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Applied Psychology

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Harper & Brothers
Publishers

APPLIED PSYCHOLOGY

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FIRST EDITION

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of the fields discussed, and have quoted tables and charts showing actual data supporting the recommendations made.

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RICHARD WELLINGTON HUSBAND

The University of Wisconsin
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Applied Psychology

limited in possibilities, and was growing so rapidly that inefficiency did little damage. In addition, industry was far less complex, so a hazy general knowledge of the various phases of a trade was adequate. But with increasing complexity and specialization, there is need of careful selection of workers for any operation, and with this comes the other side, that of advising the individual into the vocation for which he is most suited. The problem includes not only the efficiency side, but the human aspect, that of happiness.

Even in those cases where a vocational choice has been made one cannot be certain that it has been made accurately. If such choice has originated outside of the individual it is highly uncertain. A son's following in his father's footsteps is not always justifiable. Going into an occupation because an admired elder is successful in it has practically no justification. Only in cases where the individual has made his own choice by means of study, direct observation, and thorough acquaintance with the demands, training required, and ultimate possibilities of the profession can a person's decision be regarded as sound. This does not mean that any other means of decision will be certain to be wrong; one might decide his vocation by drawing a card from a hat and happen to become highly successful and happy, but the chances would be decidedly against it.

What is necessary is for the individual to find out all he can of the requirements of the projected vocation, and to match his own capacities and interests with these, to see if he is well fitted for that profession. In this he may use not only his own resources, but may have guidance by a vocational counselor or any other person who is fitted to judge him and is acquainted with the occupation.

II. UNDERLYING PRINCIPLES OF VOCATIONAL GUIDANCE

The fundamental principle underlying the ideal type of guidance is to let the individual *find his own vocation*. One may advise the boy or girl that the conditions to be met in certain professions are not such as to enable him to function at the highest level of efficiency of which he is capable, or to allow him to enjoy himself while at work as much as his personality and interests should allow

under conditions of proper choice of vocation. This type of guidance is largely negative; one tells the individual whether or not he is suited for taking up work in a field he proposes. Positive guidance is more difficult; it is practically impossible to tell a boy that he should become a lawyer, a bricklayer, or a salesman. It is better to let the leaning toward the occupation originate within the individual, and then determine suitability in ways to be suggested in this and the next three chapters.

Among pioneers in the field of vocation-finding is the Milwaukee Vocational School. The keynote to its policies is contained in the following passage, written by the Director, Robert L. Cooley, as an introduction to the series entitled *My Life Work*. This series analyzes a large number of common occupations to acquaint the candidate with duties, types of task encountered, training necessary, and future possibilities:

All work is hard unless you care for it and are interested in it. Interest is to work what oil is to machinery. A machine operating without oil will grind itself to pieces and shorten its life, and in the meantime use more power and produce less. The human body, like a machine, has only a certain period in which to serve and live.

There is no such thing as an easy job that is worth while. Some kinds of work require muscular activity; others demand mental activity. In either case, any worth-while job just about balances with the amount of energy that it requires in the course of a day. If the work is of a kind that you care for, you will accomplish more and be less worn out at the end of the day.

All kinds of honorable work are necessary to society. Whatever one's job or position may be in industry, one should become acquainted with what goes before or comes after the particular task upon which one is engaged.

The conditions found in any industry affecting hours, wages, surroundings, and workmanship are largely dependent upon the interest, the intelligence, and the coöperation of those engaged in it. No one ever gets a dollar that he does not earn without some one's earning a dollar that he does not get.

As a result of occupational analyses by the Milwaukee Vocational School, four volumes of this *My Life Work* series have been

issued. These take up, respectively, the Building and Metal Trades; Office and Store Occupations; Printing and Servicing Trades; and other Representative Industries. Each deals with about fifteen or twenty different occupations. All are analyzed from the same general viewpoint, largely as follows:

1. Nature of the Work.
 - a. Functions of occupation.
 - b. Tools, materials, operations.
 - c. Conditions of work.
 - d. Changes likely; future.
 - e. Steadiness of employment.
2. Training.
 - a. Knowledge: school; technical.
 - b. Physical and personal qualities; age.
 - c. Apprenticeship.
 - d. Eventual status; promotions.

We present here a brief summary of the description of the carpenter's trade, to show how the facts are presented to the person considering entering that field. This has been cut to its barest outlines, and many important points omitted, but it should serve to show what sort of information an individual should possess before he makes his decision to enter an occupation. Full knowledge is essential, as interest may come from some of the more superficial or spectacular aspects of the vocation.

Carpenters are the men who install and fit into place the woodwork on all buildings. They follow the bricklayers and prepare edifices of all types except the purely steel buildings.

The tools are well known. The work is almost wholly in wood. It is divided into two types—rough and finishing. Shingling, laying the roof, putting on porches, windows, etc., are included.

Most of the work is outdoors and is not very dirty; hence it may be called a healthful occupation. Not particularly hazardous if one takes reasonable care. Eight-hour days characterize the work, and overtime is usually rewarded with extra pay.

The work is still mainly done by hand; machinery has not been substituted so much as in many other vocations. There is

opportunity for craftsmen along special lines: cabinet-makers, stair-builders, etc., although much of this material is factory built and needs but to be put together.

The work is somewhat seasonal, although steadier than in the past; in inside work, particularly, one has chance for all-year employment.

The skilled carpenter must be able to read blue-prints; know the woods he uses and the use of each; must know hardware used in construction in relation to his work. He must know the building code and be able to estimate the length of time to finish a task and its approximate cost.

Sixteen is the minimum age for entrance to training, although one who is older can start with profit. He should be in good health and have a rugged enough physique to stand heavy work in all sorts of weather. He should be adaptable to different tasks and conditions of work, and to get ahead be able to get along with fellow workers.

The period of apprenticeship is four years, after which one becomes a journeyman carpenter. General education in a number of subjects will aid success and assist in promotion.

Frequently it happens that a boy wishes to go into some profession because he enjoys dealing with a few of the elementary problems pertaining to it. He has built a radio set, and forthwith decides to become a radio engineer. But his interest vanishes when he finds he will have to study for several years, learning advanced theories and practices in alternating and direct currents, magnetic theory, properties of vacuum tubes, coils, and condensers. It is an entirely different proposition to learn all these advanced technical details, from that of carrying on a little random experimentation, where neither constructive effort nor a high degree of efficiency and neatness is required.

Likewise other aspects of the job may not be just as the person expects. He may not realize the various hardships involved in the work, such as extremes of heat and cold met in some occupations, odors, hours of work, or unpleasant duties. Steadiness and permanence of work should also be taken into consideration. A few years ago the tremendous daily earnings of bricklayers and plasterers attracted a good deal of comment, but it was not generally known that these men rarely worked a full week, usually had to

go through the whole winter without working, and suffered lay-offs at other times. Likewise the amount of training necessary before one can do independent work and earn full wages may far exceed expectations.

A case which was told the writer illustrates very nicely the importance of obtaining complete information about a vocation before entering it. A boy desired to become a baker, took preliminary training, and had a position offered him. Negotiations went along very smoothly until the employer said: "All right, then, report at eight tonight. You will work from then till five in the morning." When he expressed surprise he was told that practically all the baking in the city went on at night, since the customers demand fresh bread and rolls in the morning. The upshot of it was that his desire to become a baker was not sufficient to overcome the disadvantages of working at those hours. If he had taken the pains to find out more about the working conditions surrounding the baking industry he would have avoided the time, trouble, and disappointment.

III. TRYING OUT VOCATIONS

A written description or a personal interview cannot tell the individual everything about a vocation. By far the best way of finding whether one's interests and abilities coincide with the demands of any vocation is actually to go through the operations and make sure that most of the duties are pleasant to one and that none are prohibitively unpleasant. There are routine and unpleasant duties in any occupation, but these will not bulk large in proportion to the pleasant aspects if one's interests are genuinely along that line of work.

This is the essence of the program of the Milwaukee Vocational School. Most of the students have only grade or high school training; there are very few college graduates. The vocations in which the individual may try himself out are mostly the skilled-trade type—printing, watch-repairing, carpentry, stone masonry, beauty culture, barbering, baking, typing and stenography, electrical work, sign-painting, forge-work, stationary engineering, etc. The candidate may try several vocations one after another, to see which he

prefers and in which he does best. Those under sixteen are allowed to work within a group of vocations for a while—for instance, among various phases of the building trades, and if one finds nothing particularly interesting he may try another group, say printing or metal-work.

Every effort is made to keep the work practical. While the purpose of the school is to let the individual find his own vocation, this does not imply that he is playing around or is not learning anything serviceable. All work done is full-sized and of exactly the same type as that found under daily working conditions. For example, those learning the printing trade do all the work of that type needed within the school, which incidentally is a sizable amount. Bakers actually make cakes and bread; barbers cut hair; bricklayers use standard bricks and mortar and make regular walls, corners, arches, and designs. The instructors are all expert workers who keep in contact with industry, and are not only highly skilled workers, but are also men of foresight and wide outlook. Instruction is all individual in nature, rather than group, so that a person may proceed as fast as he can take the time and has the ability. Instruction also proceeds along general lines, for example in English or algebra, for cultural development of the individual.

When a course is completed the future of the boy or girl is dependent on two factors: (1) rating by the instructor as to performance and potential ability; and (2) his own liking for the type of work encountered. A rating sheet is filled out by the instructor on these counts: trade adaptability, industry, initiative, punctuality, reliability, coöperation, intelligence, stability, attitude, courtesy, appearance, health, physical defects, work recommended, and other incidental remarks. It will be noticed that these points take into consideration potentialities as much as present skill.

Not all the work deals strictly with vocation-finding, however. There is definite training along practical and theoretical lines. To start with, there is naturally a good deal of learning during the period of vocation-finding. As a proof of the quality of work done by this school we may cite the fact that many concerns in the city of Milwaukee will not accept new employees or apprentices unless they have taken training in and are specifically recommended by the Vocational School. Two types of training after employment are

also carried on. While the individual is actually earning he may be sent to the school for a half day or a full day a week to learn various procedures not always picked up to best advantage under actual working conditions. Or he may undertake more advanced work to enable him to secure advancement.

That this training is valuable both to the individual and to the employer has been disclosed by a number of surveys. One followed the subsequent careers of plumbing apprentices. Of those who had been sent by the Vocational School, 78 per cent were still working at the end of the year, while of those who had been employed from other sources only 23 per cent were still live material for the industry, the rest having been lost for one reason or another. This comparison certainly shows the value of scientific methods of vocational guidance and vocation-finding as opposed to the usual process of stumbling, more or less, into some vocation.

Positions are secured for students after they have completed one or more courses and feel that they are satisfied to commit themselves to one particular occupation. Record is kept in the office of the various physical, personal, educational, and professional characteristics of the individual which might be of value in determining suitability for positions which may arise. Employers cooperate, in fact are eager to do so, in taking on new men and women from this school. They send in their requirements, describing the nature of the work and specifying the type of person they wish. Files are consulted to match the individual to the work, and the proper person or persons are sent over.

Follow-up is carried on for several reasons. The welfare of the boy or girl is always kept in mind. The whole purpose of the school is to enable the average person to find the occupation which is most to his liking and in which he seems to have the best ability, so that he may lead a happier and more efficient life than he otherwise might. With this program it becomes essential to follow up the individual after he has received his training, to see whether he is entirely satisfied with his work. If differences are found to exist between the work as outlined and as it actually turns out, a revision of records, of policies, or of methods of instruction will be in order. The methods of the employer himself may likewise be looked over.

We may take a hint from the underlying principles of the Mil-

waukee Vocational School and suggest that anyone considering entering a vocation try it out so far as is possible. Actually trying it out is the best way of finding the fundamental nature of a vocation, and of making sure that one will not be disappointed later should he find conditions somewhat different from expectation. This may be done through summer, vacation, or part-time work, without one's having to commit himself definitely. In a number of ways the boy or girl who is forced for financial reasons to work during the summer is better off than one who spends it in recreation or travel, since he actually comes in contact with everyday phases of work. For the same reason one can profit more if he works at something he might continue later than if he acts as bellboy, waiter, life guard, or farm hand. If one is wavering between law, advertising, and architecture, he might manage to spend one summer working in the office of a man engaged in each one of these professions, doing routine work and observing the various types of problems which come up. One may have to undertake such work with little or no financial return, but, if it is at all possible, the person who is seriously concerned with his future will not begrudge a few weeks spent in ascertaining in the very best way whether a vocation suits him.

IV. POINTS TO CONSIDER IN VOCATIONAL GUIDANCE

There are a number of points about the individual which should be taken into consideration in guiding him into any vocation. The first three mentioned below are probably more important than any of the others, and are analyzed in detail in the next three chapters, so are only briefly introduced here.

(1) *Intelligence*. A person obviously must have a certain degree of general ability to take care of any occupation beyond the most routine in nature. Before recommending that anyone enter a vocation the adviser should consider whether the individual's ability meets the demands of the vocation. Too high intelligence as well as too little ability would disqualify a person, since he could do something better and lead a more efficient life.

(2) *Personality*. Persons of equal ability are not equally well fitted for various types of work, even on the same level. One man

will become a general superintendent, while another will become equally preëminent in research work. The former is able to handle people, while the latter rather shuns society and works best when dealing in abstract concepts. It takes a certain type of person to be a salesman and another to be an artist. Yet one is no better than another.

(3) *Interests*. One's likes and dislikes constitute another aspect of his personality. If one likes the type of problems which the doctor or engineer meets, he is far more likely to succeed than one who has equal ability but likes different activities. Some persons seem more fitted for manual and outside work, others for detailed machine operation, and still others for office work. Let each of them do as his interests suggest. However, one must make sure that interests are genuine and not second-hand expressions from suggestions on the part of parents or friends.

(4) *Physique*. This is an important attribute in some vocations, although probably of far less consequence than it was a century ago. The mere matter of strength is to be taken into consideration in a few crude manual-labor positions, where a certain minimum might be required. Health, however, is a crucial matter in many occupations, since a person must be fairly robust to stand certain types of work over long periods of time. Some occupations are hazardous to anyone with a tendency toward tuberculosis: stone-cutting, working where there is dust or lint in the air, in especially warm rooms, and in some cases any work that is wholly inside. This type of guidance, it will be noted, is negative in nature; that is, the individual is told to avoid rather than to take up certain vocations.

Conversely, it might be remarked that there are certain vocations which are suited to handicapped people. Watch-repairing is one of these; a person may be humpbacked or lame and not be any the poorer, so long as he possesses a good degree of manual dexterity. Some industrial concerns now reserve a number of positions to be occupied by persons who are handicapped—lame, deaf, blind, with poor vision, etc. The writer has seen one particular operation in a large factory which is always done by a man with a wooden leg. A heavy piece of iron might slip, and if it did, the carpenter rather than the doctor had to be summoned!

(5) *Sex* should make little difference, but unfortunately it does. From a theoretical standpoint, it should make no difference who fills a position, provided he or she can do it effectively. But we know that most occupations are traditionally held by one or the other sex. Men do most of the crude manual laboring work, are executives in large measure, and dominate the professions of law, medicine, and engineering. Almost without exception grade-school teachers are women, although in high school the numbers are about even, and in colleges the large majority are men. Most stenographers and nurses have always been women. There are about equal numbers of each sex acting as salesmen, as waiters, and as factory workers in semi-skilled operations.

The main point about guidance in terms of sex is to be very cautious about advising a person to go into a vocation which traditionally belongs to the other sex. Some women are now entering law and medicine, but the proportions remain heavily in favor of the men. Any woman who does go into these or other professions is setting herself at a slight disadvantage at the outset, and we must be certain that her interests and abilities are such that permanence and success seem fairly certain before advising her to follow her primary inclinations.

(6) *Race* is a potent factor in some cases. It may be unfair, just as is most sex discrimination, but one person cannot buck the tide of tradition more than slightly, no matter how excellent he is. In some vocations a Jew, an Oriental, or a Negro is handicapped. Just what these handicaps are and what races might have trouble obtaining a position is so dependent on local conditions that little generalization is possible.

(7) *Age* makes a difference for some positions, although in general there is a fairly direct line of promotional sequence up which an able man may gradually rise. Ordinarily a superintendent, a high school principal, a vocational counselor, or an occupant of any other position bearing prestige and authority, should be a middle-aged man. Certain types of salesmen, say in the sporting-goods line, would preferably be younger men. Further, there are some occupations into which it might be inadvisable for an older man to try to break. With industrial changes, individual readjustments are frequently necessary, but such changes must be effected advisedly.

For example, as our mode of transportation changed about the beginning of this century, a large share of carriage-makers were absorbed into the automobile industry. Many middle-aged men had difficulty in making this change.

(8) *Education.* Some positions are not open to a person who has not completed high school, or even college. Conversely, just as with intelligence, one should not allow a good education to go to waste by entering a vocation with demands of a lower order than one's training would warrant. Special training may be demanded for some positions, such as stenography or accounting, and one will have to obtain it before he can get regular employment. In other cases, as in salesmanship or carpentry, industry itself takes care of this special training.

(9) *Experience,* either in the same or in a very similar task, or in another which leads up to the one under consideration, is sometimes demanded. It is not always possible to expect experience, and such a demand can easily establish a vicious circle. If a person cannot get a position because he has had no experience, he has no way to acquire that experience. Such a demand would have to be modified soon, since before long the supply of available workers who have had experience will have been exhausted. But this latter fact does not help the applicant at the present time. It might be fairest to ask for some practice in work of similar or more fundamental nature, which might lead directly up to the task in question.

(10) *Social Factors,* both of the profession and of the applicant, must be considered for a number of vocations. A certain degree of social poise and gracefulness is demanded in occupations such as those of the teacher, salesman, minister, hotel clerk, and others having social or executive demands. Personal appearance, both physical and sartorial, as well as manner of meeting people and carrying on conversation, is included in this. On the other side, that of the young person, are the social possibilities and limitations involved in the type of work under consideration. Many persons prefer a white-collar position over one of the manual-labor type which involves wearing overalls and getting dirty, even if the former may actually pay less money. The potential service to society is a feature to be considered, although it must be truthfully

admitted that this usually appeals more to older counselors than to the young worker himself.

(11) *Economic Aspects*, present and future, should be taken into consideration. Success and happiness are not irretrievably bound up with financial reward, but this latter should be given some attention. Inventors, teachers, and ministers receive pay far smaller than their intellectual capacities would seem to warrant, but persons in these lines of endeavor are willing to make the necessary sacrifices to engage in work they like. Many artists and musicians endure actual poverty to carry on their work. A farmer may handle little cash, but is practically assured of a home and enough to eat. Most skilled occupations at least provide a living according to decent standards, which is all that is really necessary. Very few can become rich, no matter what occupation they select.

(12) *Present Distribution of Workers in the Field* is a point which has not been given much emphasis until recently. One will not open up a store if he finds there are already so many in the locality that none is earning much. Rather he will look for a part of the city where there are few stores per thousand population. Similarly, a doctor would settle where there were few, or would select a growing subdivision as yet unclaimed by any in his profession. But this idea has not come to national attention, and has had very limited application with respect to vocational guidance. To mention a few instances of overcrowding: too many at present are pointing toward the professions; too many wish to go into business in general without any specific interests or training; and, to be more specific, there are too many persons, especially girls, who have hopes of teaching high school English.

It is well, also, to look into the future possibilities of an occupation before advising a young person to undertake it as a permanent venture. Demand for that type of product or service may lessen; styles may change; mechanization may throw workers out of employment; work may become increasingly specialized. No one can foresee completely, of course, but an intelligent survey of present trends may suggest something of future possibilities. No one could have predicted, a century and a half ago, that vessels would be propelled by power other than wind; and less than half a century ago the horse and buggy was the best means of private trans-

portation. In some cases, workers may be absorbed into replacing industries, as was instanced in carriage-makers being taken over into the automotive factories. But sometimes this is not possible, so the individual should protect himself against putting all his eggs into one basket.

V. THE VOCATIONAL INTERVIEW

Because of its flexibility and ease of control, the interview is at the heart of vocational-guidance procedure. The individual can best be assisted if he talks to some one in a position to give sound advice, who knows him or is able to help him size himself up in regard to the vocations considered.

Preferably guidance should come from some one engaged in that work professionally. Not all schools are in a position to have the services of such a man on a full-time basis, but a teacher with training, experience, and judgment can accomplish a great deal on a part-time schedule. Other sources of guidance are through vocational schools, city or state guidance bureaus, industry itself, or home influences. The last two of these are rarely as comprehensive, free from prejudice, and as sympathetic toward the individual as might be desired, and accordingly should be supplemented with advice from an experienced counselor.

All in all, a vocational counselor connected with the school or other public organization is the best solution of the problem. He has a number of advantages not enjoyed by other advisers. Because of his experience he can be more objective, and size up the boy or girl in comparison with others, rather than through a parent's prejudiced eyes, and thus determine his actual merits and possibilities. Then, on the other side, he can be much more conversant with industrial conditions; he knows the possible vocations open to persons of various degrees of education; he knows which ones are in general advisable or inadvisable to enter and which ones might be most suitable for the abilities and personality traits of each individual.

As in all types of interview, it is suggested that the vocational interview take place in privacy and under as informal conditions as possible, so that the interviewee may show his best side. The

interviewer can keep on the alert to discover strong and weak points, without appearing hypercritical. He has, of course, to be critical in his own mind, since, to be fair to himself, his school, industry, and the candidate too, he must make sure that the individual is properly fitted for the career the two may agree on. This is comparable to the high school principal examining the records of a pupil to see if he has sufficient scholastic potentiality to warrant his going on to college.

In doing this, he may observe the appearance and behavior of the boy or girl as well as paying attention to the actual conversation exchanged between the two. The dress of the person, emphasizing neatness rather than expense, can be observed while he is walking from the door to the desk. One may also notice whether he is chewing gum, whether he walks in an alert manner or slouches along, whether his manners are courteous or slack, his form of greeting, and his general attitude toward the counselor and toward possible work. Only a second or two will be required to notice each of these points, and the interviewee need not even know that he is being scrutinized.

The counselor should bear in mind that the purpose of the interview, as well as of all vocational guidance, is to help the individual find his best place in economic society. Therefore, the applicant should be drawn out as much as possible, and should be allowed to do most of the talking. The counselor is not there to preach, or to assign a vocation to the young hopeful. So, while his words might contain a great deal of wisdom, advice is likely to go astray unless the desires and aptitudes of the individual are first studied.

In carrying on the interview there are a number of points which should be constantly observed. The first and most important is that the individual himself should choose his own vocation. If this decision comes from within we can be reasonably sure that the interest is genuine and that the person was not forced in any way. One may be guided and be given important information, to be sure, just as a person is taught to swim. But as in swimming, the movements must come from the swimmer himself; no one else can do that for him. The counselor may sound out the boy or girl to find out what main interests exist and what special abilities there are, but the individual himself must make the ultimate decision.

It is best to start the interview with discussion of interests. These may be of several varieties: school subjects, spare-time work, hobbies, vacation activities. Find out which ones seem to promise permanent interest, and which are passing whims. Many people are willing to indulge in hobbies up to a certain limit, say in carpentry, chemistry, or electricity, but do not have sufficient interest to develop themselves to a degree which would enable them to attain technical perfection.

For purposes of detecting underlying interests occupations may be grouped into:

Professions: law, medicine, dentistry, engineering, ministry.

Business: manufacturing, selling, accountancy.

Trades: mechanic, painter, bricklayer, printer, clothier.

Transportation: railroading, taxi, marine work.

Agriculture: farming, livestock-raising, nursery, landscape.

Public Service: teaching, police, social service.

Home-making.

A progressive elimination of unsuitable occupations is the most satisfactory procedure to follow. Inquire about the person's interests in a wide variety of occupations which appear to be within his range from an educational and intellectual standpoint. It would be useless to ask a grade school graduate who seemed to have reached the limit of his possibilities with that degree of education whether he preferred medicine or law; or to ask a college graduate if he would like to repair an automobile. The professions should be suggested only to the upper third of college graduates. Start within the range and explore, constantly narrowing down possibilities.

In carrying on the interview it is advisable to allow the boy or girl to talk as much as he or she will. In this way one can see much better what the real interests and aversions are. An example of a shift in vocations which changed a boy from a disinterested failure to a real success is quoted from Cohen. This shows how the inclinations of the boy revealed themselves as he was being drawn out during the interview:

The failure who became a salesman. This is the case of a young man who has had two years of high school work. Find-

ing that he did not like the commercial course which he was taking and not knowing what else to do, he left school to seek work in a piano-manufacturing establishment. After several years of employment he finds no promotion ahead of him. This young man is despondent and does not know what to do.

Observations: a. No mechanical inclinations.

b. Likes musical instruments and can play the piano.

c. A good talker; explains well.

d. Is sincere.

Not understanding the exact nature of his work in the establishment, we asked him to make it clear. The young man went to the blackboard, drew a diagram of the parts of the piano, explaining his drawing with well-chosen language, and demonstrating in a very interesting manner just what his duties were.

Advice. His knowledge of musical instruments, ability to play, and clear demonstrating and convincing talking abilities, seemed to point to success in salesmanship, particularly of musical instruments. The youth was advised to learn more about his work, to take courses in salesmanship, and to fit himself for that career.

Follow-up. This boy became a good salesman of pianos.

One of the most difficult of problems is that of guiding an individual who fails to stand out in any way. Quite a number of this type exist, although a percentage estimate is impossible. Suppose such a boy who is about to leave school begins to wonder what sort of life work he should take up—how can we guide him? He has just an average school record, with no suggestion of potential excellence in anything. He engages in no extra-curricular activities—no athletics, no writing, no debating, no musical work, holds no school offices. He has no hobbies—does not experiment in any scientific field, does not read good literature, has no æsthetic interests. His leisure time is spent in non-improving pursuits: reading medium-class magazines, going to movies, dancing, playing cards. One does not have to do all, or even several, of these things. But to receive good vocational advice, he should have some outstanding characteristics; be more than just “another name in the school directory.”

In such a case the problem is one of motivating the person to do something *well*. It does not matter very much what it is that is done. One thing done well means that the person has ambition enough to rise above total mediocrity, and is at least somewhat interested in that activity. Proper guidance should start early in the educational history, so one's career may be shaped before the time comes to start earning a living.

Guidance should also follow along the lines of encouraging the individual to prepare himself for his vocation by reading, by observing, by doing, if possible, and above all by getting into good personal habits which may assist in making later success. Habits of effort, willingness to do more than ordered, perseverance, and punctuality can be developed and used in any sort of activity whatsoever. This is the reason for suggesting doing some one thing well, regardless of what it is. The actual subject-matter learned in school or college is rarely used in practical situations. But there is immense value in learning how to think; in particular, to think critically and to weigh evidence; acquiring habits of personality; and also in acquiring cultural tastes. In other words, guidance should serve to stimulate ambition as well as to suggest vocational choice. This will serve to make a person work hard to get ahead, do more than the absolute minimum, and stick to the job long enough to earn a promotion, rather than quitting if a raise does not come of itself more or less without effort.

A number of forms of educational guidance have been suggested along with vocational. It is important that guidance come early in the scholastic career of the individual, even if it is only decided whether he should go on to college or if it would be better that he stop with grade school or high school. If he is to go on, courses which will best fit him for college, and the particular branch of college, may be suggested. If he intends to start earning his living within another year or two, then certain other courses will be of better service to him. This suggests a very important principle in guidance: do not be satisfied with merely getting the boy or girl a job, but guide him toward the vocation in which he seems most likely to perform to best advantage, and prepare him for it as early as possible. Only with such intelligent guidance can the vocational counselor render the best service.

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II. INDIVIDUAL DIFFERENCES

Many laymen seem to think that anyone can do about the same quantity and quality of work, provided he tries hard enough. Possibly the words and implications of the Declaration of Independence, which provides that "all men are created free and equal," have had something to do with this belief, although its framers were thinking only of economic and social equality. If the words were changed to apply to psychological principles, it would have to be worded somewhat as follows: Men are born with vastly different abilities and these manifest themselves increasingly throughout life.

This fallacy of potential equality may have been allowed to persist because of hesitancy on the part of administrative advisers to discourage parents in regard to ultimate possibilities of their offspring. Fundamental lack of ability is explained delicately as due to lack of effort, slight slowness in initial comprehension which will be made up soon, predicted intellectual growth at the time of puberty, the "slow-but-sure" superstition, and similar fallacious arguments.

Everyone recognizes that there are wide differences in ability to run, swim, play baseball or golf. Yet individual differences are far greater in complex intellectual abilities than in motor capacities. While the best man can only run about twice as fast as the slowest and the expert golfer takes only a third fewer strokes than the dub, the man of high intelligence can solve in a few seconds a problem, say in mathematics, which would take another minutes or even hours, and which a third person might never solve by his own unaided efforts.

That individual differences are of great importance in school progress can be verified from one's own experience. We all can remember a few decidedly overgrown boys and girls who were in grammar school with us, and were about eighteen when they graduated. Quite likely they were graduated more to get rid of them than because they had satisfied the standards demanded. Such a person could not possibly do high school work, no matter how long he tried. Others, who are just about average, can get through high school, but are incapable of mastering the more complex and less

concrete type of material which is studied at college. As a matter of fact, just about 10 per cent of all persons have the mentality to cope successfully with college work. The reason we do not have more failures in high school and college is because the majority eliminate themselves before they get to a point where they would fail.

Can one by practice make up for deficiencies in innate equipment? At the present time intelligence is regarded as almost entirely a native trait; it cannot be materially altered. Allowing the individual to grow up in a favorable environment may increase the intelligence slightly, but this is because he is enabled to live more nearly up to his inborn capacity rather than from an actual increase in his ability. Children born and raised in families of better economic and social status tend to have higher intelligence scores, but this is probably because the superior environment was due to superior intelligence on the part of the parents, and this intelligence is inherited directly. Twins who have been separated and raised in markedly different environments have shown only small intellectual differences. Adopted children take on in only the slightest measure intellectual characteristics of their foster parents, resembling them in intelligence scores far less than their own children who were raised in the same home.

III. THE NATURE OF INTELLIGENCE

Let us examine briefly some of the current opinions as to the nature of intelligence, so that we may understand the practical bearings, applications, and limitations with better comprehension.

(1) *Exactly What Intelligence Is* from a physiological or neurological standpoint, is not known. Perhaps it is somewhat related to speed of nervous conduction. But speed is not the only function of intelligence; accuracy of work and ability to comprehend complex situations with minimum trial and error are also essential. These two functions are termed speed and power, respectively, and appear to be highly correlated. As a rule, the faster an individual is, the more accurate he is also, and the more quickly he can see through a complex situation. The popular idea of "slow but sure" has proved to be a myth; it is very rarely that a person does fall into this classification.

(2) *Definitions of Intelligence* usually incorporate one or both of these functions of speed and power. Stern considers intelligence to be the ability to adapt to new situations. Binet's definition includes three abilities: maintaining a given mental set, making adaptations for the purpose of attaining a desired end, and possessing the power of auto-criticism. Thurstone has suggested another important attribute of intelligence—the ability to endure a delay without losing the general orientation to the problem. This is important, since it involves a symbolizing activity of which less intelligent humans and animals are not capable. Harlow found that the higher grades of primates could remember location of food reward for as long as five minutes, even though they wandered around the cage in the meantime. Lower forms retained this abstraction shorter periods of time; rats could remember only a few seconds, and then only when they retained their bodily position.

A reasonably comprehensive middle-ground definition might be given as follows: Intelligence is the ability to profit from past experience and to adapt quickly and accurately to new problems.

(3) *Characteristics of Intelligent Behavior.* The intelligent person behaves appropriately; learns in fewer attempts and in less time; adjusts in a novel situation with greater facility; uses past experience effectively; and can think in terms of more subtle relationships. In contrast the stupid person (like an animal) behaves more automatically; his behavior is less adequate in situations where routine is not entirely sufficient; he learns more slowly; is slow in adapting to changes, being more a creature of habit; thinks poorly in abstract terms; and is less capable of inhibition or delay without losing his orientation.

(4) *Generality of Intelligence.* Of great importance is the question whether intelligence is a general function or whether it is composed of a large number of separate abilities. Spearman believes it is general, with specific or separate abilities entering in to only a small extent in functions apart from music, art, or motor skill, in which fields skill is largely apart from intelligence. A second theory is that of "group factors"; one may have, for example, high ability in science, but not be so good in languages, and poorer still in literature; but skill is fairly uniform among subjects of related nature. Kelley has presented analysis of performance on various types

of tests into the following factors: verbal, arithmetical, memory, spatial, and speed. "Vivacity" appears in a few tests, and certain other factors, as maturity, race, sex, and environment, are responsible for individual differences. The third theory is that abilities are separate and discrete. Opinion at the present time seems to be somewhere between the general and the group factor theories.

Applied practically to scholastic situations, a combination of general and group factors such as these might mean that one should do work of the same general level in all courses, a small amount of variation being allowed between languages, literature, sciences, etc. But any *wide* differences would have to be accounted for on the basis of effort, interest, and similar non-intellectual factors.

IV. THE MEASUREMENT OF INTELLIGENCE

The procedure of measuring intelligence is too well known to need description here. A few important facts will be pointed out briefly.

The most accurate way of ascertaining a person's intellectual ability is by means of a test which gives a numerical score and is evaluated by comparison with previously obtained scores. The score may be given in gross units, percentage accuracy, or in terms of a derived unit which is the same for all intelligence tests.

This standard score, as customarily used, is the Intelligence Quotient, ordinarily shortened to the first letters, I.Q. It is a device to express the relationship between the chronological age of the individual and his mental development. The formula for computing it is:

$$\text{Intelligence Quotient} = \frac{\text{Mental Age}}{\text{Chronological Age}}$$

Both ages are in terms of years and months, the chronological since birth, and the mental from comparison of the child with the standard for his age. If an eight-year-old has a mental age of eight, he is exactly average. His mental age would be eight regardless of whether he were eight, ten, fifteen, or only five chronologically, if he had a test performance of eight. But the age would make a vast difference in interpretation. His I.Q. by the first assumption would be 100

(the decimal point is dropped); 80 if he were ten years old; 53 if fifteen; and 160 if only five.

Interpretation with adults is not often made in terms of I.Q. points, since there is uncertainty as to mental growth after middle adolescence. Ability is nearly constant from the age of twenty to over fifty. We could not reasonably expect a man of forty to do twice as well as he would have done at twenty. Most authorities consider sixteen as the age when this period of stability begins, although some urge fourteen or fifteen. When persons beyond this chronological age are tested and the I.Q. is computed, sixteen is usually left as the denominator.

Scores do not need to be reported in terms of I.Q. points; they may be given in gross score units as well. It makes no difference whether we set an I.Q. of 105 as minimum for a clothing salesman, or demand that he make a score of 130 points on the American Council Psychological Examination, provided that both scores represent the same potential ability. The chief advantage of using a derived score such as the I.Q. is that a certain figure means the same, regardless of the test administered. But if we are to use the same test for all new employees, a distribution of scores obtained from that test is absolutely satisfactory.

Understanding of the interpretation of various I.Q. scores will aid in later practical educational and vocational guidance through intelligence. No absolute differentiation is possible, since the distribution of scores is continuous, but a few conventions have been arrived at in terms of words used to express different degrees of intelligence. The following table compares these levels:

TABLE I. I.Q. LEVELS

I.Q.	Classification
0- 19.....	Idiot
20- 49.....	Imbecile
50- 69.....	Moron
70- 89.....	Dull
90-109.....	Average
110-139.....	Superior
140 +	Genius

Although the terms moron, imbecile, and idiot are often used in private life as interchangeable terms of abuse, in scientific circles

there is the clear-cut differentiation indicated in the table. The idiot is incapable of even caring for himself or learning language. The imbecile is also profoundly defective, but is slightly higher in the scale, and can perform a few routine duties, feed himself, and use a few words. However, earning a living is beyond his possibilities. The moron can earn his living in manual labor, but should have some guidance and advice about spending his money, and should not undertake the responsibilities of raising a family. Since there are comparatively few defectives, perhaps less than one in a hundred, and since vocational possibilities are so distinctly limited, we may dismiss these classes with this brief consideration.

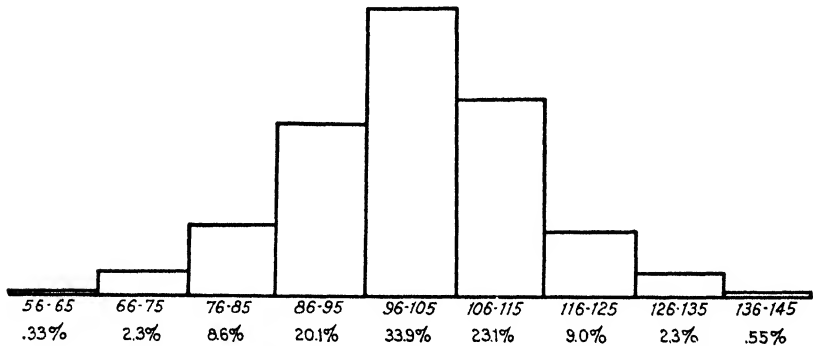


FIGURE 1. DISTRIBUTION OF I.Q.'S OF 905 UNSELECTED CHILDREN, 5-14 YEARS OF AGE.

Those listed as "dull" include many more. These include many of the individuals who drive trucks, are farm laborers, sell routine articles in lower-class stores, and act as unskilled file clerks and typists in offices. They are capable of graduating from grammar school, but do not profit from trying the more abstract subjects started in high school.

The "average" group comprises the large mass of white-collar workers, expert file clerks and secretaries, mechanics in types of work where extreme skill and some planning are necessary, and salesmen of more detailed types of articles. The "superior" class includes almost all the higher occupations, although one needs to be near its upper limit to engage in law, medicine, writing, inventing, or college teaching. The "genius" class is by definition a point so

high on the distribution curve that only one person in a thousand attains it.

The above chart is quoted from Terman to give an idea of the approximate number of cases within each general I.Q. class.

V. EDUCATIONAL GUIDANCE

Knowledge of the student's intelligence can assist in a number of ways in guiding him in his educational progress, and through this toward vocational preparation. The moron has reached his limit by the end of the second or third grade. Therefore reading and writing simple material, and only the simplest arithmetical calculations, can be acquired, no matter how much training he is given. Vocational limitations are apparent. The general class of dull individuals can reach the later grades or even graduate from grammar school. Completing the eighth grade should demand an I.Q. of about 90 or 95 as a minimum. To graduate from high school, provided good standards are maintained, about 105 should be necessary. For college a minimum of 115 I.Q. points should be demanded, although criteria vary somewhat among large and small state universities and private institutions.

Vocational choice will be partially determined by educational possibilities. Those who cannot go beyond the third grade have little information at their disposal, and little ability to acquire it, so are limited to physical labor. High school graduation, on the other hand, will permit a choice of almost any position but teaching higher levels, the professions, and administrative positions in large business concerns. College training further increases the range of choice.

Beyond the grades there is a choice of several curricula. In high school, pupils have choice of college preparation; a second program of general cultural value, but with some of the more difficult materials left out; and a third, more direct vocational training, such as bookkeeping, shorthand, typing, shopwork. The writer would recommend minimum I.Q.'s of 115 and 105, respectively, for the first two groups. There will be overlapping because of individual desires, but no one should be allowed to undertake work beyond his ability. If anyone tests over 125, he should be urged to go to college by all

means, even if it requires loans or scholarships, lest a person who has the potentiality of making valuable contributions should fail to realize his possibilities just for lack of training.

Conservatism in suggesting the more difficult courses is urged. While we frequently hear the plea of educating all possible, there can be such a thing as over-education. Many are being sent to school vainly now, since they have not the requisite ability to profit by the material studied. By having achieved a certain degree of education, they are designated as having a corresponding amount of ability, yet they do not have it.

Using intelligence tests as a part of college-entrance requirements has several advantages. First, direct comparison between applicants is possible. Intelligence tests given to all high school seniors in Wisconsin during an investigation by Henmon and Holt have shown that the average intelligence in some schools was better than the highest score in others. At that rate, and assuming that grades are roughly proportional to intelligence, an A in one school would actually represent less than a C in a school having more intelligent pupils. Secondly, intelligence scores predict college success as well as any evidence available. The correlation between the two has usually fallen at about $+0.55$, which indicates only fair agreement, but is almost exactly the same coefficient obtaining between high school grades and college marks. This fact speaks well for the predictive powers of intelligence tests, if we can foretell with as high a degree of accuracy from a one- or two-hour examination whether a high school graduate will succeed in college as we can from knowing his grades for the whole four-year high school career. The third use of test results is in selecting a curriculum in college.

That intelligence does figure in selection of courses is evidenced by Table 2, taken from Henmon and Holt. The figures quoted are the median percentile ranks for those enrolled within the various schools. It is extremely instructive to note which groups are at the head of the list and which are toward the bottom. All branches of Engineering are well toward the top, as is the technical chemistry course. The course in Humanities, which is purely cultural rather than practical in purpose, attracts a very high class of students. Courses of shorter duration or those which have less broad programs, such as agriculture, pharmacy, physical education, and home

TABLE 2. MEDIAN PERCENTILE RANKS IN INTELLIGENCE OF FRESHMEN IN VARIOUS SCHOOLS OF THE UNIVERSITY OF WISCONSIN

Course	Rank	Median Percentile
Mining engineering	1	80.0
Humanities	2	77.5
Chemical engineering	3	68.8
Electrical engineering	4	65.6
Chemistry course	5	64.2
Mechanical engineering	6	63.7
Bachelor of arts	7	62.7
Civil engineering	8	60.0
Pre-medical	9	54.1
Chemistry-commerce	10	52.5
Nursing	11	51.3
Music	12	50.6
Art education	13	50.5
Home economics	14	50.0
Physical education	15	48.8
Bachelor of philosophy	16	46.7
Agriculture	17	37.9
Pharmacy	18	31.0

economics, have lower scores. Comparisons between the two aspects of the same courses are interesting. Candidates for the Ph.B. degree are allowed to omit languages, substituting courses which apparently are easier for many students, and the percentile difference between this course and the scores made by students working for the A.B. degree is sixteen points. The Chemistry-Commerce course shows a score nearly twelve points below the standard Chemistry course, which demands more intensive and detailed work.

Dentistry and Veterinary Medicine are not represented among the schools at the University of Wisconsin, but scores reported at Ohio State place students in these curricula well below those in Pharmacy, which is at the foot of the Wisconsin list.

These scores are *not* final, since they were made by freshmen entering the various courses, and some of the students will not be successful in completing them. There is also a great degree of overlapping; many bright students elect courses for which the average

is rather low, and *vice versa*. But as a matter of fact the averages probably indicate with good accuracy the comparative difficulties of the various curricula. This does not imply that agriculture and pharmacy are not desirable occupations. Rather the demands are such that more people are able to cope with their subject-matter. It would be advisable to direct the superior student away from those courses which are low on the list, since the higher ones offer him opportunity to make fuller use of his possibilities. On the other hand, there is always opportunity for a desirable man in any occupation, and it might be more advantageous for a person to be an outstanding farm expert than an average doctor.

VI. VOCATIONAL GUIDANCE

Vocational guidance through intelligence will be discussed in four headings: General comparisons between occupations; Cases where intelligence scores and occupational success agree; Cases where intelligence does not predict success; and the Degree of Intelligence desirable for undertaking various vocations.

(1) *Comparisons between Occupations.* A tremendous amount of valuable material on the relation between intelligence and vocation has been provided us by the famous Army Alpha test. This represents the largest single program of mental testing ever conducted. About a million and a half soldiers in the American army were tested in 1917 and 1918. Such a large proportion of men between 21 and 30 were in the service that we may consider the results a good sample of the general population. The scores were surprisingly low; the mental age average, found by comparing results on this test with the score obtained from some of the same group on the Binet age scale, was 14.09. The gross score averaged 79, the maximum possible being 212. In several colleges of good standards it was found that Alpha scores of less than 115 would not permit success, and for those between 115 and 130 unusual effort was necessary to secure passing grades. Averages of freshman classes were around 140-150; almost twice the score obtained by the average of the country. And remember that the figure of 79 quoted for the Army was only the average; about half the scores were below that figure.

Figure 2 shows the scores made by the middle 50 per cent, together with the median scores, of persons in the various occupations indicated. Scores for some of the higher occupational levels are

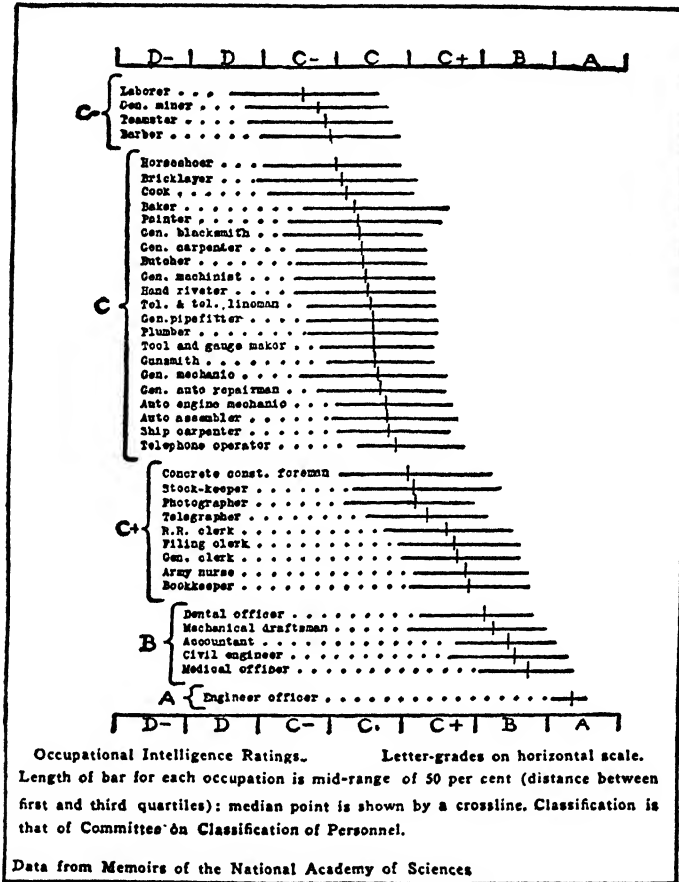


FIGURE 2. DIFFERENCES IN ARMY ALPHA SCORES BY OCCUPATION.

missing, since the test was applied chiefly to enlisted and drafted men, and persons in higher vocations would very likely be officers. It is instructive to note that the engineering officers, who constitute the highest occupational class on this scale, score in just about the same range as college freshmen.

One must be warned very strongly not to think of all men in a given occupation as having exactly the same scores. There are wide variations from these averages, as shown by the width of the bars, which include only half the cases, omitting the upper and lower quarters of each group. Telephone operators showed an average of 70, with a scattering from 46 to 95. Other occupations have just about this same ratio between highest and lowest scores. We may find a man of high intelligence acting as a barber, although it is unlikely that he will be satisfied very long. In perhaps fewer cases persons of comparatively low intelligence will be discovered holding higher positions than one might expect. Extended comment on this chart is unnecessary; one may make his own comparisons.

(2) *Where Intelligence and Success Are Correlated.* Kornhauser reports a study of intelligence scores of several groups of factory employees who were being trained to become minor executives. They had been sectioned on the basis of learning performance to allow each group to learn at its best rate. Mental-alertness tests disclosed an almost perfect separation between the groups. The few cases of overlapping were almost invariably traced to persons of higher intelligence who were not trying. But it had taken months of experience to make these divisions, which a test could have made with over 90 per cent accuracy within an hour.

Executives, minor executives, and clerks (including sales clerks) were compared by Yoakum. Only a very small percentage of clerks came up to the level of executives. Yoakum says: "It is clear, for example, that very few of the clerks and sales people have the ability that will enable them to compete with the higher executives even after years of experience and training." The executives who left employ because of incompetence all fell within the lowest quarter of their groups.

That various positions nominally calling for the same duties are far from alike was demonstrated by Miner in a study on various types of salesmen. Table 3 shows the numbers in each group, their means, and the middle 50 per cent of the range. This demonstrates the necessity of carefully analyzing the work to be done.

Alderton studied the relation between intelligence and rank status of girls working in department stores. There was correspondence both in class of position held and in wage scale for groups classed

TABLE 3. INTELLIGENCE SCORES OF SALESMEN

Type of Work	Number	Average	Range
1. Low grade; make change on one-priced article	52	51	36-70
2. Wholesale order takers.	73	89	59-121
3. Insurance salesmen.	326	112	82-138
4. Selling technical article requiring training.	66	139	124-155

in terms of I.Q. from 80 to 113. Practically all the lower intelligence scores were made by those earning but twelve dollars a week, while no one with an I.Q. over 110 received this minimum salary. The proportion of those earning this minimum steadily decreased as one went up the intelligence scale.

The report on Army Alpha gives an example from a clerical occupation.

One hundred and six employees of the Civil Service Commission, who had been selected with unusual care and retained for several months and in many cases for several years, were given group-examination Alpha. Since unsatisfactory employees would not have been retained, it is to be presumed that the group is a competent group. The civil service ratings, assigned in percentages on the basis of examination at the time of entry into the civil-service, range from 70 to 94. The median Alpha score for this group is 150, with extremes of 199 and 70. For the entire group the correlation of Alpha score with civil-service rating is $+0.48$. For a group of 73 who are classified as clerks, the correlation is $+0.53$.

A number of other cases in which ability and intelligence are highly correlated are reported by Kornhauser. Table 4 shows a good example of agreement, the correlation being $+0.82$. Similar ratings of women office workers in another company produced a correlation of $+0.76$, which for all practical purposes is of the same predictive and diagnostic value.¹

Junior accountants and bookkeepers achieved success roughly proportional to their intelligence scores. Scudder administered Terman Group tests to disabled veterans undertaking training in

¹ For interpretation of various correlation coefficients, the reader is referred to the discussion of correlation on page 234.

TABLE 4. COMPARISON OF MENTAL ALERTNESS SCORES OF WOMEN OFFICE WORKERS IN DEPARTMENT M, COMPANY B, WITH RATINGS OF THEIR ABILITY BY SUPERVISORS

Employee	Test Score	Rank by Test	Ranking in Ability by Supervisors
A	49.0	1	1
B	48.0	2	6
C	45.0	3	3
D	44.5	4	4
E	42.5	5	5
F	40.0	6	2
G	38.5	7	7
H	38.5	7	8
I	36.5	9	11
J	32.5	10	14
K	32.0	11	13
L	30.0	12	9
M	28.0	13	12
N	24.0	14	10

these vocations. It had been previously thought that 125 would constitute a desirable critical score, as that was about the college minimum. Since many scored under that figure, cases lower down were studied for possibilities. The averages of successful and unsuccessful candidates were as follows:

Group	Number	Average
Whole group.....	264	129
Successful.....	170	142
Discontinued.....	94	112

Of those who had been promoted or were being considered for promotion, practically all had scores over 125. Wages showed similar differences. It is interesting to note that analysis of those who succeeded in spite of low scores on the test disclosed all to have high arithmetic scores. In this way the presence of a special ability compensated in this specialized task for lack of higher general development.

Stenographers holding positions of more than a purely routine

nature should be able to exercise judgment and take on some responsibility, and for finding people of this type, a general ability test was devised by Shellow. The test was of the usual nature, except that the actual items chosen were such as are met with in the performance of duties, such as filling in missing words, paragraphing, spelling, grammar, and analogies. For validation, three groups of stenographers of responsible, average, and routine positions were tested. Their efficiency ratings took into consideration not only their actual performance, but also the type of work done and problems handled; so general value to the firm was the real criterion. The intelligence results correlated $+.48$ with this criterion. The intelligence and trade tests correlated with each other only $+.12$, which is desirable from a technical point of view, since separate abilities are being measured.

Nurses in training will have slightly better success if they have higher intelligence scores, a study by Young shows. The high school senior girls who signify a desire to become nurses average at the 45th percentile, while those in active training fall at the 58th percentile, suggesting some selection at the outset. Rating records for ten nurses from each of the high, medium, and low groups on the intelligence tests were compared. The high group was generally higher in these efficiency ratings, and a fact which stood out especially was that they had fewer weak points. Those higher in the test did better in both the theoretical and the practical work met with in training, although the superiority was more marked on the theoretical side. These nurses averaged seven percentile points higher than a group of teachers in training.

In a study by Mosher on normal school students, intelligence appears somewhat less determinative of success. Correlation with practice teaching marks was only $+.11$, but a mark on a subject like this might easily indicate effort and carefulness more than strict ability. A comprehensive test of knowledge of materials to be taught in elementary subjects correlated $+.53$ with intelligence. It was also shown that 63 per cent of the failures occurred below the median score, and that 42 per cent fell within the lowest quartile of juniors.

(3) *Where Intelligence Does Not Predict Success.* In some cases intelligence and success do not seem to be at all correlated. These

instances do not overthrow the value of knowing intelligence, however, as sound reasons for the discrepancy appear in every case.

Bingham and Davis report a correlation which is practically zero between business success and intelligence. Tests were given to a group of 102 business men of various ages at a conference. About two-thirds of the group furnished a sort of business autobiography which permitted a rating of degree of success. Two of the three lowest on the test were presidents of their concerns. What is probably the chief reason for this lack of correlation is that such a narrow *range* of mental abilities was tested that a few points' difference could be more than made up by compensating personality traits. The investigators comment that *all* scores were well above the average of the general population. No one could succeed as a business executive without a fairly high minimum. Another possible reason might be that many of the men in higher positions were older men, and test scores tend to decrease somewhat with age.

In some cases the nature of the occupation itself may permit success through factors other than mental alertness. Thurstone found very startling results in a study of the Detroit Police Department. Actually the officers were of lower intelligence than the patrolmen.

Rank	Number	Score
Lieutenant.....	17	57.80
Sergeant.....	34	54.71
Patrolman.....	307	71.44

There is no doubt as to the accuracy of the results, as another investigation by Fernald and Sullivan disclosed the same general rank-orders. Stenographers, secretaries, and clerks scored higher than any of the regular force. Detective lieutenants and lieutenants did score higher than patrolmen, but again the sergeants were lower, averaging 88.7 in comparison with 95 for the patrolmen. It would appear that advancement in the police department comes from reasons other than alertness, perhaps willingness to follow routine, regularity, bravery, etc. The duties appear to be such that men of good intelligence find them uncongenial, as there is an inverse ratio between length of service and intelligence.

Efficiency ratings of laundry employees were compared with their intelligence scores, and practically no agreement appeared.

Those of higher scores were slightly better than the rest, but in the rest of the range there were no differences. This suggests a fact which appears in many lower-scale occupations. In mechanical and routine operations possession of a certain degree of intelligence will permit of success, but any beyond that figure is unessential. Pond found the same thing to be true with metal workers, even in types of work demanding some adaptability in handling different products. Intelligence made little difference in determining success.

Yoakum reports practically zero correlations between Alpha and both output and accuracy with graphotype operators. New tests were developed which measured more closely the types of ability needed to operate the machines, and the correlation now became $+0.55$. A similar test was devised for comptometer operators which enabled a selection of employees with 85 per cent accuracy; none who failed the test passed the course, and only a few who passed the test failed to succeed in the course. These probably failed because of lack of effort or other personality deficiencies. In shop work Bird and Pechstein found that some of inferior intelligence did better than those of higher general ability.

Since a number of studies have shown good agreement between intelligence and occupational success, and others show no relation at all, what are we to conclude? The answer is found by inspecting the types of occupations dealt with. It was seen that with a single exception the cases of disagreement arose in lower types of occupations which demand mechanical ability of a routine nature. For these types of activities a better prediction could be obtained if one were to test the specific skills involved in the operations demanded. Correlations with intelligence appear to increase with complexity of duties. The exception was in Bingham's study of business ability, but the narrow range tested accounted for failure in this case in a manner well known to those acquainted with the technicalities of correlation.

(4) *Intelligence Desirable for Entering Various Vocations.* How closely may we use intelligence scores in guiding an individual into his vocation? We have seen that scores for various occupations overlap greatly, which fact suggests an answer. We cannot pick out a single occupation and advise the individual to enter that. But we can place him within a certain group. A person with an I.Q. of

about 95 might do equally well as a carpenter, a telephone lineman, an automobile mechanic, or in any one of dozens of other vocations which demand the same general degree of ability. At the same time he has too much ability to be a common laborer, but not enough to become an accountant or a newspaper writer. A doctor might have been a lawyer or a minister, to illustrate from professional levels.

The median scores from Alpha may probably be taken as fair indicators of the intelligence necessary to enter the occupations classified there. We can be reasonably sure that intelligence scores of individuals who have remained in an occupation for a number of years are fairly close to the desirable figure for that vocation. The fact that wide variations exist means that some individuals are too high or too low to be in that particular group, not that it makes little difference what one's intelligence is. Our constructive program should be to eliminate both ends, instead of letting time and experience accomplish this—often painfully.

Before norms are established for any position, we should analyze its demands very carefully. The writer was told by a tester in a public-service company in one of our large cities that an I.Q. of about 85 was requisite to drive a city bus, although the mechanical operation of driving could be done by one of even less ability. But such an individual would be unable to remember the names of the streets at which he was to stop, and so would not render complete service. Yet this aspect does not appear at first thought to be an important function of the job. Another instance was seen in the figures quoted on salesmen of different types. This shows that cases cannot be lumped and norms given as to intelligence necessary to become a salesman. Norms must specify what type of salesman as well as the fact that the position demands selling. Figures on various aspects of painting and gardening will be given below.

Critical scores for six occupations have been established by the Scott Company and are reported by Kornhauser. Since this test is not converted into I.Q. points or mental ages, we are unable to interpret the data beyond comparing the occupations listed here. The critical score is a point below which chances of success are so slender that it is considered inadvisable to employ anyone having such a score. The reason women are below men in comparable

TABLE 5. MENTAL ALERTNESS TEST STANDARDS FOR VARIOUS OCCUPATIONAL GROUPS

Occupation (Men)	Number of Individuals	Average Score	Critical Score
Stenographers.....	26	59	40
Bookkeepers.....	25	50	35
Draftsmen.....	58	49	32
Clerks.....	245	47	33
Office Boys and Messengers..	135	33	15
(Women)			
Stenographers.....	70	45	33
Typists.....	55	44	30
Clerks.....	235	36	25

positions is that many men are willing to start low in the hope of promotion, while women take these places for temporary employment, or are satisfied to remain there.

Beckham presents data on the mental ages necessary to carry on a number of lower-grade manual-labor activities. A mental age of seven permits one to do rough painting, or simple shoe-repairing, or be a blacksmith's assistant (note the words rough, simple, and assistant), plow, and do simple carpentry. With an additional year of mentality, one can pitch and load hay, cut hair and shave, and paint outside and interior flat work. A nine-year mentality suffices to paint toys, but a ten-year status is necessary to paint signs, a more complex and particular task. General garden work, similarly, can be done with mental age of eight, but the more particular types demand two years' higher development, and to be a greenhouse attendant or to take care of a lawn one must be at the eleven- or twelve-year level.

Another study of vocational possibilities of persons with less than average intelligence has been contributed by Burr. Girls from 6.8 to 10.8 mental age have been taught to run electric-power sewing-machines, although they required a period of training longer than ordinary. That what appear to be slight differences in type of work can make considerable difference in intellectual demands is seen by the fact that hand sewing on garments may be done by girls of ten-year mentality, while the next grade of work, sewing on labels,

demands more speed and only those of twelve-year mentality survive.

Several other critical scores have been presented in the two preceding sections, and need not be repeated here.

TABLE 6. ADVISED LIST OF I.Q.'S FOR VARIOUS OCCUPATIONS

Group	I.Q.
A. Teacher, engineer, lawyer, journalist, clergyman, accountant	126
B. Physician, novelist, grade teacher, banker, chemist	122
C. Draftsman, secretary, dentist, minor executive	116
D. Stenographer, bookkeeper, nurse, clerk, gym or music teacher	110
E. Musician, photographer, electrician, druggist	103
F. Policemen, tool-maker, plumber, dressmaker, machinist, vaudeville actor	95
G. Carpenter, farmer, hair-dresser	90
H. Sailor, structural-steel worker	84

Suggestions as to appropriate I.Q. levels for undertaking work of various types has been given by Feingold for purposes of aiding in vocational guidance in high schools. While not all vocations are listed, one may locate others by their general class. In terms of other norms the I.Q.'s appear rather "optimistic"; each class seems a few points too high. But the relative classification is accurate enough.

VII. INTELLIGENCE AND TURNOVER

Each occupation has its own intelligence demands, and those in it will sooner or later hit a fair norm of agreement. At the lower end, elimination occurs automatically; the worker is so unfit that he cannot keep pace. At the upper end of the scale, a man will be neither interested nor stimulated by the work. A study of turnover among factory employees engaged in five different levels of work was made by Bills. He obtained the intelligence scores of the workers when they were first employed, and compared these averages with those of the original groups who were still employed thirty months later. He found that elimination had occurred at both ends of the scale, in a manner like that just sketched. The correspondence

TABLE 7. INTELLIGENCE AVERAGES AT TIMES OF EMPLOYMENT AND AFTER THIRTY MONTHS

Grade of Work	Original Score	Later Score
A (low)	85	68
B	78	80
C	105	95
D	104	111
E (high)	119	123

between intelligence and grade of work increased, and the groups became much more clearly differentiated than at first. It will be noticed that the averages for the lower types of task decreased, indicating that those of higher intelligence were dropping out, while in the more complex tasks the scores increased, showing that lower mentalities were inadequate for the demands. This same tendency has been observed by others.

Since one of the most important functions of the personnel department is to select new employees in such a way that they have a high probability of remaining on the job as long as possible, it should eliminate at the beginning those cases which are very likely to drop out early. One cannot escape turnover among individuals who are not correctly placed in positions appropriate for their abilities, so it is better to take care of it by scientific means and save both industry and the individual, rather than letting it take care of itself.

VIII. PSEUDO-SCIENTIFIC MEANS OF ESTIMATING INTELLIGENCE

(1) *Intelligence from Photographs.* Frequently surmises are made as to a person's probable intelligence from looking at his face or from inspecting a photograph submitted along with an application for a position. Are such estimates reliable? Can tests be dispensed with by a man who is experienced in sizing up others?

A picture often fails to do a person justice because he has to pose and may feel rather stiff and awkward, with the result that the camera records a grimace, an unnatural expression, or a transition between two expressions.

Several studies have been made on the reliability of estimating

intelligence from photographs. A number of pictures of people are given to various raters who are asked to arrange them in what they think is the order of intelligence, from high to low. Pintner once conducted a careful study of this problem. The results were absolutely worthless, as far as predictive ability is concerned. Experts on intelligence testing and graduate students in psychology were no better able to judge than were several stenographers who had had no training at all in this field. Bright children were just as likely as not to be rated dull, because they happened to have a serious, gloomy, or frowning expression; while a moron with a cheerful smile might be given a high rating. The averages of the correlations between actual and estimated scores were practically zero. This means that one might as well shuffle the cards at random, and hand the pack back to the examiner as representing his judgment.

(2) *Photographs and Applications.* Intelligence cannot be estimated from photographs, but the picture may have some slight value in detecting traits which might be undesirable for a position, such as race or color; premature baldness when youth is desirable, say in a sporting-goods salesman; facial disfigurement which might antagonize people in a position which has certain social demands; and similar characteristics which are entirely apart from ability.

(3) *Intelligence from Interview.* Are we any better off if we avoid the faults of a still photograph and judge a person while talking with him, observing his facial expressions and adaptability during the course of the conversation? This means of formulating judgment is probably better than from a picture; still, it is highly uncertain. An experienced psychologist, who may have given thousands of tests, would not venture to rate a person without a lengthy close acquaintance, and even then he would make many mistakes. The writer is frequently surprised at scores made by some individuals on tests, even after a year's contact in the laboratory, which should furnish ample evidence of their behavior and potentialities.

Snedden succeeded in building up an interview technique of estimating intelligence, which gave him a correlation of $+0.82$ with the scores made on an actual test. The test was carefully disguised to appear to be nothing more than the usual interview in which the individual expects to tell about his past experience, his qualifications, and special abilities. In spite of this remarkable accuracy, Snedden

was not especially enthusiastic about its possibilities for general use. It requires a very expert interviewer to apply the test successfully, and it would require a number of thoroughly standardized interviews to test adequately the whole range of intelligence. In addition, valuable time is consumed; a routine clerk can administer a mental test, and a high-class interviewer should be left free to study other features which cannot be discovered from tests.

IX. LIMITATIONS OF INTELLIGENCE TESTS

So far we have discussed chiefly the favorable aspects of intelligence in respect to vocational choice. But intelligence is not all-sufficient. Let us therefore look over a few points which it does not cover.

(1) *A Critical Score* must be established before test results can be used practically. Time alone will enable one to settle the exact score desirable. Employees are tested after they are accepted and permanent records are kept. After a few months, or a year or two, these records are reinspected in terms of the subsequent histories of the individuals concerned. One may find, for example, that all persons who scored below 85 proved to be unsatisfactory, that those above that score were successful, and that those over 100 had earned promotion. Therefore, in the future anyone with a score below 85 would not be accepted, while one scoring over 100 would be eagerly received, and considered for promotion as soon as possible. Actually, one's procedure in establishing a critical score will not start quite so far in the dark as might be gathered from these remarks. Available results furnish one with a close index of the intelligence demanded for success in any vocation, and standardization of a new test, if one does not find some test already available suitable for his purposes, on a wide sampling of individuals should enable one to put it in force almost immediately. Scores will, of course, be subject to later check-up and revision if found not entirely accurate.

(2) *Demands Other than Intelligence.* Many of the duties of a position may require traits other than intelligence. Otis reports that an intelligence test worked very effectively in selecting clerks for an office force, but failed utterly when used in the process of

employing mill workers, many of whom were foreign or illiterate. With a certain minimum intelligence, speed and reliability were probably greater assets than ability itself. The studies of police forces showed instances of intelligence actually working against advancement.

(3) *Personality* is a large item in success, and is practically unrelated to intelligence. Both are necessary in most positions, and a person slightly lower in intellectual qualities, but possessed of a distinctly pleasing personality, may progress satisfactorily. Likes and dislikes contribute as well as the more social aspects of personality. These two phases of an individual's equipment will be discussed more at length in the next two chapters, so are only briefly mentioned here for the sake of completeness of perspective.

(4) *Individual Discrepancies* will in rare instances occur, failing to correspond to predicted success or failure. If we accept an I.Q. of 115 as the minimum for successfully completing medical school and discharging professional duties, we can be certain that a boy with an I.Q. of just 100 can never succeed. But we might be able to find a few practicing physicians with scores around 110. Suppose a boy with this latter score seemed seriously anxious to enter the medical profession, should he be discouraged? The matter may be considered in the light of probability, rather than of certainty one way or the other. With scores of 100 there would be practically no chance in a hundred of success, but with 110 we might say that he has ten chances in one hundred of being a successful practitioner, but certainly no chance of becoming eminent. The ultimate decision must be left to the individual and his family as to whether they will take such a long chance with the risk it involves. But the vocational counselor should do his best to discourage anyone who has a score below the accepted *minimum*, which itself is slightly below the *average* for a given vocation. In fact, anyone entering a vocation with an intelligence below the average of that vocation is setting himself the task of competing with persons beyond his ability. However, occasionally such a case does "get through." The mental test is then subjected to ridicule as being faulty, and the fact that it predicted correctly in a dozen instances is ignored in the face of a single negative instance.

(5) *Possession of Special Ability*. Another failure of intelligence

tests is in the case of a man who achieves success somewhat beyond the expectation based upon his intelligence status, because of the possession of some exceptional ability not dependent on intelligence, such as musical or artistic genius, or an extreme degree of manual dexterity.

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help in the complete performance of functions of a hangman, a bill collector, or an auctioneer.

Therefore personality traits may be rated as good or bad merely in relation to the situation in which the individual places himself. If two men of equal ability are employed in a department store, and one becomes a buyer, while the interests and personality traits of the other lead him to advancement along management lines, can we say that one is better than another? Is one man better because he wishes to become a carpenter while a second prefers to be a butcher? There are many cases of maladjustment; many individuals become discouraged; and many fail to be interested in the work they are doing, even though they have the requisite ability. A shy, quiet, bashful man would not be very likely to do well at selling aluminum ware or books on hygiene of doubtful authenticity at farmhouse doors. Nor would a quick-tempered, nervous individual succeed at a task requiring great care, patience, and precision, such as watch-repairing or wood-carving.

We do not wish to imply that there is no such thing as a trait which is desirable in itself. Many traits are valuable in success in all occupations: reliability, honesty, persistence, foresight, tact, etc. But they are not equally valuable in all cases. In some vocations one or another of these may be especially important, while in others a trait not mentioned, such as originality or precision, may be paramount to success.

II. DEFINITION OF PERSONALITY

A generally accepted definition of personality is "characteristic modes of behavior." Thus when we say a man is honest, we mean that when he is placed in a situation in which there is a choice between two modes of conduct, he usually, or characteristically, elects to follow that which is approved by society. A man is reliable if he makes a practice of being on time, doing his business with dispatch, and being a person on whom one may count. A man is patient if he accepts slowness or inaccuracies on the part of others without becoming provoked.

Mark May points out very astutely that there are two aspects to personality, that of response or behavior, and that of stimulus, the

effect one has on others. Ordinarily, he says, we define personality in terms of a man's actions, as suggested in our last paragraph. But he insists that the more accurate description should be in terms of his stimulus value. For example, nearly all the questions on a recommendation blank for some one who is applying for a position ask for the impression the applicant makes on others. Although it was emphasized above that personality could not be estimated on a single linear dimension like intelligence, it is in terms of the stimulus value that terms such as "strong," "magnetic," "antagonistic," "trustworthy," or "leadership" may be applied. A weak personality would be one which makes no impression. If a man could enter a room, take a seat, and remain, all without making the slightest difference to the conversation or attitudes of the group, we should say that he had little stimulus value.

The two spheres of personality, as stimulus and as response, may differ. Some people are said to be snobbish because that is the way they affect others, but actually they may be rather shy and hate to start a conversation, and so appear to be deliberately avoiding contact with all but a few close friends.

Just as it was necessary to understand how widespread or generalized the trait of intelligence is (cf. page 23), so we find it of the utmost importance to ask the same question about personality. If a man is possessed of a certain trait, will he exhibit it in all situations where it may be demonstrated in one form or another, or is it highly specific? Intelligence was found to be largely a general trait, but, unfortunately, personality behavior appears to be highly specific. Research has shown to be false the old ecclesiastical argument that the boy who steals cookies will grow up to be an embezzler or a murderer, dishonesty having been found not to extend widely beyond individual situations. A man who may be scrupulously honest in his business dealings may take advantage of his opponent's looking the other way to improve his golf lie.

Practically, this means that a person cannot be evaluated once and for all on a personality level as he can in respect to his intelligence. The same individual can be very highly recommended for one position, but would be given lukewarm credentials for a second of no higher level, because different characteristics are called for.

III. FACTORS UNDERLYING PERSONALITY

Another definition of personality has been given by Watson, as "the end product of our habit systems." In other words, personality is the sum of our habits, and one person differs from another because he has different habits or because those which are held in common exist with different degrees of strength. The man who is honest has integrated within himself a powerful system which forces him to follow certain lines of behavior when certain situations arise. A trait is strong in proportion to its resistance to change.

(1) *Physique*. While personality is a functional matter, a behavior characteristic, some of its roots lie in the physical structure and physical condition of the individual. Size alone may exert an influence. The large man is easy-going and often tends to accept leadership because others defer to him. Jim Corbett, former heavyweight boxing champion, is said to have observed to a friend who expressed surprise when he apologized for bumping into a smaller man by accident, "You can afford to be courteous when you have a punch to back it up." The smaller man must zealously guard every bit of authority he can muster up. A fat man may really be jolly for a good reason; his digestion may be working so well as to allow him not only to maintain but to gain weight.

Health can make vast temporary or even permanent differences in one's personality. In portraits the Puritan fathers, famous for their blue laws, look dyspeptic. We all know how hard it is to be cheerful when our systems are not functioning perfectly. The chronic invalid who said, "I wish that damned bird would quit chirping so cheerfully," illustrated this perfectly.

Beauty, or lack of it, in a girl will often have a pronounced effect on her personality, for several reasons. To begin with, she may acquire a feeling of superiority, or at least confidence. Next, she will probably get more social experience, since she receives more invitations, and hence will develop more than one who has less broad experience. On the other hand, girls who are not so attractive may develop a rather sour attitude toward life, or they may take pains to make themselves attractive along personality or intellectual lines.

Under- and over-secretion of various glands, particularly the thyroid, exerts influences both on physical structure and on personality.

(2) *Inferiority Complex* is a term which has been frequently heard, and admittedly has been overused. But such a complex nevertheless exists. One or two points mentioned in the previous section suggest this mechanism. Physical disfiguration may bring it about. A girl who had the misfortune to burn her hands severely while a baby, leaving visible scars, admitted that this fact had colored her whole life. A boy who lost one arm became very despondent because he felt handicapped in society, particularly with girls. He may have been somewhat handicapped, but one would judge, from reading the boys' own statement, that he had taken the attitude of being about to be rebuffed, regardless of whether it might occur or not.

A very interesting case of inferiority complex has been known to the writer. A man feels himself inferior because his father and older brother are both brilliant scholars and superior athletes. Although he himself is better than average in both lines, he feels this direct comparison very keenly. It is said that there is no inferiority complex worse than that of the poorer of a pair of twins.

(3) *Environmental Influences*. The cotton farmer in the South has interests, outlooks, and manners of thought differing vastly from those of the broker or large-scale manufacturer in a Northern city, because of his work, his associates, and his surroundings. Prior to this come the influences molding the child in his early years. The type of home in which one is brought up exerts a tremendous amount of influence. The child brought up in a poor neighborhood, with criminal associates or parents, has far greater chance of becoming delinquent himself than if he had been raised in favorable surroundings.

Family acts as a determiner of outlook. The only child receives more advantages than one of several. He is forced to play alone, so may develop greater independence. But on the other hand he may become selfish. Being brought up by mother and maiden aunt has been known to cause effeminacy and other non-normal forms of development. There is greater likelihood of problem cases and

juvenile delinquency arising from homes in which the parents are not living together.

(4) *Intelligence* is not strictly a factor in personality, but may contribute indirectly. Leaders tend to be persons of more than average intelligence, although not universally so. A feeling of superiority can arise if one finds himself able to do tasks in a fraction of the time his competitors require. Success and failure may depend on intelligence, and to that extent personality may depend on one's native ability.

(5) *Outlook on Life*. This is perhaps as much a result as a cause of personality, but is valuable for description and interpretation. For many positions it is valuable to know whether the applicant is conceited, selfish, cynical, cheerful, generous, coöperative, erratic, socially inclined, moody, or the opposite of any or several of these.

(6) *Social Grace*, or adaptability, is a function largely apart from abstract intelligence, but is an important side of the individual. Ability to get along with others is dependent on several personality traits, as shown to co-workers, superior officers, subordinates, and persons with whom one is not working. Appearance is not exactly a personality trait, but may be an index of one's habits along other lines, and others tend to judge one by his appearance, particularly on first impression.

(7) *Interests* constitute another important aspect of personality, and can determine whether a person is likely to do more than his mere duties would demand. Is he likely to learn more than the details of his position necessitate? Has he many or few interests? How narrow or how wide a range do they cover? If scattered over a wide range, does this prevent his being good at any single thing—a sort of "jack-of-all trades and master of none"?

Hobbies often constitute an excellent index to the breadth of an individual. We ask whether these interests are reasonably intellectual and of an improving nature, or merely crude escapes, such as bridge, movies, golf, or dancing. We do not wish to discourage these pursuits, but certainly a few nights a week spent in self-improvement would not cause one to get out of touch with society.

(8) *Drive* is fairly closely allied to interests, but applies especially to the vigor with which one goes about whatever he undertakes. A person may be rated as energetic or apathetic; he may be very

persistent or he may start out with a burst of enthusiasm, but soon become bored. He may tend to drift into another job, superficially better, and become a drifter, or he may work hard until promoted or until a genuinely good opportunity elsewhere is offered him.

(9) *Individuality* exists in spite of many common influences. Just where this originates is uncertain. May suggests that the great emphasis given environmental influences is at times overdone, since the minutest details are often given credit for bringing about wide personality differences. Whether one is the older or younger of two brothers cannot be responsible for the vast differences all of us could describe between such persons in our acquaintance. This is especially true when we consider all the similarities usually existing in the situation: same parents, same home, same relatives, largely the same circle of friends, and usually the same educational opportunities. As to explanation, we can only suggest some of the biochemical theories, and hope that more exact procedures will solve the problem in the future. At present we must remain content with the negative fact that all individuals are different in some respects at least.

The term individuality has definite significance when used to describe both the stimulus and the response phases of personality. The person who is said to have a lot of individuality, or color, is the one who does things in a way different from others. Cleopatra, the Borgias, Robespierre, and Mussolini are familiar examples.

IV. A CLASSIFICATION OF PERSONALITY TRAITS

Rating blanks and questionnaires on personality request judgments on many personality traits, of which the following list represents many. Presentation is in alphabetical form, in order not to give precedence to any particular trait or group of traits. It has been compiled from a number of rating blanks and from writings on various phases of personality. There may be some overlapping, but an effort was made to introduce each concept only once.

It will be noticed that most of these are desirable traits, only a few, such as prejudices and deception, indicating undesirable qualities. So in rating one judges the degree of presence or absence of

TABLE 8. ALPHABETICAL LIST OF PERSONALITY TRAITS

Accuracy	Enthusiasm	Poise
Adaptability	Executive Ability	Prejudices
Affability	Expansion	Promptness
Aggressiveness	Force of Character	Refinement
Ascendancy	Honesty	Reliability
Carefulness	Humor	Resourcefulness
Caution	Independence	Self-assertion
Common Sense	Industry	Self-assurance
Complacency	Inhibition	Self-control
Confidence	Initiative	Social Adaptability
Conformity	Introversion	Stimulation of Others
Conscientiousness	Judgment	Submission
Coöperation	Leadership	Suggestibility
Deception	Motivation	Sympathy
Decision, speed of	Neatness	System
Decisiveness	Open-mindedness	Tact
Discretion	Originality	Tolerance
Emotional Control	Patience	Trustworthiness
Energy	Persistence	Vivacity

these traits. For example, is the person in question highly accurate, moderately so, average, rather poor, or slovenly?

It would not be necessary to rate an individual on all these traits for any single purpose. Suppose recommendation for college entrance were desired. In a student intelligence, persistence, promptness, reliability, and originality will cover very adequately the major requirements.

V. PROBLEMS AND METHODS IN THE MEASUREMENT OF PERSONALITY

So far our discussion has centered around personality from a descriptive standpoint. We have described an individual as honest, reliable, neat, and coöperative, and in some cases have subdivided these according to descriptive levels, such as superior, average, inferior. But so far complete knowledge of personality has progressed only as far as the terminology of intelligence had progressed when the terms dull, average and bright were generally used. We desire, however, to place personality measurement on as accurate a basis as is the Intelligence Quotient.

Scientific measurement has two main stages. First, one observes a large number of cases and collects data. Then the data are inspected for evidences of generality, from which tentative conclusions may be formed. Under very favorable conditions these conclusions may be expressed in terms of mathematical formulæ.

Let us return a moment to our definition of personality—characteristic modes of behavior. To define these with the utmost accuracy it would presuppose that behavior over quite a period of time be catalogued. But this is exceptionally difficult, in fact, impossible, as numerous individuals who have attempted it on adults or infants can testify. Therefore the investigator usually resorts to the questionnaire method, having a rater or the individual himself answer questions about his general behavior. Such questions as these may be asked: Do you make new friends easily? Do you keep in the background at social affairs? Are you easily moved to tears? Do you like to listen to classical music?

There are several sources of unreliability in measurements of personality derived from data obtained in this way. (1) Experts are far from agreeing on exactly what certain personality traits are. Tests of introversion or of neurotic tendencies devised by different men will contain different items and have unsatisfactory inter-correlations. In contrast to this all our good tests of intelligence correlate very highly with one another. Consequently, interpretation will suffer if an individual is classed as highly introverted by one test and as about average by a second.

(2) The question may be of such a nature that generalization is not possible. "Do you enjoy art?" would be very difficult for many people to answer. One may enjoy symphony music greatly, but be bored with sculpture or poetry. Or he may be very fond of the architecture of one century, and dislike very much that of another.

(3) Incomplete knowledge will lower the validity of the rating by an outside person. No one is familiar with all aspects of an individual. One is his superior at work, a second a co-worker, a third belongs to the same lodge, a fourth person lives in the same rooming-house, and another plays golf with him on Sundays, and each knows him only in certain surroundings and sees him only a small fraction of the time.

(4) The "halo" tendency in rating is well known. Everyone has

his strong and weak points, but a rater tends to confine his judgments within a narrow range on either side of what is perhaps his opinion of the general merit of the individual.

(5) Finally, ratings may not be entirely honest. The question, "Do athletics interest you more than intellectual affairs?" might be answered in the negative, since a person might think that admitting frankly that they did interest him more would stamp him as a low-brow. One who is writing a letter of recommendation for a friend is naturally interested in his getting the position, so will minimize weaknesses. The extent of inaccuracy cannot be readily checked up, as could an estimate of weight or intelligence.

A closer approximation to objectivity was achieved in the army, where officers were ranked in relation to one another. Captain Smith is more reliable than Captain Jones, but less so than Captain Robinson. This procedure has limited applicability, however, and would be suited only to a situation where all candidates were equally well known and had been observed under largely comparable conditions. It would be useful for promotion, but not for initial employment.

Now we shall examine some of the tests of personality, together with their application to vocational guidance.

VI. INTROVERSION—EXTROVERSION

The introvert-extrovert division is probably the best known of all personality descriptions, and is the most useful to us for vocational guidance. Literally these terms mean that one's thoughts are turned inward and outward, respectively. In broad terms the introvert is the scholarly type of person who is interested more in thoughts and concepts than in persons. The extrovert is the social mixer, the person who prefers to be in a crowd. The usual examples to differentiate between these two types are Woodrow Wilson as the introvert and Theodore Roosevelt as the extrovert example.

Some of the outstanding characteristics of the two types are presented for ready comparison in Table 9. If one understands these and has a clear concept of what each type is like, he will be better able to follow later discussion of applications of these to vocations.

Donald A. Laird has issued what is perhaps the most widely used

TABLE 9. SOME INTROVERT AND EXTROVERT CHARACTERISTICS

Introvert	Extrovert
Interested in ideas	Prefers working with others
Solves own problems, even if troublesome	Seeks advice
More likely to hurt others' feelings	More careful in this
Shy and ill at ease with strangers	Makes friends easily
Talks little about self	May be boastful
Worries more; moody	Comparatively care-free
Blush easily; self-conscious	Less self-conscious
Suspicious	Trusts readily
Radical	Conservative
Careful and conscientious; persistent	Gives up more easily
Detailed	Less careful
Meticulous	Less attention to personal appearance

test of Introversion and Extroversion, in his C-2 and C-3 scales. The former is scored by the individual, who rates his own habits, and the latter is worded in the third person and checked by an outside rater. The test is given the neutral title, "Personality Inventory," so that one may be less likely to answer as he thinks he should rather

TABLE 10. SAMPLE QUESTIONS FROM LAIRD'S INTROVERSION TEST

7. In social conversation how have you been?			✓		
	talkative	an easy talker	talked when necessary	preferred listening	refrained from talking
11. What about a diary?					✓
	fairly complete record kept	occasionally recorded events		desired to keep one but did not	do not keep any
33. What kind of work have you liked best?					
	coarse, rough work	rather liked manual labor	not particular	liked exact, delicate	preferred very painstaking

than as he genuinely feels. Three of the questions asked are reproduced below to illustrate different types of behavior sought. It is

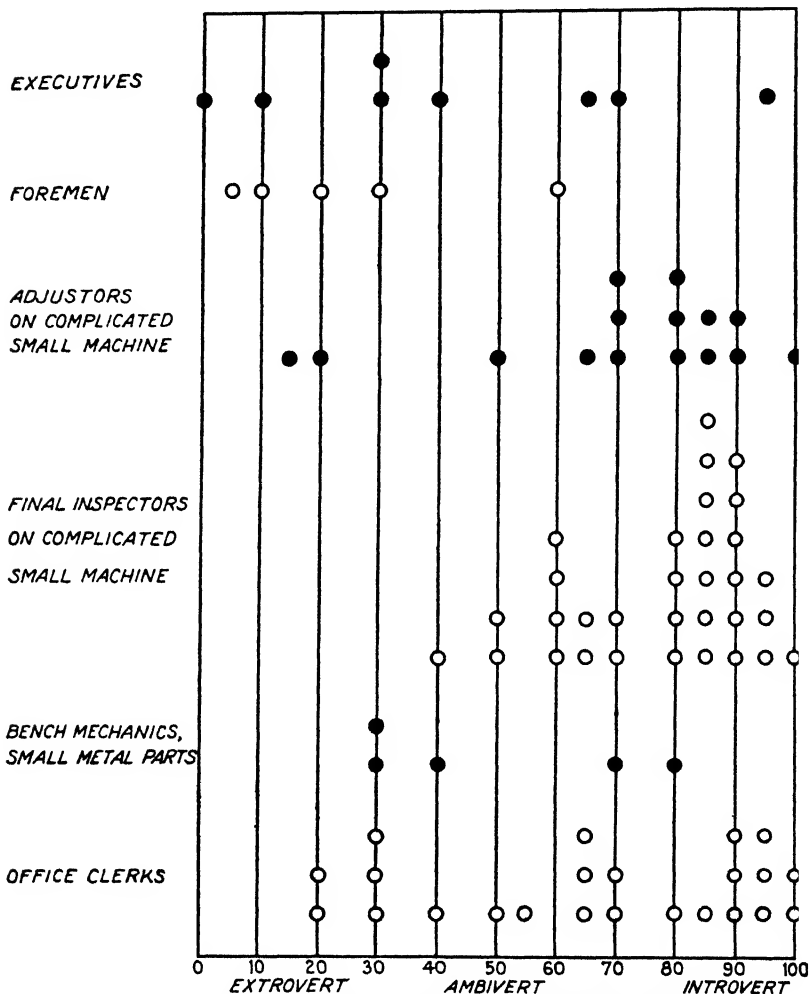


FIGURE 3. DISTRIBUTION OF INTROVERSION BY OCCUPATIONS.

fairly easy to judge from these questions which answers will indicate which type of personality.

No person is at the extreme end of the scale on all characteristics.

One who is well toward the introvert end of the scale may be fond of athletics, and a fairly pronounced extrovert may thoroughly enjoy reading. Nor do more than a very few occupations demand extreme introversion or extreme extroversion. An introvert might not make a successful auctioneer, and a back-slapping extrovert would probably be too impatient to be a successful research man in physics or astronomy. The point to consider is how far the individual is toward one end of the scale or the other, or whether he is about midway, and so classifiable as an ambivert.

Results from testing a number of individuals in several vocations are given by Laird, and are presented here in Figure 3. Executives and foremen are seen to tend well toward the extrovert end of the scale, since their work demands handling people. The foreman who stands 60 per cent toward the introvert end, only slightly beyond the median at that, is rated as "not so hot." On the other hand, persons whose duties demand scrupulous attention to details, such as "adjusters on complicated small machines," and "final inspectors on complicated small machines" nearly all stand far toward the introvert end. Office clerks are fairly well scattered over the entire range except for the extreme extrovert end, and about two-thirds of the group is in the upper end of the scale toward introversion. The small sampling of bench mechanics has a median in the ambivert range, with no case near either extreme.

From comparison of these scores with the individual's success on his job, Laird suggested that inspectors, accountants, and research men, whose duties demand careful attention to objects, should be introverts; and that foremen or executives who handle people are better fitted to their tasks if extroverts.

A similar study was conducted by Davenport. Superintendents and inspectors were each rated for efficiency, and judged as to personality characteristics on the Laird C-3 test. The distributions of the two groups overlapped only slightly. Only one inspector was more extroverted than the median of foremen, and only five of the thirty foremen exceeded the median introversion score of inspectors. In point of efficiency the foremen ranked in general correspondence with their degree of extroversion.

Nurses have been compared with college girls in a study by Elwood. They have had the same previous general education, but

are making widely differing choices of careers. Both groups were tested on Laird's Introvert-Extrovert scale and on the Woodworth Neurotic Inventory. The nurses show far fewer unhealthy emotional outlets, as ascertained on both tests. Their median stood at the seventy-seventh percentile of the college group. In extroversion the nurses were particularly outstanding, their average coming up to the ninety-fourth percentile of college girls. It is rather interesting to note that those who intend to go into child-nursing are more introverted and more psychoneurotic than other nurses.

Promotion should depend on personality traits as well as on intelligence and quality of performance in the present position. Suppose a vacancy in a shop foreman's position occurs and the company wishes to promote from within the organization. Consultation of records we have quoted shows that bench mechanics tend to be ambiverts, that is near neither extreme. A foreman, by other figures, should be an extrovert, so promotion should come from among those individuals tending toward that end of the scale. Davenport says:

Every company is confronted at some time with the necessity of promoting employees to executive positions. Long, faithful service and marked proficiency are commonly rewarded this way, partly because the quality of workmanship is often thought to indicate fitness or unfitness for a position as foreman. Very often this is a false presumption.

The bench mechanic may feel far more at ease over his machine than among his fellow workmen, and much more satisfied without the responsibilities of a foreman resting upon his shoulders. The very characteristics which aided in gaining him a high rating as a bench mechanic make him dissatisfied and ineffective as a foreman.

Something beside technical knowledge of the work is essential for the foreman. Some of the qualities which are of evident value to a foreman are: The ability to make himself liked by the men under him; the power to keep the morale of the men on a good plane; the facility to sell the company's interests to the men as their own; and the resourcefulness to maintain production under varying conditions.

The general function of the foreman is to bring production in his department to its highest point of efficiency through

planning and coöperation with the workers. . . . The work done by the inspector of a complicated product, in contrast, demands more solitary activity, the handling of tools instead of men, and a critical attitude. These are personality traits of an introvert.

These differences between inspectors and foremen can be extended to similar situations. In a large store, for example, there are two chief lines of advancement possible. One may go up the merchandising line, or may progress in the executive end of the concern. The latter aspect would obviously call for extroverts, while an introvert would be suitable, in fact fairly desirable, in merchandising. Any contact with people would be in situations which might be classed as impersonal and intellectual: interviewing wholesale salesmen, ordering goods, giving information to and generally guiding sales clerks. The more direct end of regulating routine and handling disputes devolves on the executives from the section manager up through the general superintendent. The line of advancement of a sales clerk whose value warrants promotion would, therefore, depend on his personality.

Many vocations have duties which demand activities agreeable to both classes of personality, rather than exclusively to one or the other. A personnel manager, for example, has many duties involving handling people, and yet research work is an essential part in advancing efficient methods within the organization. A general physician has to be somewhat of a scholar, but will not be eminently successful unless he has qualities of sympathy, and ability to get along with people who are sick and in trouble. The minister would have to have the same qualifications. A specialist or surgeon could be farther toward the introvert end of the scale, since he meets people under more restricted conditions than the general practitioner.

Laird suggests that vocational guidance be conducted in terms or norms. One should stand within the middle 50 per cent of those who are successful and contented in the vocation he is considering entering. Unfortunately, scores have been obtained for only a few occupations, and even in these the number of cases is not sufficiently large to warrant more than tentative generalization at present.

VII. ASCENDANCE—SUBMISSION

When two people are together one usually takes the leading, or dominant, rôle. Such dominance, says G. W. Allport, is probably general, and not dependent on the specific situation. This assumption has the qualification of other factors being equal, such as neither person having particular advantages in knowledge or experience.

G. W. and F. H. Allport have devised a test in the effort to measure ascendancy and submission. Characteristic bits of behavior, such as those listed in Table 11, were used in making up the test.

TABLE II. SAMPLES OF ASCENDANT AND SUBMISSIVE TRAITS

Ascendant	Submissive
Tries to meet important people	Is timid about doing so
Acts in accordance with own desires	Yields to desires of others
Places self in position of advantage	Does not seek such position, if it would make him conspicuous
Resists even trivial violation of rights	Does not object, even if heresents it inwardly
Haggles over prices	Avoids disputes
Opposes others' ideas	Conciliates or suffers in silence

Samples of two items on the test are given below:

8. Some one tries to push ahead of you in line. You have been waiting for some time and can't wait much longer. Suppose the intruder is the same sex as yourself, do you usually remonstrate with the intruder.....
 "look daggers" at the intruder or make
 clearly audible comments to your neighbor.....
 decide not to wait, and go away.....
 do nothing.....
13. When you are served a tough steak, a piece of unripe melon, or any other inferior dish at a high-class restaurant, do you complain about it to the waiter?
 occasionally.....
 seldom.....
 never.....

There are separate forms for men and women, but there is no great difference between the two forms. Largely the same problems are presented, but in situations characteristically met by members of the sex for which it is designed. The scale has been partially validated by correlating the results with a seven-step scale by friends' estimates of the individual's tendency to take the leading rôle. The test has not as yet been standardized for vocational use, but G. W. Allport suggests a number of possible applications. A person who is rather submissive might not do well in certain occupations which demand public speaking, contact with many people, supervision, and executive ability. But such tendency would not materially handicap a woman for librarianship, nursing, secretarial or clerical work, editorial work, domestic science, dentistry, costume designing or millinery, pharmacy, teaching, statistics, research, and literary or artistic activities. Ascendant scores would equip one for salesmanship, social work, reportorial work, management of clubs, tearooms or stores, law, medicine, personnel, soliciting, executive and administrative work.

He recommends that men with rather submissive tendencies go into college teaching, architecture, art, farming, bookkeeping, banking, dentistry, editing, writing, music, secretaryship, mechanics, etc. Those with ascendant scores might enjoy an advantage in salesmanship, executive work, factory management, law, politics, organizing, and kindred occupations. Allport especially emphasizes selecting salesmen, foremen, and executives from ascendants. All these recommendations assume, of course, proper qualifications in other directions.

Leadership is partly found in this trait, but is also dependent on other qualities, such as intelligence, social traits, and special abilities. One may not be in a leadership position, but may exhibit dominance in many daily contacts.

Relations between ascendance-submission and certain other factors in personality were studied by Bender. He found no relationships between ascendance and physical structure, correlations being $-.03$ with height, and $+.09$ with weight. There is no relationship at all with intelligence, and only $+.06$ with grades, although he commented that some individuals who ranked very high in scholarship were rather submissive. Ascendance correlated $+.38$ with a

modified form of Heidbreder's extroversion test, which represents a good degree of agreement as relations among personality traits have run. This seems to us in general to be *one aspect* of extroversion.

Possible use of the Ascendance-Submission test for selection of executives was the purpose of an investigation by Beckman and Levine. A shortened form of the Laird Introversion-Extroversion test was also given. The groups used were twenty-nine executives in public offices and thirty-one water-meter readers, chosen as a control group because they were in a vocation far removed from executive lines. Previously rated efficiency estimates were used for purposes of comparison. The correlations between efficiency ratings and test scores were as follows: among executives, $+.41$ with A-S score and $-.01$ with introversion; with meter-readers $+.21$ with introversion and $-.07$ with A-S. These coefficients suggest tendencies for the better executives to be ascendant and the more efficient meter-readers to be somewhat introverted, but no relationship between degree of extroversion and executive quality or between meter work and submission. It is probable that the extroversion test was inadequate to detect the tendency which executives usually show.

Comparing means of the two groups we find a reliable difference in favor of the executives toward ascendancy, but only a very slightly greater tendency toward extroversion. The conclusion of this study is that ascendancy is a desirable trait to take into consideration in executive selection, but that this shortened form of Extroversion-Introversion test fails to contribute in selection. Undoubtedly, the full-length form would have had some value.

VIII. NEUROTIC TENDENCIES

There are a number of tests which attempt to measure neurotic tendencies, among which the Thurstone "Personality Schedule" is outstanding. It is composed largely of items selected from various existing tests of neurotic tendencies, introversion, and ascendancy-submission. A number of sample questions, each to be answered yes or no, are listed below. These have more diagnostic value for mental hygiene purposes than for vocational guidance or for em-

ployment of new workers. However, the maladjusted employee may cause disturbance in a department or may himself fail to do acceptable work for reasons other than his ability.

- As a child did you like to play alone?
- Do you usually control your temper?
- Do you get stage fright?
- Do you have difficulty in starting conversation with a stranger?
- Are you careful not to say things to hurt people's feelings?
- Are your feelings easily hurt?
- Do a great many things frighten you?
- Can you stand kidding?
- Have your friends ever turned against you?
- Are you bothered much by blushing?
- Do you day-dream frequently?
- Can you stand the sight of blood?
- Are you systematic in caring for your personal property?

Dixon, in an article entitled "What Makes a Good Cashier," points out, from a survey of girls in a large city department store, that cashiers have duties of a nature which is routine, yet rapid and responsible. Mistakes are costly, both in terms of money and in terms of service. He says:

Personality: Good attitude toward the work is essential. Cashiers suffering from serious mental conflicts or complexes are likely to make errors and be slow in handling their transactions, so do not hire the so-called "nervous types," those with maladjustments, wrong mental attitudes, or seriously faulty ways of meeting their problems. Avoid those who day-dream often, especially if their reveries are of a pessimistic nature.

Home conditions: Since day-dreaming leads to errors, do not hire the girl who has serious home problems. Financial difficulties may make her a better worker, but serious illness or domestic troubles will distract her.

Other work would come in the same general class. Where absolute concentration is necessary to insure speed and accuracy, one cannot have serious outside worries. Accountants, bank tellers, chauffeurs, street-car motormen, waiters, and machine operators would fall into this class.

Fortunately, the majority of these cases of nervousness, etc., are

temporary and may be cured, so the individuals suffering from most forms of maladjustment need not be permanently disqualified from obtaining positions of this nature, if they desire to enter these vocations. In other tasks minor disturbances would not in the least militate against success.

IX. SOCIAL INTELLIGENCE

Most occupations demand at least a certain amount of social contact, and a person should be able to associate with others gracefully and without creating offense or arousing antagonism, or he will not be much of a success regardless of his abstract ability. He must know how to deal with superiors and subordinates as well as with associates. Further, he must not only be able to take care of a situation when it arises, but should plan ahead to guide conversation and action into desired channels. Lack of social grace is what sometimes causes failure in life work of an individual who has had a remarkably brilliant intellectual career, or makes some executives very difficult to get along with and causes many resignations among employees.

F. A. Moss and his collaborators have devised a test of social intelligence, which includes six types of situations which are of value in dealing with other people. These are:

1. Remembering names and faces. Study of photographs with names underneath; after a lapse of time one associates the names with the proper faces from a large number of pictures.
2. Identifying emotions from facial expressions.
3. Identifying emotions from printed quotations; somewhat similar to interpretation from conversation.
4. Recognition and solution of a situation in which there is no absolutely correct form of conduct, but where one form of behavior makes one less conspicuous or unpleasant.
5. Knowledge and observation of human behavior, as to which tactics are best in dealing with people.
6. Breadth of knowledge, both social and general, on the basis that the more one knows the more of a social asset he will be.

This represents an interesting attempt to measure a capacity

which is of undoubted importance, but the practical value of the test at present is highly uncertain. The defect is probably more in the situations used than in the test itself. The ability to behave gracefully does not consist in stopping to consider possibilities, but in acting immediately and practically without thought, just as one places his hand in the correct position to catch a ball without going through elaborate calculations. This is confirmed in practical situations by the blunders made thoughtlessly by persons of the *nouveau riche* type who have tried to acquire social grace with the aid of a book of etiquette, a tailor, and a butler. Yet the same individual might be able to answer test questions correctly.

Social intelligence scores correlate rather highly with general intelligence, figures running around $+.40$ to $+.50$, which is as high as single tests, such as arithmetic or analogies, correlate with the total intelligence score. The writer has known individuals of high intelligence status who scored very high also on the social test, yet whose behavior was at times far from graceful or tactful. Table 12

TABLE 12. NORMS ON SOCIAL INTELLIGENCE TEST

Group	Median Score
Executives.....	117
College Graduates.....	113
Teachers.....	112
Upper-class College.....	111
High-grade Secretaries.....	111
Salesmen.....	107
Engineering Employees, Draftsmen, etc.	105
College Freshmen.....	101
Clerks and Stenographers.....	95
Lower-grade Office Workers	84
High School Students.....	81
Nurses.....	78
Policemen.....	74
Sales Clerks in Department Store.....	73
Lower-grade Industrial Workers.....	65

lists norms quoted by Moss for various groups. This order is seen to be in very close agreement with figures from Army Alpha and other tests, with a few exceptions. These could easily be explained on the basis of social information being only one part of general

ability, and the fact that maturity probably plays a greater part here than in measures of purely abstract ability. There would likely be as many shifts from the order of general intelligence if we were to test these same groups in respect to mathematical ability alone.

Moss comments that those college students who scored highest in the test were those who had engaged in many extra-curricular activities. This might indicate that their ability was somewhat more acquired than abstract intelligence; or it might be taken to show that those who possessed social aptitude tended to seek others' society.

At present social ability may have to be determined by interview or by recommendations from previous associates, but should be considered at any rate.

X. WHAT TRAITS ARE IMPORTANT FOR SUCCESS?

In our list of personality traits presented earlier in this chapter there was no attempt made to rank them in order of importance. Which ones are the most important for success in one's vocation? Are the same ones important for every vocation?

Brandenburg made a study of the comparative importance of personality, grades, and intelligence of engineering students in determining income five years after graduation. Income may not be a sure criterion of success, but is a reasonably good measure, and the best available.

Personality was measured by having members of several classes rate one another on twenty-nine traits, and also on total personality value. The three following tables show the results of various phases of this investigation. It is very interesting to note that personality seems to contribute much more toward success than intelligence.

Grades give a better prediction than intelligence, although not quite so good as personality. When the two groups were divided into thirds by personality and intelligence, the same trends appear. The progression toward lower incomes for those rated lower in personality is very regular, and the differences between groups is sizable. But with intelligence there are no trends evident, and the group differences are very small.

TABLE 13. CORRELATIONS BETWEEN INCOME AND TRAITS

Group	Personality	Intelligence	Grades
I	+ .72	+ .18	+ .32
II	+ .46	- .18	+ .19

TABLE 14. MEDIAN INCOMES, COMPARED WITH PERSONALITY AND INTELLIGENCE RATINGS

	Group I	Group II
1. Personality		
Top Third.....	\$3,000	\$3,000
Middle Third.....	2,316	2,700
Lower Third.....	2,076	2,040
2. Intelligence		
Top Third.....	2,400	2,856
Middle Third.....	2,580	2,640
Lower Third.....	2,100	2,856

Next the rating value of each personality trait was correlated with the individual's income. Many social qualities seem to stand toward the top of the list, and it is interesting to note that industry, reliability, and neatness, which are usually placed at some premium in selection, are toward the bottom.

TABLE 15. CORRELATIONS BETWEEN INCOME AND PERSONALITY TRAITS

Accuracy.....	.77	Popularity.....	.61	Self-reliance.....	.48
Originality.....	.75	Sympathy.....	.61	Coöperativeness.....	.47
Address.....	.72	General ability.....	.60	Speed in work.....	.47
Social and civic interest.....	.69	Reasoning.....	.56	Industry.....	.45
Memory.....	.69	Tact.....	.56	Reliability.....	.36
Enthusiasm.....	.68	Gen'l Information.....	.53	Neatness.....	.30
Motor ability.....	.65	Appreciation of hu- mor.....	.53	Sincerity.....	.29
Aggressiveness.....	.62			Moral habits.....	.23

For several reasons these results are not to be given too certain an estimate. To start with, the unreliability of rating of single personality traits is high. Probably rating of each trait took in much more territory than a strict definition would permit or such high correlations between income and unitary traits would not have appeared. It also seems unlikely that general ability estimated by

friends should correlate higher with success than an accurate measure of that ability.

Hoopingarner lists twelve traits as of the greatest general value in business success. These are:

- | | |
|-----------------------------|------------------------|
| 1. Personal impressiveness | 7. Decision |
| 2. Initiative | 8. Adaptability |
| 3. Thoroughness | 9. Leadership |
| 4. Observation | 10. Organizing ability |
| 5. Concentration | 11. Expression |
| 6. Constructive imagination | 12. Knowledge |

These traits are present in every individual to greater or less degree; they are valuable in various types of business contact, although in varying proportions; they are tangible enough to be measurable; and one may improve himself in any of them. Tests of a self-administrative nature are presented with which an individual may measure himself in all twelve capacities. The exact value of these tests is uncertain, since neither norms nor critical scores for various positions are given, although one may rate himself in terms of general averages. Nor does Hoopingarner say which traits are to be emphasized in selecting a man for any particular position, such as salesman, foreman, or executive.

Doubt has been expressed by Dashiell as to whether one could really separate the personality traits demanded by different vocations. He feels that it is a fallacy to consider one trait as desirable for law, but acting as a detriment to teaching success, for example. To test this hypothesis he selected fifty traits and had them rated by men in various professional schools with regard to value for success in that field. Certain traits were rated high for all occupations, and others were not considered as of particular importance for any. In very few instances was a trait rated high in one field and low in another. Dashiell further points out that it would be difficult to generalize personality demands for any occupation, since each has sub-groups. An engineer may be electrical, chemical, civil, or mechanical; a physician may be a general practitioner, a surgeon, or a specialist. However, the resemblances must be far greater than differences. There is undoubtedly much overlapping between occupations and particularly among requirements for different phases of the same general fields.

XI. PERSONALITY AND PHYSICAL STRUCTURE

Just how far may one go in reading personality characteristics from size, weight, facial appearance, hair, skin, eye color, or general build?

(1) *From Photographs.* We have seen that intelligence could not be predicted on this basis; may personality be estimated with any greater accuracy? Landis and Phelps conducted a study to see if choice of profession and possible success in it could be estimated. Men who had been in the professions of law, medicine, education, and engineering were rated for choice of vocation and degree of success, on the basis of photographs at the time of graduation and at the twenty-fifth reunion. The estimates were absolutely incorrect; neither prediction nor judgment of attainment of success was good. Some men were assigned as many as fifteen vocations. Methods of making judgment were largely through general impression or hunches; a few judged on the basis of friends who resembled the individual in question; and some judged by shape of nose, mouth, or other features.

The criticism may be advanced that the judges were college students, rather than men who have had experience in interviewing and selecting new employees. But even trained judges have no agreed objective basis upon which to work.

(2) *Blond and Brunette Traits.* Several systems of characterology have had as one of their fundamental premises the assumption that blonds and brunettes differ from each other in many traits. It has been declared that blonds are positive, dynamic, driving, aggressive, domineering, impatient, active, quick, hopeful, speculative, and variety-loving, while brunettes are negative, static, conservative, imitative, submissive, cautious, painstaking, patient, plodding, slow, deliberate, serious, thoughtful, and specializing.

Paterson and Ludgate attempted to check these hypotheses by having each of ninety-four individuals select two pronounced blonds and two pronounced brunettes from among his acquaintances and rate them in these characteristics. The averages turned out to be so close to one another that not a single difference is so high as 10 per cent, and the majority are within 1 or 2 per cent. Gentle-

men may prefer blondes, but it will have to be on æsthetic grounds rather than because of any personality differences.

(3) *Shape of Face.* Men with a high forehead (highbrows) are said to be intellectual. A receding chin is considered weak; the bulldog aspect makes for stubbornness. A thin nose is said to indicate artistic temperament, while the person with a thick or flat nose is bestial. We have not the space to devote to discussion of investigations testing these and similar assumptions; so suffice it to say that several careful studies have been made, and not the slightest shred of evidence was disclosed which might tend to verify any of them.

(4) *Weight and Height.* Several studies have been made on these factors, in connection with leadership, success in various occupations, aggressiveness, and other traits. The correlations have all been in the neighborhood of zero. However, averages have suggested some trends which are obscured in the correlations by the wide individual fluctuations. Executives, presidents of corporations, bishops, and men in similar directing positions have been found to be a few inches taller and a number of pounds heavier than their subordinates. However, there are numerous examples of men of slight physique in responsible positions. A large man may unconsciously inspire respect and may be advanced over another of equal ability but smaller build. This is the only reasonable explanation which may be offered.

(5) *Body Build.* A remarkable correspondence between physical build and type of abnormality has been reported by Kretschmer. In studies of the insane, he found that persons of the typical fat-man structure with large stomach and short neck tended to suffer from manic-depressive psychosis, which is thought by some to be an exaggerated form of extroversion. On the other hand, those of thin build, having long legs and arms, narrow chest, and slight muscular development, and also those of athletic build, with muscular limbs, well developed chest, and smaller waist, fell into the dementia præcox category, which form of abnormality can perhaps be called an extreme introversion. Some later studies have corroborated these results. However, they were derived from abnormal cases and there is no evidence as yet to show that one might make any predictions within a normal range where differences are smaller.

XII. PERSONALITY TYPES

Of very great importance in practical vocational guidance is the question as to whether there are distinct types of personality. Both scholarly and popular discussion has been full of divisions of humans into classes on various bases. Spranger has divided men's attitudes into six groups: theoretic, economic, æsthetic, social, political, and religious. Hoopingarner defines five types of business personality: mechanical, persuasive, analytical, conservative, and managerial. We have mentioned two chief divisions, the introvert-extrovert and the ascendant-submissive.

There are several objections against such analysis into types. (1) Types represent extremes, which occur only in the minority of cases. We might be able to name a friend who would fit into each of the above classes, but would have to search over several times that number before we discovered the proper ones. The rest would simply be unclassifiable. (2) Most people tend toward an average, just as we saw the majority of individuals to be ambiverts. (3) No person is entirely consistent. A person with marked extrovert tendencies may show one or two introvert characteristics. (4) Types tend to break down on careful analysis. The writer once knew two brothers who impressed him on first acquaintance as being very similar, but after a few months he was unable to see any resemblances at all. Individual differences are far greater than resemblances, but casual acquaintance had not disclosed the former as yet.

Practical use of some general differences may be used with profit. It is reasonably safe to assume that a boy who comes in for vocational advice, and who has delicate features and is extremely neat about his appearance, and seems to have certain of the characteristics of the artist, would not enjoy becoming a blacksmith or a stationary engineer. He would dislike the dirty work that goes with these vocations. Again we are only observing extremes, but such observation can serve as a starting-point.

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Can we not take a suggestion from the happiness derived by men in some of the occupations just mentioned, and try to bring about the same thing for ourselves and others? After all, the majority of hours in one's waking life is spent working, so one is far better off if he can enjoy what he is doing. Not every task has outstanding reward in personal or social recognition or glory, nor are all spectacular in nature. But self-satisfaction is at the bottom of interest in any activity, and there are persons in almost every occupation one might name who regard it as highly satisfactory and who take great pride in their work and regard it as of the utmost importance for the progress of human activities.

Each person has different interests from others; that is, each one derives satisfaction from doing different things from those which other persons enjoy. So our task becomes that of fitting a person into whatever vocation seems to appeal most to his interests, and allowing him to develop in the line of work he most enjoys.

One person may prefer golf, another tennis, and a third billiards. One collects stamps, a second builds radio sets, and another reads history for recreation during the evening. Vocational choice goes the same way. We choose to become a doctor, a lawyer, a salesman, an agricultural expert, a mechanic, or a garage-owner because of real or apparent advantages offered. In any case likes or dislikes will color the decision.

The next question which comes up is how to ascertain an individual's interests. Merely asking him whether medicine is a profession pleasing to him gives insufficient evidence. He may think of many of the tasks of the doctor as being romantic, but he should not attempt to enter that profession unless his enthusiasm is great enough to triumph over a long and arduous training in medical school and an internship, followed by a period of rather scanty practice, discomforts in having to get up at all hours of the night, irregular meal hours, non-paying patients, futile trips to visit worried mothers or hysterical patients with nothing really wrong, difficulty in arranging vacations, etc. One with true medical interest would not mind these features, or would consider them as minor in comparison with the pleasures derived from other aspects of medical duties.

This suggests that the likes and dislikes of the individual and the type of duties demanded by the profession should be carefully

matched together. Consideration of both the individual and the position is necessary, although the latter may at times be handled indirectly, since the vocational counselor or some objective measure of interests can outline the requirements of the vocation. The individual himself cannot always learn all the facts about all possible vocations, although he should find out all he can by reading, questioning, and observing.

Even a long-sustained ambition is not a guarantee of interest in the multiplicity of duties pertaining to any profession. The individual may keep his interest alive by always having in mind a few of the obvious features of the occupation, yet may fail to learn more about it as time comes near for his participating in it. Strong quotes a very striking case of a man who went through engineering school, making very high grades, obtained an excellent position, and did so well that he earned several promotions within a few years, but who tossed up the work and returned to school to undergo training for another profession, saying that he could stand no longer the type of work demanded in engineering. His interest test had previously shown that he did not have the same outlooks and preferences as most engineers, and this manifested itself in his career in spite of his superior ability. The writer knew a girl who had had the ambition for several years to become a nurse, but she quit training after just one week, as she found the duties so opposed to her interests.

II. STRONG'S VOCATIONAL INTEREST BLANK¹

(1) *Desirability of Measuring Interests.* Since everyone is not in a position to discover all facts pertaining to a vocation which he might enter, a promising method of guiding the individual into an occupation to his liking would be to ascertain objectively the likes and dislikes of persons who are successful in the occupation under consideration and then compare the preferences of the individual with these. If we discover that doctors are enthusiastic about certain activities and dislike certain others, and our applicant shows similar

¹ Fryer, Moore, Remmers, and others have also used vocational-interest tests. The make-up of all tests seems about alike, and a large share of the items are common. In view of this fact, and the fact that there is little systematic presentation of standardization, validation, and experimental results of the others, the discussion is confined chiefly to Strong's test.

likes and dislikes, we could say that as far as this particular aspect of his personality is concerned he is suited for entering the medical profession.

E. K. Strong has devised an interest blank which has great promise for vocational guidance. He states:

Men engaged in a particular occupation have been found to have a characteristic set of likes and dislikes which distinguish them from men following other professions. Scores on the *Vocational Interest Blank* are a measure of how nearly a man's interests coincide with those of the average man successfully engaged in a certain occupation.

In ascertaining a liking for a profession the fact that a candidate may not have complete information about it is taken into consideration, and questions asking one's preferences include various activities and situations which are basic to liking and succeeding. One may know little more about a civil engineer's position than that he plans bridges and buildings and gets his name on brass plates on these edifices. But the engineer must use a great deal of mathematics and do mechanical drawing, and if one has an aversion to these subjects he will not last long in preparation for this vocation. So the test asks how one feels about doing things calling for these subjects, as well as about many other types of situation. The research man should prefer to work alone and be willing to take care of details, while the hotel clerk or salesman should prefer to work with or near people, and the executive would like to direct them. The minister must be willing, and actually take pleasure in, meeting all types of people, under varying circumstances. Many other similar vocational preferences could be named, but the test items speak for themselves.

(2) *Make-up of Vocational-Interest Test.* "There are 420 items on the blank, to each of which the individual reacts by indicating whether he likes (L), is indifferent to (I), or dislikes it (D). The 420 items comprise 100 occupations (e.g., actor, advertiser, architect), 54 amusements (golf, fishing, hunting), 39 school subjects (algebra, agriculture, arithmetic), 82 activities (repairing a clock, making a radio set, adjusting a carburetor), 63 peculiarities of people (progressive people, conservative people, energetic people), 42

miscellaneous items, and 40 estimates of present abilities and characteristics ('usually start activities of my group,' 'usually drive myself steadily,' 'win friends easily')" (Strong, *Change of Interests with Age*, p. 13).

In filling out the blank one is constantly urged to work as rapidly as possible. The first impression should be checked; if one thinks the matter over to decide what he should answer or what a lawyer or a doctor might think about that point, his genuine interests will not have been obtained. Feelings, not abilities, are being studied, so trying to give a "best" answer, whatever that might be, is undesirable. There is no time limit beyond the instructions to record first impressions with rapidity.

Representative items from each of the eight parts of the blank are given. One is to encircle his feelings with regard to each.

I. Occupations:

Actor (not movie)	L	I	D
Advertiser	L	I	D
Architect	L	I	D
Army officer	L	I	D
Artist	L	I	D

II. Amusements:

Golf	L	I	D
Fishing	L	I	D
Hunting	L	I	D
Playing a musical instrument	L	I	D
Full-dress affairs	L	I	D
Detective stories	L	I	D

III. School Subjects:

Algebra	L	I	D
Agriculture	L	I	D
Arithmetic	L	I	D
Art	L	I	D
Bible study	L	I	D
Bookkeeping	L	I	D

IV. Activities:

Repairing a clock	L	I	D
Making a radio set	L	I	D

Handling horses	L	I	D
Organizing a play	L	I	D
Methodical work	L	I	D
Continually changing activities . .	L	I	D

V. Peculiarities of People:

Progressive people	L	I	D
Energetic people	L	I	D
People with gold teeth	L	I	D
Bolshevists	L	I	D
People who chew gum	L	I	D

VI. Order of Preference of Activities:

First 3 choices	Last 3 choices	
()	()	Develop the theory of operation of a new machine, <i>e.g.</i> , auto
()	()	Operate (manipulate) the new machine
()	()	Discover an improvement in the design of the machine
()	()	Determine the cost of operation of the machine
()	()	Supervise the manufacture of the machine
()	()	Create new artistic effects, <i>i.e.</i> , improve the beauty of the auto
()	()	Sell the machine
()	()	Prepare the advertising for the machine
()	()	Teach others the use of the machine
()	()	Interest the public in the machine through public addresses

VII. Comparison of Interest between Two Items:

Check the bracket nearest the preferred occupation, or the middle one if you have no preference

Street-car motor-				Street-car conductor
man	()	()	()	
Repair auto	()	()	()	Drive auto
Deal with things	()	()	()	Deal with people

Work involving few details	() () ()	Work involving many details
Few intimate friends	() () ()	Many acquaintances

VIII. Rating of Present Abilities and Characteristics:

	Yes	?	No
Usually start activities of my group....	()	()	()
Win friends easily.....	()	()	()
Am quite sure of myself.....	()	()	()
Am always on time with my work.....	()	()	()
Get "rattled" easily.....	()	()	()
Worry con- siderably about mis- takes ()	Worry very little ()	Do not worry ()	
Frequently make wa- gers ()	Occasionally make wa- gers ()	Never make wagers ()	

(3) *Scoring the Test.* One may ask: Well, what have the facts that I would not care to be an actor, that I would like to be a farmer, that I like to tinker with my automobile, that I would rather be a street motorman than a conductor, have to do with whether I should become a doctor or not? The bearings of many items are obvious enough, although justification for certain of them does not appear on the surface. An engineer should like mathematics and scientific work, making a radio set or repairing a carburetor, and would prefer to develop rather than to sell a new machine. As to peculiarities of people, the connection is not so obvious, except in occupations of distinct social demands. However, this has been found: each occupation so far studied has shown characteristic likes and dislikes which distinguish it from others. This is a matter of fact, and since it works, the test is sound.

Strong standardized his test by finding how successful men in various professions differed from the average of men in general. Thus, 25 per cent of men would like to be actors, but only 9 per cent of engineers would care for that type of work. This coupled with the ratios on the indifferent and dislike choices gives a weighting which may be applied to potential engineers. If one dislikes to

be an actor he receives 4 points to his credit; if he is indifferent he is given -1; and a score of -6 if he would like to be an actor. This does not mean that an actor's profession is any the less worthy, but that engineers, as a rule, do not care for it, and in this respect anyone who likes it differs from the great majority of engineers. Naturally there are individual variations, and anyone will receive a number of negative scores, but if one is suited for entering a profession the positive scores will be found to outweigh the negative ones.

To illustrate in part how scores for the same answer will vary when interpreted for different professions, the weights for responses on being an actor are presented for a number of vocations.

	Actor	Like	Indifferent	Dislike
Chemist	-2	1	0	0
Teacher	0	1	-1	-1
Journalist	0	0	0	0
Engineer	-6	-1	4	4
Accountant	0	-1	1	1
Advertiser	2	-2	0	0
Minister	4	-2	-2	-2
Architect	-2	3	-1	-1

Interpretation of the total score is made in terms of the distribution of successful individuals already in that vocation. An "A" score is arbitrarily set as including the range of the upper 75 per cent of those in the vocation; a "B" score is one in the lower 25 per cent; a "C" score is any which lies outside the range of those in the occupation. Thus for engineers a rating of A includes scores from 202 to 640; B is from 1 to 201; and C a score of zero or below. For chemists A is from 203 up; B from 37 to 202; and C below 36.

One has probably already surmised that the test cannot be scored a single time and hold good for any vocation which one might consider entering. In this the interest blank differs from intelligence tests, which have a single score which can be applied to any desired use. But with the interest test one must ascertain how members of each profession feel about each situation included in the blank. We see from the table just above that liking acting is slightly favorable for an advertiser, more so for a minister, neutral for teachers, journalists, and accountants, somewhat negative for architects

and chemists, and detracts heavily from one's score as an engineer. While this makes our task a fairly lengthy one, if an attempt is made to select an occupation for an individual who has no outstanding preferences, it is this same fact which makes the test a success. That is, it is able to discriminate very accurately between various occupations by virtue of the elaborate weighting scheme. Several short-cuts have been tried, but none separated the professions as clearly as the original procedure. Scoring requires from fifteen to thirty minutes for each occupation, but this is a small investment of time to decide one's suitability for a given occupation.

It might be remarked that the test has not been standardized for women as yet, and it is not certain whether they could be scored with fairness in terms of established norms for men. The writer is of the opinion that anyone who has the interests (and other assets) required for a vocation is qualified, regardless of sex.

The validity of the test depends on a number of factors: whether interests are permanent or whether likes and dislikes change with age or experience; whether members of one vocation may be separated from those in others without appreciable overlapping; and whether those who rate high in interest will succeed and continue in that vocation. These problems will be discussed in the next few sections.

III. PERMANENCY OF INTERESTS

(1) *Problem.* If any test is to have predictive powers, the trait it measures must either be constant or must change in known direction and known degree. Our question is this: are interests constant enough so that the likes and dislikes of a college student, preferably a freshman, or even a high school pupil, resemble the interests of men of middle age who have undergone professional training and have been engaged in active participation in the profession for years?

(2) *Are Interests Native or Acquired?* We can not answer this question satisfactorily with our present information, but a few suggestions may be given. Some parents try, almost from the birth of the child up to his maturity, to get him to go into medicine, banking, music, etc., but such guidance does not always work. A case

along this line is of a boy whose father and grandfather had been bankers, and who had been given every opportunity to learn that profession. He followed it a few years, much to his distaste, but finally broke away completely. Now as a professional pianist he is doing far better than he would ever have done as a banker, and what is more important, is enjoying life thoroughly. This is a case where interests could not be acquired. Possibly some native elements which contribute to personality are partially responsible for the formation of interests, although the actual direction is probably learned. For example, a man may be fond of athletics, but environment would determine whether he preferred golf, swimming, or rowing.

(3) *Interests before Maturity.* Thorndike asked college students to check preferences for school subjects at present, while they had been in high school, and while in grade school. Interests correlated $+0.85$ between elementary and high school ages; $+0.66$ between elementary and college; and $+0.79$ between high school and college likes. Correlations between interest and grades were $+0.83$, $+0.71$, and $+0.77$ for the same groups. While these figures suggest a good degree of stability, there are several serious criticisms. All interests were rated as of the past, and one's feelings may easily become colored by subsequent events. Further, the reliability of an estimate of what one liked a dozen years previously is uncertain. This criticism is suggested by the fact that the correlation is highest between the two most distant times; this is strange, especially considering that these ages are at the time when one is changing most rapidly.

On this subject Strong quotes: "Cowdery finds that the five groups—(a) freshmen and sophomores planning to be engineers; (b) juniors and seniors in engineering school; (c) engineers in graduate work; (d) engineers with less than five years' practical experience; and (e) engineers with more than five years' practical experience—all score approximately the same on the interest test. The same holds true with respect to physicians and lawyers." Strong adds that these results hold true with groups, but that it is not certain yet whether each individual is as stable as these statements would suggest.

This establishes, within limits, a reasonable stability of interests of persons from college level up. Whether it could be applied to

all college students is not certain; a freshman who has already decided to go into a technical school like engineering might be assumed to be more mature and settled than the average. To be a perfect instrument of guidance a test would have to be based on the fundamental assumption that interests could be measured, say, in early high school years, so that educational guidance could properly precede vocational advising.

(4) *Stability of Interests during Maturity.* This topic has been attacked directly by Strong in his *Change of Interests with Age*. The relative likes and dislikes of men from twenty to sixty in various professions were compared. The data were analyzed in great detail, but space forbids our giving more than a few conclusions.

To start with, changes were not very great at any time; in very few cases did the shifts in liking or disliking exceed 10 per cent. Most of the change which occurs takes place between twenty-five and thirty-five. The differences between people in different occupations are far greater than those between members of the same occupation, even if the latter have thirty years' difference in age. Older men prefer doing things alone; like reading more; like activities involving physical daring less; are less tolerant of peculiarities of people, especially if such peculiarities might affect their daily routine, such as ideas about socialism. These changes take place equally in all the eight professional groups studied. There is none, for example, which particularly characterizes doctors, but not insurance men or ministers.

There is no evidence in favor of a hypothesis that persons in a certain profession become more alike with the passage of time because of similar environment and activities. Differences which originally existed have apparently persisted in proportional form.

There is one finding, however, which has practical bearing on interpretation of scores. Scores increase slightly with age (and experience). While by definition 75 per cent of men rate A for their profession and 25 per cent B, actually the older men exceed expectation and there are fewer younger men who rate A—about 55 per cent. This suggests that a man who now rates B+ or even B might eventually score A within his occupational group, and that we might revise our standards slightly downward to take care of this trend. Our criterion groups might be taken from as young men

as possible, so that any changes would be minimized. However, this could not go beyond a certain limit, as we can only include those who are now in the profession and have been in it long enough so that their success and happiness insure their suitability and permanence. Therefore, the ultimate validation of the test will have to wait until blanks on record can be verified against middle-aged occupational status of the individuals who were students when they filled them out.

At the same time that he points out that the percentage of A scores increases, Strong states that the number of those rating B stays constant. Since B scores are within the range of those successful in the profession, vocational advising is safe enough on the basis of that score. It is extremely doubtful, however, whether an individual who rates C would ever change enough to rate within the distribution of successful men of a given vocation.

As yet, we are somewhat uncertain about the development of interests from middle adolescence to early maturity, that is, from about sixteen to twenty-five. This is the most important period, since most vocational choice and training occur within these limits. Complete validation of the interest test will also depend on research on this problem.

IV. SEPARATION OF GROUPS

Another requirement for validation of the Interest Blank is that it separate clearly the various vocations for which it might be scored. Evidence that it does this has been given in several studies.

The following table, quoted from Strong, shows how few men score highly for occupations other than the one in which they are situated. One will notice that almost exactly the specified 75-25 ratio of A and B scores do appear when the blanks are rated for the true occupations of the men who filled them out. But when scored for from eleven to fourteen other professions there is only one case where more than 9 per cent of men fall within the A range. This exception appears logical, furthermore; 20 per cent of bankers score within the A range of accountants. These two occupations have many overlapping duties. Many men have B ratings for voca-

TABLE 16. PERCENTAGES OF MEN IN VARIOUS OCCUPATIONS WHO RATE A AND B IN THE INTEREST OF CERTIFIED PUBLIC ACCOUNTANTS, ENGINEERS, AND PERSONNEL MANAGERS

	C. P. A.		Engineer		Personnel	
	A	B	A	B	A	B
C. P. A.	74	25	2	28	3	31
Banker.	20	39	2	31	0	12
Office worker.	2	39	7	25	2	24
Lawyer.	5	23	5	25	7	40
Engineer.	2	21	75	25	3	31
Personnel manager.	6	13	6	33	75	25
Author.	2	16	4	18	2	10
School-teacher.	2	15	8	29	4	31
Life insurance salesmen	4	12	0	29	5	30
Advertising man.	0	10	—	—	6	38
Doctor.	0	8	9	42	—	—
Minister.	0	0	0	10	2	34
Artist.	0	0	4	29	0	0
Line executive.	—	—	—	—	7	32
Department store sales- man	—	—	—	—	0	14

tions other than their own, but this is not unexpected and does not require particular explanation.

To show how a single individual sizes up on the test, Strong quotes scores of a mining engineer for twelve different vocations:

Engineer	A
Chemist.	A
Personnel manager.	B+
Purchasing agent	B+
Certified public accountant	B
School-teacher	B-
Lawyer.	B-
Life insurance salesman	C
Advertising.	C
Artist.	C
Minister.	C
Journalist	C

One might deduce from these scores that this engineer has the major interests of a scientist, shown by his high score on chemistry

as well as on engineering, and a leaning toward accounting; and a secondary interest in executive work, especially that involving planning, which is perhaps akin to research. But the more strictly social forms of activity do not appeal to him. Possibly he would be excellently equipped to be director of a research laboratory or some similar position incorporating both technical and managerial functions.

Another study contrasts interests of 575 engineers with 933 men engaged in other occupations, whose tests were scored for engineering interests. Whereas 75 per cent of engineers rate A, 24 per cent B, and 1 per cent C, only 15 per cent of the non-engineers rate A in engineering interest, 40 per cent B, and 45 per cent C. Even better differentiation appeared in the scores of 1,200 men who filled out the blank while attending an industrial meeting. Seventy-five per cent of the personnel men present rated A for interests of that profession, as might be expected, but only thirty-nine other persons scored A. Analysis showed that many of these latter individuals were engaged in functions which might be classed as personnel, although their organizations maintained no such department as a separate unit. We might say that these men ought to be personnel managers, rather than that the test did not discriminate closely enough.

There are instances of overlapping, however, which are perfectly legitimate, and which are easily accounted for. Interests of chemists, engineers, and farmers have been found to overlap greatly. (The farmers presumably represent the modern scientific large-scale type of operator.) Lawyers and journalists likewise show considerable similarity of interests. Analysis of the occupations thus overlapping shows that a large share of the duties and problems are very similar. In many cases the interests form a skeleton, predisposing one toward a certain class of occupation, and it is largely a matter of chance that a man chooses one profession rather than another *within the same group*. (Sometimes the Interest Blank differentiates more finely; cf. page 87.)

Another source of overlapping occurs when an occupation includes more than one type of function. Executives do not form as distinct a type as members of professions with more homogeneous duties. Many executives have interests similar to those in the fol-

lowing occupations: life insurance salesmen, office workers, engineers, lawyers, bankers, accountants, and personnel managers. Many rate B for a number of occupations. It is worth noting that many of the professions with which executive interest overlaps are those from which an executive might have risen to his present position. The overlapping is very slight with ministers and none at all with artists, vocations of more individual and scholarly nature. Differentiation among various types of executives discloses some interesting comparisons. Finance executives rate high for an accountant's interest, but low for selling; engineering executives score high for office work and pure engineering functions, but low for selling; and merchandising executives score high for life-insurance selling.

Strong suggests the possibility of standardizing interest scores for various types of executive or various types of engineers, according to the type of directing or planning they are engaged in. Whether there would be appreciable differences among the various types of engineers is doubtful. Also one might name so many types of executive that standardization could go on forever. For the present it might be the most practical procedure to demand that a potential executive show high interest ratings for leadership and direction and for the technical aspects of the work under his direction. And in similar manner a salesman who is being considered for promotion should not only be preëminent in his own line, but should show some disposition for executive work.

V. THE RELATION OF ABILITIES TO INTERESTS

If one is interested in an activity he will work harder and longer, and consequently accomplish more. But is interest a criterion of genuine ability? Ability and accomplishment are far from perfectly correlated; if a person had equal potential ability in two subjects and became enthusiastic about one and indifferent about the other, his performances in the two would soon be far different. But related to practical guidance, this is the question: are interests sufficiently indicative of ability so that they may be given a good degree of emphasis in vocational guidance?

The two variables, interest and ability, can never be separated entirely. One will work harder if he is interested in a subject; and

also a certain degree of success will further stimulate interest and cause more effort to be put forth. Langlie asked college freshmen to rate their liking for English, mathematics, ancient languages, modern languages, social sciences, and natural sciences when they entered college. These estimates were compared with grades received subsequently, and in this way avoided the criticisms raised against Thorndike's investigations which asked for ratings of interest after the grade had been received. Even here estimates may have been colored by high school success. About twice as many received their best and poorest grades in the subjects they preferred or disliked most than would be expected through pure chance. But while these group differences indicate some relationship between ability and interest, there were many exceptions and the investigator did not think interests should be taken as a valid indication of ability.

The relation between intelligence and occupational preference was studied by Henmon and Holt in 16,350 Wisconsin high school seniors. There is in general a pretty good degree of correspondence between degree of ability and vocational choice, although there are wide variations within the groups. Those intending to enter the professions which are usually considered as most desirable have higher scores, while the pupils of lesser ability tend to select the more routine occupations. It is interesting to note that those who have no preference rate well toward the bottom of the list.

Agreement between vocational ambition and intelligence seems to be better at high school levels than either above or below. Among those with lower intelligence scores ambition seems to exceed potentiality, while the reverse holds true with more able persons, who frequently select a vocation with demands below their possibilities.

This regression toward the median is not so startling when one considers that any divergence in the higher levels will have to be downward, and that those who score low on the test cannot very well select an occupation below their ability. Study of just which pupils go into which occupations, and which ones fall by the wayside, would be very instructive. There are a few departures from usual findings in this study. These may be accounted for in part by the comparatively few cases in some of the classes; and also by

TABLE 17. OCCUPATIONAL CHOICES AND MEDIAN INTELLIGENCE SCORE OF 34,000 HIGH SCHOOL SENIORS. (HENMON AND HOLT)

Vocation	Score	Vocation	Score
Journalism.....	84.3	Clerical.....	51.9
Science (Chem.).....	74.1	Music.....	51.1
Law.....	73.8	Bookkeeping.....	50.9
Entertainment.....	70.7	Civil service.....	48.5
Personnel.....	70.7	Home economics.....	47.8
Library.....	66.4	Drafting.....	47.1
Medicine.....	66.2	Sales.....	47.1
Forestry.....	65.0	Dentistry.....	46.7
Banking.....	64.2	Pharmacy.....	46.4
Advertising.....	64.2	Physical education.....	45.2
Miscellaneous.....	63.3	Nursing.....	44.1
Engineer.....	61.1	Construction.....	43.6
Ministry.....	60.0	No preference.....	41.8
Architecture.....	57.5	Printing.....	40.0
Business.....	55.7	Agriculture.....	38.9
Teaching.....	55.7	Electrical and mechan- ical.....	38.6
Art.....	53.5	Beauty parlor.....	32.0
Aviation.....	52.8	Transportation.....	29.4

the fact that the students only *intended* to go into these occupations. They are not actualities yet.

VI. INTERESTS AND ACTUAL VOCATIONAL SUCCESS

Another method of validating the interest blank is to compare test scores with vocational progress. Strong gave his test to 156 seniors a short time before graduation. None of them was told how he had scored or in any way given vocational guidance in terms of test results. The next January, about two-thirds of a year after graduation, the same individuals were asked to state what occupation they were in and the degree of certainty they felt that they would want to continue in it permanently. Of this group, 46 per cent had entered the occupation for which their test had indicated the highest degree of interest; 20 per cent the second highest; and 11 per cent the third highest. Only 18 per cent had gone into a profession for which they showed no interest, that is in which they

had rated C. As Strong points out, some of these may have undertaken these vocations because of family pressure, finances, temporary convenience, and like reasons.

Fifty-two per cent of this group failed to score A for any vocation, but this is probably accounted for by the fact that all professions are not yet standardized in terms of interests, and the ratings of some individuals could not be in terms of their primary interests. So we could not expect perfect agreement between professional choice and interest scores at present. The agreement that is displayed, however, seems remarkable.

A negative approach to the same problem is to make an analysis of cases of individuals who score low on the test for the occupation in which they are engaged. A few cases from Strong are quoted here.

(1) Electrical Engineer, 50 years old, designs electrical equipment, primarily surgical instruments. Received M.D. degree at college. Rated C in engineering in general and in all four engineering groups.

(2) Electrical Engineer, 43 years old, is apparently a typical electrical engineer for a Light and Power company. Finished college engineering course. Has day-dreamed of "real estate, stocks and bonds." Remarks, "I have always had a general tendency for entering the commercial field, in the above-mentioned lines." Rated C in all five tests.

(3) Civil Engineer, 38 years old, has general supervision of all kinds of construction work. M.S. degree. Remarks, "I plan to go into general contracting for myself at some time in the future, but I am well pleased with my present connections." Rated C in all five tests.

The three individuals sketched briefly appear to have fundamental interests of inventing, selling, and executive work, respectively, rather than being really interested in engineering. In the first and third cases the classification was probably not entirely accurate, and in the second the individual himself admitted that his interests lay elsewhere.

So from practical experience, as well as technical and statistical studies, the test seems to have high validity. Just as does intelligence, interests appear to guide one's destinies, but since there may be a

waste before one's real personality manifests itself, the comparatively slight amount of time necessary to fill out and score the test will be very well spent.

VII. PRACTICAL GUIDANCE THROUGH INTERESTS

It has been clearly demonstrated how closely related interests are to vocational choice, happiness, and permanency of work. People tend to go into occupations in which they are interested, not only as evidenced through vague subjective impressions, but also as objectively disclosed by their answers on the Strong Vocational Interest Blank.

How, now, may we actually use the test in vocational guidance? Strong himself is rather cautious against making extravagant claims for the value of his test results. There are a number of items of uncertainty yet remaining about the test scores. The extent of change of interests with age, especially during years of adolescence and early maturity, is somewhat uncertain, although evidence available indicates that changes are minor. It is also possible, although doubtful, that one might acquire the interests of a group by engaging in the same activities for a period of time.

Not all occupations have been standardized as yet. At the present time (Strong's manual issued September, 1931) scoring stencils have been prepared for the following twenty-four vocations:

- Advertiser
- Architect
- Boy Scout master
- Certified public accountant
- Chemist
- City school superintendent
- Engineer
- Farmer
- Journalist (newspaper editor)
- Lawyer
- Life insurance salesman
- Mathematician
- Minister
- Office clerk
- Personnel manager

Physician and surgeon
Physicist
Psychologist
Purchasing agent
Real Estate salesman
School-teacher and administrator
Vacuum-cleaner salesman
Y.M.C.A. general secretary
Y.M.C.A. physical director

Most of these occupations would be classed as "professions" rather than just as positions or jobs. That is, they are among the higher-class vocations, although the list does not include all of these by any means.

Guidance will be in terms of the letter grade derived from the score. As explained previously, a grade of A means that one falls within the upper 75 per cent of the distribution of individuals who are successful in that profession. Scores of B include the lower 25 per cent of scores in that vocation. C scores indicate entirely different types of interest. If one scores within the A range, he may be advised without hesitation to go into that profession, provided, of course, he has or will be able to acquire the requisite education or special training where necessary, and has the requisite intelligence and other personality qualifications. The B range is divided into three groups; one with B+ could with reasonable safety be guided into that vocation, but with B or B- the chances become less that he will be satisfied with the type of work and situations encountered in daily routine. Very few rating C are found in any occupation, and these cases usually drop out soon, wish to drop out, or have as their main interests something apart from their professional duties, and so an individual with such a score could be definitely advised against entering that particular profession.

Among those rating within the A group little relation may be found between strength of liking and success. Very eminent men are as likely to be at the lower end as at the top of this part of the distribution. Cowdery quotes a correlation of $+0.33$ between interest scores and grades in engineering school, and of zero between scores and grades in law and medical schools. He says "relative success is not predicted with any degree of accuracy by relative standing

above the critical level of interest scores. Only the categorical classification is significant" (Italics ours). Beyond this critical level, he suggests, a high score only serves to increase the probability that judgment is correct.

A person scoring B in an occupation he had considered entering might be allowed to enter that profession, or he might search for some rather similar vocation in which he might score higher. However, a high B score would not be grounds for discouragement.

In ascertaining a person's interests it would be rare that a blank would need to be scored for all twenty-four professions. Usually one with intelligence high enough to fall within these general groups has sufficient definite interest in a number of activities so that one can start investigation within a reasonably narrow range. One might make a rough classification of occupations into technical or scientific; social, including selling; executive; service, such as minister, Y.M.C.A. secretary, Boy Scout leader; and artistic. This suggests a preliminary centering of interests on one or two of these groups of occupations and then working more intensively within the limited territory chosen.

Through analyzing intercorrelations among interest scores for eighteen professions, Thurstone has isolated four major factors in interests, deduced through common presence within related occupations. These factors are interest in science, language (talk), people, and business. A certain common factor was noticed to be present to a high degree in chemistry, engineering, psychology, architecture, agriculture, and medicine; and disliked by men in advertising, life insurance selling, and real-estate selling. This factor was taken to be an interest in science. Likewise one which was present in ministers, teachers, Y.M.C.A. secretaries, and personnel men must be a distinct liking for people. We can also deduce from his table of loadings just what broad interests go to make up preference for any particular profession. Thus chemistry is seen to be made up of a high degree of liking for science, slight dislikes for language and people, and what amounts to indifference to business. Ministers like language and people, are indifferent to science, and find business slightly distasteful. Real estate men emphasize business, dislike science, and care little for either language or people.

An individual's major subjective preferences might be analyzed

TABLE 18. LOADINGS OF INTEREST FACTORS FOR VARIOUS PROFESSIONS

Name of Profession	Science	Language	People	Business
Advertising	-.48	+.66	-.21	+.22
Art	+.45	+.70	-.18	-.31
Certified public ac- countant	-.04	+.32	.00	+.56
Chemistry	+.98	-.21	-.15	+.06
Engineering	+.84	-.36	-.22	+.16
Law	-.23	+.77	-.12	+.44
Ministry	+.09	+.51	+.62	-.30
Psychology	+.77	+.47	-.04	-.28
Teaching	+.36	+.15	+.68	-.22
Life insurance	-.82	-.02	+.27	+.45
Architecture	+.83	+.26	+.16	+.05
Y.M.C.A. secretary	-.23	.00	+.90	-.37
Farming	+.71	-.54	+.01	+.18
Purchasing agent	-.05	-.79	+.01	+.44
Journalism	-.15	+.84	-.28	+.25
Personnel	-.30	-.26	+.66	-.19
Real estate	-.76	-.07	-.06	+.58
Medicine	+.71	+.33	-.26	-.09

and compared with these loadings for any given profession to see whether or not he resembled those in that profession, and if there seemed to be reasonable certainty the Strong Interest Blank might be scored to give detailed information.

In case an individual is considering entering an occupation not yet standardized for characteristic interests, guidance becomes more difficult. Very cautious and tentative use of the Interest Blank might be serviceable, in terms of likeness of interests to those of individuals in vocations as closely related as are available. "B" interests for a related profession might suggest higher correspondence with those in the unstandardized vocation. The test discriminates between certain occupations so well, however, that seemingly related professions are found on statistical analysis to be far apart. What would probably be a better procedure would be to have a competent adviser take some of the questions from the interest test, make up similar questions, and explain the nature of the duties of the position in which the individual is interested. This presupposes

that the adviser is thoroughly conversant with the nature of the vocation, its duties, preparation necessary, possibilities for rank and wage improvement, etc. He can then compare the demands of the position with the interests and other personality traits of the candidate.

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From these quotations we may deduce the fundamental problems of personnel as these: to select for each position the men who seem most suitable and most likely to do the best work; to so treat them that they will remain as long as possible; and to make them happy and useful members of the organization. Employment is without doubt the largest single practical function of personnel, and appears most prominent from the outside, but one is missing the underlying philosophy of personnel if he sees it as little more than an employment agency run by each organization. Other major fields are: following up the person who has already been employed; improving his efficiency; handling the human relations within the plant; and research to improve any of the personnel functions.

Since most men are engaged in working directly or indirectly for some one else, the management is interested in their efficiency. There was little need of personnel study a century or two ago, when work was much simpler and less specialized than at present, when most work was individual in nature, and when towns were smaller. If a cobbler or printer hired an apprentice, he usually came from the neighborhood and was personally known to the employer; his work could be directly supervised; and efficiency was not at such a high premium as at the present.

When machines came into use the worker's status suffered greatly, since his trade skill was no longer at such a premium. Soon the advantage of large factories became evident and the picture changed to one of large groups working together. Consequently many problems arose, chiefly those of the relations between the employer and the employee. Friction occurred, because the workers felt that capital was trying to exploit them. As a matter of fact, it is undoubtedly true that in many cases the workers were treated as so many automata, rather than as individual human beings with desires, ambitions, and interests of their own. The result was a hostile attitude, always productive of inefficiency; the formation of labor unions; methods of sabotage; and in many instances strikes.

Now industry is seeking to restore the lost personal contacts between management and labor. It is impossible in any plant of more than a few dozen employees for the owner to know personally all the men, so he designates the Personnel Department as his

representative in all personal dealings. Scott, Clothier, and Mathewson discuss this point as follows:

Whereas, previously, the employer enjoyed the rich gift of friendship with his associates at the bench, it now became possible for him to know them only casually, if at all; to know their names and faces, perhaps, but not their weaknesses and their strengths, their interests, their ambitions, their family fortunes, their follies, and their hobbies. They became to him merely a group of workers, a collective thing, whose labor must be bought in the market.

II. PERSONNEL PROBLEMS

Personnel has a very wide scope, since it concerns itself with the relations of individuals in all situations arising in connection with their work. We present just below an outline which sums up a large share of the activities of a personnel department. Some of the more important of these are explained in subsequent paragraphs, and many of them are discussed at length in the next seven chapters.

OUTLINE OF PERSONNEL PROBLEMS

- I. Employment:
 - a. Occupational description.
 - b. Application.
 - c. Interview.
 - d. Testing.
 - e. Physical examination.
- II. Follow-up Work:
 - a. Introduction to the job.
 - b. Training.
 - c. Periodic rating.
 - d. Promotion and transfer.
 - e. Discharge.
- III. Efficiency:
 - a. Reduction of fatigue.
 - b. Work and rest periods.
 - c. Working conditions: illumination, noise, temperature, etc.
 - d. Motion study.

IV. Human Relations:

- a. Treatment of labor.
- b. Handling dissatisfaction.
- c. Wages.
- d. Safety; illness and accident compensation.
- e. Lunch and rest rooms.
- f. Employees' organizations; library facilities.

V. Research:

A very important function of personnel; to study and improve methods of handling any of the above named problems.

Let us now examine some of the major problems of personnel management. The first two to be discussed pervade the whole of personnel work; the rest are special problems, and will be only briefly introduced in this chapter.

(1) *Formation of Definite Personnel Policies.* This is a very general point, but one which sounds the keynote to the detailed procedures of the personnel department. The functions of personnel include the two chief heads of bringing about greater efficiency and of insuring greater satisfaction. One must pay definite attention to carrying these out consistently.

One of the most important points is the recognition of the workers as human rather than as somewhat superior machines. The older commodity theory of labor, whereby it was purchased at a price which went up or down according to demand, like the price of any item of goods, and which considered laborers as hands or heads, like so many cattle, has disappeared in most plants. Since men are workers and fellow citizens alike, any ill treatment will be against society in general as well as against the employee in particular.

To bring about progress, through flexibility, open-mindedness, and search for improved methods, is another outstanding duty of personnel. With the severe competition of the present time, maximum efficiency must be maintained for a company to continue in the struggle for existence. Any organization which is content to go on as it has in the past will soon find itself left behind by others which are more progressive. Family control of companies is becoming less and less prominent; a son who intends to follow his father's

footsteps must show his suitability, just as does any man taken in from the outside.

One must look ahead to the future. This is the reason for keeping elaborate records and conducting research. Present methods are subjected to careful scrutiny, to see which ones are working well and which ones should be altered. The mere fact that the company as a whole is earning a fair profit does not justify assuming perfection of all details of operation. Proper methods of selecting new employees, systems of pay, methods of treatment, promotion, and discharges all come under this heading. If one gives tests as part of the employment procedure, he can check up a number of months later to see if the percentage of labor turnover has been reduced and if those who scored high on the test are more satisfactory than those who made lower scores.

Another general function of the personnel department is to correlate activities within the organization. Each department lays down its detailed plans, naturally from its own point of view, and these may conflict. By making minor modifications, one can frequently eliminate waste, through cutting down overlapping between departments, transferring employees to take care of seasonal fluctuation, adjusting wage scales to equitable bases, establishing sound training methods, and acting as adviser to the various department heads in all questions of personnel relations.

Coöperation with other concerns is also implied in the formation of a definite policy. One must acquire ideas from the outside, and in the long run must contribute his share of ideas to others. The notion that individual or secret methods of conducting affairs is of advantage has been dispelled. People now realize that they can exchange views on personnel or economic policies with nothing but gain to both parties.

(2) *Centralization.* One of the most important facts about modern society is its specialization. One man does a task only a twentieth as broad as his great-grandfather performed, but in so doing produces a hundred times as many items. In a large store a salesman does not handle everything, but confines himself to shirts, hardware, or drugs. An organization has executives to take care of certain specialized functions. One is a buyer; another a manager; a third has control over financial matters; a fourth deals with per-

sonnel problems; etc. In the old days each foreman hired his own men and handled all matters of a personnel nature (although the term was not in use then) which arose. It was later observed that there were a number of serious faults in this way of conducting affairs. The foreman is not equipped or trained to make proper selection of personnel, is more inclined to be subjective in his judgment, and cannot be expected to take care of many of the contacts which are important after employment.

When a vacancy occurs in any place within the organization, the personnel department should be notified immediately. If it seems desirable to promote an employee already within the plant, the personnel office will have records showing his personal qualities, test scores at time of employment, and periodical efficiency ratings made since. If an outside person is wanted, the office has an occupational analysis card which describes the type of person required to fill the position.

The customary procedure is to have a sheet prepared each morning, listing the vacancies, with perhaps a supplementary list of expected openings in other positions, which may be available later. By use of this method, several advantages of centralization appear. To start with, a certain amount of confusion within working departments is eliminated if persons who hope to obtain jobs are not wandering about. Next, having one department do all the hiring permits a certain degree of flexibility. If a man who appears to be a potentially valuable employee wishes to tend a certain type of machine or sell a certain kind of goods and there are no vacancies available, he may be placed temporarily (or even permanently) in some related department.

Perhaps the chief advantage of centralization of function is that an adequately trained man can take care of all personnel duties. Obviously the man who has studied personnel from the ground up, both in theory and in practice, who is experienced in testing and interviewing, and who has made a study of human personality, should be far better able to deal with the problems arising than the foreman of each department. It is not finding fault with the foreman to say that he is not properly qualified to hire his men any more than it is a relevant criticism of the personnel manager to

point out that he does not know how to run a machine or an elevator.

Since the personnel manager deals with a large number of men, he is better able to make an objective judgment of the suitability of any applicant. Men from potential executives to those wishing to do the crudest labor pass before him each day, and any one man can be placed in his proper rank order by such an experienced man.

If the foreman, superintendent, or buyer insists on having some part in the selection of his workers, which demand is logical enough, he can be present at the interview and can inspect any test results which may be obtained. This will enable him to look over his own prospects, but at the same time it will preserve a uniform control over the personnel, and thus permit a more objective selection of new employees than the foreman might be able to do alone. Taking this time will not be a serious drain on any executive. The ordinary department usually consists of from half a dozen to perhaps fifty men, and turnover is not especially rapid, so the fraction of an hour spent with an applicant will occur infrequently.

Decentralized plants, on the other hand, have certain defects. Permanent comprehensive records are not so readily available, if kept at all. Confusion may occur from applicants' going from one department to another, asking the foreman of each if there are any vacancies. Foremen are less expert in estimating the merits of applicants, and some may be inclined to accept or reject persons through prejudice, because of color of hair, religion, race, etc. The method of selecting employees on the part of one foreman has been quoted as consisting in accepting all red-headed Irishmen and rejecting all others. A case has been quoted of one man being discharged from fifteen departments of the same plant within one year. A centralized system would have eliminated this, as he would not have been reemployed after one or two failures.

Promotion and other follow-up work can be carried on much better with a centralized office and permanent records. Suppose a vacancy occurred in one of the executive offices in the plant; it might be filled from any one of several departments. Without centralization such choice would be exceptionally difficult; one would have to consult the boss in a number of departments and make up a list of possibilities on a far less definite basis.

(3) *Employment* is the largest single function of personnel. Many of its problems have already been pointed out. All applicants come through the one department, where they can be judged as to merit for the position for which they apply in as close to an objective manner as is possible at the present time. Attracting a desirable class of applicants, interviewing, rating, and testing are included in employment functions. Another aspect is the occupational analysis, which is a complete description of the work and duties demanded of one holding a position. This is both for the applicant to see and for the interviewer to use in determining whether the applicant is suitable.

(4) *Follow-up* after employment covers a number of different phases of personnel work. Introduction to the job is an important item. Regardless of theoretical knowledge, the worker is somewhat ill at ease in his new surroundings, and any personal interest and contact will do much to make him a useful and happy member of the organization. He is made to feel that he is a person of some importance when the personnel department, one of the executive branches of the organization, manifests an interest in him. Training is another very important point. In almost any task the new worker needs a certain amount of instruction before he is completely efficient. This deals with the duties of the occupation in general, and with the detailed methods used by the individual concern. Periodical ratings are usually made, to validate employment procedures, to see if the individual is getting along satisfactorily to himself and to the concern, and to guide in making rank or salary promotions.

(5) *Promotion and Transfer* are in a sense employment, although they consist in filling vacancies from within the organization. By means of the records kept in the personnel office the various qualifications and possibilities of individuals considered for a position may be estimated on a basis of true merit.

(6) *Resignations and Discharges* constitute an important, though frequently neglected, item in the affairs of the personnel department. The personnel of an organization cannot be expected to remain stable indefinitely; some turnover is expected, for reasons of death, retirement, removal from the city, marriage, illness, etc. But if many leave because of unsatisfactory conditions of work or

to go with other concerns, it is best for the personnel department to ascertain the exact reasons and take steps to improve conditions for the future. Likewise, if an unusual number of discharges have taken place because of unsatisfactory work, the fault may not lie with the employees, but with the management for having allowed them to undertake work beyond their ability in the first place. This naturally suggests revision of employment procedures.

(7) *Keeping Technical Records for Research Purposes* is a final function of the personnel department. These include, first, the history of each individual in employ. His personal and occupational data up to the time of present employment come first. Records since employment include promotions, both of rank and of salary; periodic ratings; special comments, such as originality or unusual work; absences, illness, and tardiness; disciplinary action; etc. Secondly, records of the firm in general furnish valuable data from which to check up on methods. If labor turnover is found to be very high within one department, it is well to look for the source of trouble in the methods of that department, rather than blaming laborers for being capricious. Profit-and-loss statistics belong more properly in the field of economics than in that of psychology, but analysis of these factors may disclose some personnel suggestions.

Another research field is that of studying the relations between positions and the best methods of carrying out the functions of each. With changing business conditions old positions may no longer be necessary; several may be combined into one; and new ones may need to be instituted. Departmental reorganization may become advisable from time to time.

III. VOCATIONAL GUIDANCE AND VOCATIONAL SELECTION

Poffenberger has introduced a very nice distinction between these two terms, which apply to the two aspects of placing an individual in his position. *Vocational Guidance* is from the standpoint of the individual. It consists in analyzing his particular potentialities and interests, and selecting a career for him from the hundreds of those which are available. *Vocational Selection*, on the other hand, is the process undertaken by industry, that of sizing up applicants who are seeking a particular position and accepting one from this

number as an employee. In this case the work comes first; the management has a vacancy and notifies the Personnel Department that a man of certain experiences, capabilities, and personality characteristics is desired to do work of such and such nature. The personnel organization then tries to find a man who as nearly as possible fits this list of requirements.

The two differ in a few respects. Vocational Guidance has as its purpose the welfare of the individual, while Vocational Selection picks the best worker for a designated position. For this reason the management could theoretically pick out the man who seemed best for the job, regardless of whether it was for the best interests of the individual or not.

However, the principles of both should be the same, as suitability in one direction will represent equal merit in the other. If a key will open a lock, then also the lock must be suited for the key. So if a person getting vocational guidance sizes up well for a certain occupation, in terms of intelligence, personality traits, age, experience, and any other capacities that may be demanded, he should likewise be a man whom the management would desire to employ. The same type of man should be guided into a certain vocation and be selected as a worker in it.

There is sometimes a tendency on the part of industry to take the best man that applies for a job, estimating best on an absolute linear scale. However, as we saw in the discussion of various phases of vocational guidance, the best individual is the one who is the most suitable, rather than the person who possesses the highest degree of any particular trait. A man must have enough intelligence, for example, to execute his work efficiently; but if he has more than this amount of ability he will either become dissatisfied or will advance rapidly. In either case he will be lost to the original position. Ordinarily our task is to select workers who will be satisfied and will remain the longest possible time. Otherwise we have wasted the time and expense involved in training the man up to a level of full efficiency without receiving a return for a length of time that will enable the company to make up the initial loss. A few exceptions are found where workers are deliberately hired for a short time only, as in harvesting, handling Christmas rushes, doing summer hotel work, or training individuals for higher class work.

IV. QUALIFICATIONS NECESSARY FOR THE PERSONNEL MANAGER

Personnel work has a very fascinating sound, and many people wish to enter this field after hearing about it. The work of interviewing and giving advice sounds very interesting and not especially difficult. However, one could hardly think of a position calling for more originality, broader personality characteristics and interests, and higher qualifications in other ways. Therefore, we append this brief section as an analysis of the abilities and characteristics necessary for the personnel manager, for the benefit of any who may be seriously considering undertaking this work.

One must remember that personnel work is in its early stages. Methods and procedures are not fixed, and it is improbable that they will ever become entirely exact. They must operate with flexibility within broad general principles. There are advisable methods of conduct and one can learn much from experienced men in the field; but thereafter originality and initiative count for more than does formal training.

For these reasons, the exact training leading up to personnel is not strictly defined. When personnel was in its infancy, mature men from various fields were selected, since there was no recognized background for this new field. Many of the leading personnel men at the present time have been trained in academic psychology. General study of psychology, with emphasis on mental testing, personality, social psychology, and statistical method, seems very suitable. Knowledge of economics and sociology are valuable supplements. A person will of course have to acquire some practical experience before he can rise to manager of the personnel department. This is acquired by doing testing, interviewing, executive selection, and similar detailed phases of activity.

The manager must be highly intelligent; have broad vision and be able to see fundamental issues, beyond the usual mass of petty details. This is particularly true for the man who tries to realize the utmost possibilities of his opportunities in this work. Employment has been pointed out as its most important function, but one has missed a great deal if he confines his thinking to this single

phase. Factors of follow-up, promotion, periodical ratings, handling labor problems and disputes, research into matters of efficiency, and details of control all fall within the scope of the personnel organization.

Personality counts for more in this work than in almost any field one could name, because of the varied tasks and problems which arise. The personnel manager must have a great amount of tact, and be able to get along with all types of people. His duties call for personal dealings with men from the most routine worker to the president or general manager of the organization, with their different problems, educational and social backgrounds, and outlooks on life. To talk and act comprehensively a personnel man should understand the duties and problems of the various positions within the plant or store. His best work is accomplished in promoting friendly relations within the organization, and to effect this his attitude must be such that employees will go to him with their worries and complaints as a sort of "father confessor" knowing that he will be friendly and will not bring about executive or disciplinary action.

Finally, the personnel manager must be able to sell himself and his work. The field is just becoming established, and is still considered by some owners a rather expensive experimental luxury. It neither manufactures, distributes, nor sells goods, so does not contribute directly to economic success. Employers who do not understand the value of personnel work may tend to eliminate that department in hard times. Therefore, one must show results as soon as possible, in terms of selection of better workers, greater efficiency, greater satisfaction, and lower turnover, and thus demonstrate that his department is worth several times its cost in terms of the saving to the organization.

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occupational description will be of especial value in guiding the interview and subsequent rating of the employee, but it can also be of service in enabling the personnel department to set up test standards for various positions. Some of the more important features about an occupation are: duties and functions of the position; skill and tools necessary; education, experience, and training demanded; conditions of work; physical demands; personality requirements; promotional possibilities; pay; and any special items peculiar to the task in question.

Each position is different from others, in general or special education necessary, in hours of work, in conditions of work, in amount of responsibility involved, and in mental or physical strain accompanying performance of the duties. Many of the functions of some positions could not be performed by the majority of workers, even if they possessed equal skill along similar lines, so a complete analysis is necessary for the management and for the applicant as well.

It might be remarked at this point that the term "job analysis" is sometimes used synonymously with "occupational description." Strictly the two are not interchangeable. Job analysis refers more to detailed instructions such as a mechanic might receive before starting a rather extensive repair job on a particular automobile. The occupational description in this case would be an outline of the abilities and experience this mechanic would have to have before he is employed, and in no sense an analysis of any single detailed task he is to perform.

A very complete and thorough outline of the contents of the occupational description is presented below. This is quoted with only a few minor additions from *Personnel Management*, by Scott, Clothier, and Mathewson. This outline can be used for all occupations from just above crude manual labor to positions demanding high mental and manual attainments, so not all points would need to be included for every job:

Great care must be taken in obtaining the facts from which to build up the occupational description. Not only is complete accuracy essential, but the items included must be properly apportioned, so that each is given its proper emphasis. This means that the information should be collected by an expert, and done with com-

DESCRIPTION OF THE WORK

1. *Name of Occupation and Location.* Its symbol in the occupational code, or indexed list of occupations in the organization. Alternative names in use. Names of allied occupations from which a worker could be transferred with little additional training. Names of the divisions, departments, and units where it exists. These entries might be regarded as the *identifying* entries.
2. *Statement of Duties.* Here is given a brief description of the *functions* performed by the employee rather than the details of how he performs those functions. His responsibilities are described, such as those for the custody of funds, for supervision of other workers, for training subordinates, and so forth. A statement is made of the machines, tools, and materials used which involve some special ability or skill on the part of the worker; here, for instance, would be mentioned a drill press or a typewriter, but not a broom or time stamp. In cases of machine operation one might include the movements necessary, as to standardization, parts of body used, and speed. Also, whether the worker has to make adjustments and repairs to his machine. Additional duties, even if minor, should be mentioned for the sake of complete accuracy and honesty.
3. *Conditions of Work:*
 - a. Location Factory, office, inside, outside, overhead, underground, solitary, gang, and so forth.
 - b. Time Permanent, temporary, day, night, hours of labor, probability of overtime, peak loads, uniformity of work, and so forth.
 - c. Posture Standing, sitting, stooping, walking, climbing, reaching, lifting, and so forth.
 - d. Speed Quick, moderate, slow, varying.
 - e. Accuracy Coarse, fine, exacting.
 - f. Degree of
 automa-
 ticity Varied, routine, repetitive.
 - g. Health
 hazards Ventilation, illumination, nerve strain, eye strain, physical strain (heavy, medium, light), moisture, heat, dust, humidity.
 - h. Accident
 hazards Flames, acids, exposure to weather.

- i. Disagreeable features Dirt, noise, oil, and so forth.
- 4. *Pay*:
 - a. Method Monthly, weekly, bi-weekly, daily, hourly, piece rates.
 - b. Rate Range of pay from minimum to maximum.
 - c. Bonuses, premiums Attendance, Christmas, and so forth.
 - d. Penalties For absences, tardiness, infringement of rules.
- 5. *Relation to Other Occupations*. Names of those other occupations naturally leading to this one, and names of those higher positions utilizing experience gained in the occupation described; lines of promotion.
- 6. *Sources of Supply*.

DESCRIPTION OF THE WORKER¹

- 7. *Sex*.
- 8. *Race*.
- 9. *Nationality*.
- 10. *Age*: minimum, maximum.
- 11. *Physical qualities*: height, weight, strength, eyesight. Physical impairments permitted.
- 12. *Education*: common school, number of years required and desired. High school, number of years required and desired. College, number of years required; degree, business-school training; technical training.
- 13. *Experience*: former employers—years of service with each; kind of work done.
- 14. *Skill*: trade or kind of work.
- 15. *Language ability*:
 - a. English—read, write, speak.
 - b. Other languages.
- 16. *Personal qualities*:
 - a. Appearance and manner.
 - b. Leadership.
 - c. Coöperativeness.

¹ Many of these points are suitable for describing and rating the worker, but are used in the present connection to outline the points it is desired that an individual have for the position. The proper sex, race, age, experience, and emotional qualities will be listed, as well as certain traits whose presence would make the applicant undesirable.

- d. Initiative.
 - e. Ability in developing men.
 - f. Accuracy, and so forth.
 - g. Judgment.
17. *Mental qualities:*
- a. Test range best suited. Eliminate both those who are too low and those who are too high, for reasons discussed in Chapter II.
18. *Emotional qualities:*
- a. Optimistic.
 - b. Stable.
 - c. Serious-minded.
 - d. Happy.
 - e. Carefree.
 - f. Contented.
 - g. Earnest.
19. *Emotional disqualifications:*
- a. Nervous or irritable.
 - b. Timid or shy.
 - c. Quick-tempered.
 - d. Moody.
 - e. Indifferent.
 - f. Fixed ideas.

plete frankness and with coöperation on the part of the workers and labor supervisors. Having workers fill out a questionnaire or write up in essay form a description of their duties seems the most feasible approach, but we cannot be sure that results thus obtained will be perfectly accurate and balanced. It is natural to point out the difficulties of one's work. Certain aspects of it which are not entirely agreeable may seem to require much more time than they actually do, and are unduly emphasized. A rough estimate of the proportion of the working day spent on each phase of work might lend objectivity and convey the most accurate impression of the nature of the position.

It is suggested that the Personnel Manager or one of his force do the investigating, of course with consultation of the workers and their immediate supervisors. The personnel office will already have a general idea of the level of the occupation, and will understand the purposes of the study, so will be able to keep facts in

their proper relation and balance. This is especially necessary if the results of the classification include wage revision.

One must be sure to include in the description only the chief duties, and not emphasize minor tasks which might come up occasionally, unless these might have some influence on an individual's liking or disliking the position. For example, a teacher hired for a rural school is usually required to sweep out the room and take care of the stove. Resentment might arise unless all cards were laid on the table at the start. If a salesman's duties include cleaning up, remaining after hours to dress windows, and opening crates, these facts should be inserted in the occupational description. The writer can bear witness to the effect of unexpected extra duties. While working on a delivery truck, he and his companion were occasionally, and unexpectedly, asked to remove a pile of broken crates. Coming at a time when the day's work was apparently completed, this extra duty caused quite a bit of resentment, even though it took only an hour once a month or so. A slight overtime bonus of fifty cents would have been amply repaid to the firm in terms of satisfaction and feelings on the part of the worker for having been treated squarely.

Working conditions constitute a very important item of description. When conditions depart from the usual, they should be mentioned. One would include temperature conditions, odor and ventilation, noise, illumination, night work, etc. Hazards, such as cuts, danger of infection, dust, burns, and possible digestive upsets are another aspect of working conditions. The posture, if cramped, lying down, working in a small space; rapidity of work; and necessary motions should be set down if at all out of the ordinary. We might also include responsibilities: lives, safety, property, money, quality and quantity of work demanded. Listing the tools, equipment, and materials used gives an idea of the complexity of the task, whether it is done largely by hand or by machine, and would perhaps indicate to an experienced worker the status of that concern in comparison with others of the same general type. All these facts are outlined to give the applicant a complete and honest account of the conditions to be met with if he accepts a position. Some may not bother many individuals, as working in a hot or smelly room, but others would quickly break down. For example, many elevator

operators and painters develop stomach trouble, from the sudden acceleration and deceleration, and from the odors, respectively. Applicants should be warned rather than having to quit the job after working a while.

The degree of supervision is another important aspect of any position. It is of importance to many workers to know whether each task is laid out for them in some detail as to procedure, or whether carrying out the duties is left up to their own initiative. Supervision would include not only verbal instructions from the supervisor, but also printed directions, blue prints, and diagrams.

Having described the duties of the position in detail, we must next determine what sort of a worker is wanted to fill it. Many or all of the following points may be listed: age, sex, race, strength, health, education, special training, intelligence, personality traits, previous experience, and certain special features which may be necessary to any one particular position, such as acuity of vision or color discrimination. Whether any special training which might be demanded is furnished by the company or if the applicant is expected to have acquired it by himself will be specified. Included with these minimal requirements one might add a somewhat more stringent list of specifications of the traits which a man must possess if he expects to advance up the scale.

The pay for the position is generally determined from the survey, but will vary within certain limits in accordance with the quality of the individual. The previous experience of the person, his length of service with the firm, the extent to which judgment and initiative may be exercised, responsibility and any minor supervisory functions undertaken, and possibly the disagreeableness and danger attending performance of the functions of the position, will all be taken into consideration.

A third main group of facts about a position relates to the provisions the company makes for the comfort and safety of the employees. Two companies may call for the same types of work, and hire the same class of employees, but one organization may be a vastly more desirable one with which to be associated. The type of building, whether new or old, frame or steel; whether the floor is concrete or wooden; and whether elevators are available—may make considerable difference in employee satisfaction. Another

group of facts would include rest-room facilities, employees' lunch-room or cafeteria, hospital and general medical attention, and

Prepared by Harrison		Symbol 192																						
Date August 10, 1930																								
Occupation <u>AUTO MECHANIC</u>																								
Occurring in: -		SECTORS																						
<table border="1"> <tr> <th colspan="7">MINIMUM REQUIREMENTS</th> </tr> <tr> <th>M.</th> <th>En.</th> <th>Ed.</th> <th>Ar.</th> <th>Sci.</th> <th>Phys.</th> <th>Work.</th> </tr> <tr> <td>D</td> <td>C</td> <td>E</td> <td>D</td> <td>F</td> <td>B</td> <td>E</td> </tr> </table>		MINIMUM REQUIREMENTS							M.	En.	Ed.	Ar.	Sci.	Phys.	Work.	D	C	E	D	F	B	E	Maintenance	Garage
MINIMUM REQUIREMENTS																								
M.	En.	Ed.	Ar.	Sci.	Phys.	Work.																		
D	C	E	D	F	B	E																		
		UNITS																						
		Repair																						
Details	<p>The automobiles and trucks used by this company are kept in condition in the Garage Branch of the Maintenance Section.</p> <p>Under direction, the auto mechanic overhauls, repairs and operates such standard machines as the "Dodge" and "Cadillac" touring cars and "Pack", "Standard B" and "G.M.C." motor trucks. He tests, overhauls and repairs motors, generators and ignition units. He does acetylene welding and uses such tools as lathe, reamer and valve reader.</p>																							
Hours	<p>7.45 a.m. to 11.50 a.m. } 11.20 a.m. to 12.15 p.m. Lunch } Monday to Friday 12.15 p.m. to 4.30 p.m. } 7.45 a.m. to 11.45 a.m. Saturday</p>																							
Minimum Qualification	<p>The Auto Mechanic must have graduated from common school and in addition, he must have had three years practical experience in a garage or automotive machine shop as repairman. In lieu of one year of practical experience, six months special training in auto-repairing or one year as machinist apprentice will be accepted. Man, 18 to 50 years of age.</p>																							
Additional Qualification Desired.	<p>The Auto Mechanic should be physically strong, capable of occasional heavy lifting. He should have good eyesight in order to do close work and make fine adjustments, although glasses are permitted. Keen hearing is also desired in order to enable him to test motors by sound.</p> <p>Accuracy is important in this work as errors may cause delay and impair work.</p>																							
Working Conditions	<p>Garage with concrete floor. The worker is on his feet about half the time. Much of his time he is in a crouching or prone position incident to repairs underneath the cars. The Auto Mechanic is outdoors part of the time, especially when testing machines on the road.</p>																							
Principal Lines of Promotion	<p>From: Trunk Driver 190, Chauffeur 189, Mechanic's Helper 068.</p> <p>To: Garage Superintendent 193, Engine Mechanic 192.</p>																							
<p>Approved by <u>J. C. Davison</u> Ch. of Sec. <u>Pat McFarse</u> Ch. of Br. <u>J. H. Mason</u> Dir. of Pers.</p>																								

FIGURE 4. FACE OF TYPICAL OCCUPATIONAL DESCRIPTION SHEET (From *Personnel Management*, by Scott, Clothier, and Mathewson, courtesy of the McGraw-Hill Book Co.).

recreational facilities. Other conditions surrounding work are such as hours of work, overtime, seasonal fluctuations, vacations, and

lay-offs. Finally the employee, particularly if a skilled worker, would like to know whether he has to furnish his own work clothes, tools, and equipment.

An example of a typical Occupational Description Sheet is given in Figure 4. This may be noticed to include only a small fraction of the points suggested in the outline, but it contains all that are necessary for the position under consideration.

It is recommended that most or all of these points be described in essay form, rather than by means of the multiple choice devices frequently used. It is practically impossible to build up a blank so that all possible answers can be filled in. Complete sentences can describe much more adequately the duties and responsibilities of an occupation.

The personnel department must remember that once an analysis has taken place, one cannot forget the position and expect matters to continue in the same manner indefinitely. Changes in styles and demands, seasons of the year, and improvements in machinery or methods all will affect the nature of many positions within an organization. Specifications, requirements, functions, duties and pay will consequently be subject to constant check-up and revision.

It has been further suggested by Owen that the employer prepare a printed statement concerning the general nature, history, financial status, and working conditions within the plant. He outlines the important topics as follows:

1. Nature of the business.
2. Financial condition of the firm.
3. Working conditions.
4. Wage policies.
5. A brief review of:
 - a. Firm's history.
 - b. Growth of earnings.
 - c. Number of employees.
 - d. Labor turnover and stability of employment.
6. Benefit schemes.
7. Attitude toward organized labor.

The worker is casting in his lot with the company, and is naturally interested in its sound financial status and its treatment of labor. He is entitled to this information, just as the employer

is entitled to know the past record and personality characteristics of the worker. Owen lays particular stress on these items: strikes and other labor disputes; rapidity of turnover; and regularity of work, seasonal fluctuations, lay-offs, etc. He thinks that companies would be forced to adopt equitable policies of labor treatment if publicity were given their methods, and that in this manner a higher quality of applicants would seek positions. But we wonder actually how many workers or applicants would read technical information of this sort, particularly the financial reports.

II. LETTERS OF RECOMMENDATION

For many positions letters of recommendation are requested. These may be either specific, from former employers or teachers; or general, from personal acquaintances of supposedly prominent position and established reputation. The former are probably the more trustworthy, since they speak of past performance in actual working conditions, usually very similar to those found in the position now under consideration.

Many personnel men and industrial managers feel that letters of recommendation are practically valueless, since they usually deal with generalities and since praise is so lavishly and indiscriminately bestowed on each individual that it means little. Are these criticisms true? If true, is there anything we can do to make these letters more valid?

(1) The first point of weakness in letters of recommendation is the fact that a person will only ask for letters from persons whom he believes to have a good opinion of him. He will ask good friends of the family, such as the minister (who is always optimistic concerning human nature), his high school principal, the family physician, and a banker or a storekeeper. Among former employers he will only ask those with whom he had a good record. If he did not do well with one or was discharged, he will naturally omit the name of this employer from the list he furnishes. To insure complete accuracy, the applicant should be required to place on his application blank the dates of entering and leaving service of all former employers.

(2) Another source of unreliability of letters is that the writer

naturally tends to include only items which are favorable to the individual and to omit his weak points. As pointed out above, anyone who is asked to write is more or less interested in the individual's getting the position, and will give him the best "send-off" possible. This results in a vicious circle. Since exaggeration is so prevalent, each person writing realizes that he must over-state to some extent or his protégé will lose out to some one of less or only equal ability, whose credentials have greatly over-rated his accomplishments and potentialities. About the only thing to prevent this situation, with matters as they are, is pride on the part of the individual writer. If he greatly overstates his opinions of the individual, and the latter fails to live up to his recommendations, the employer will hesitate before accepting at face value a high recommendation from the same man about subsequent applicants. When a really fine candidate does come along, superlatives have already been exhausted, and he cannot be described in terms any more glowing than have previously been applied to a mediocre individual.

(3) If any definite figures can be quoted in the letter, rating will be so much the more objectified. Objective scores will include such matters as intelligence-test scores, ascertained in school or by a previous employer; school marks; amount of goods produced or sold, by machine operators or salesmen, in comparison with others working on the same tasks; gains in efficiency; and periodical ratings during previous employment.

(4) Some companies do not consider seriously miscellaneous recommendations, but prefer to have the applicant mention several men who can give general or specific estimates. Then they write to these persons and ask them a definite set of questions. The content of these questions may be derived from the following sources. (a) The Occupational Description, which outlines the qualities and experience necessary to succeed on the job. (b) The characteristics of previous employees who have been, as judged by their past records, successful. (c) Analysis of traits or absence of traits which have caused partial or complete failure in certain instances. One cannot foresee all possible contingencies, and it is only through experience with workers of all types that one can establish permanent standards.

A few such critical questions have been taken from letters of

inquiry sent by the writer to former teachers of students who are applying for positions involving part-time teaching and part-time study. As such, in contrast with most business or industrial positions, the stipend is in part recompense for the actual work done and in part a way to aid a promising student in academic advancement. So not only must his work be good, but he must be able to carry on independent study largely on his own initiative.

1. Will the applicant's interest in psychology be permanent? We do not wish to invest in some one for a year or two and then have him decide to quit or change his course.
2. Has he imagination? Can he plan his own work out, or does he need to be told at every step just what to do next?
3. Has he intellectual curiosity? Will he read the professional journals and important books without definite assignment?
4. Is his interest in his work strong enough so that he will inhibit himself with regard to social matters to an evening or two a week?
5. Can he handle people tactfully, so that he can take full charge of class or laboratory?
6. Would you class him as a gentleman? Is his conduct courteous and graceful? The "diamond in the rough" type may be potentially valuable, but may stir up trouble in the meantime.
7. Are his race, physical appearance, and other external features suitable both for assistantship and for placement later?
8. Has he any individual peculiarities, other than those suggested above, which might interfere with his success?

We wish to receive a perfectly honest statement about the individual. We realize that no one is perfect, and assure you that pointing out one or two shortcomings will not necessarily disqualify the applicant. In fact, if some degree of deficiency is admitted, we are usually far more ready to believe what praise you give in other directions. Ratings of excellent in all respects are rarely justified.

Some questions which have been asked concerning an applicant for social work are:

How far is this person independent and self-reliant?

To what extent a social being, who works well with others and is liked by them?

How much really interested in people?

Is she the sort of person to whom an individual in trouble might be glad to turn?

To what extent tolerant and understanding?

To what extent is she a religious person? How would this affect adjustment to people of varying religious beliefs and conduct standards?

Do you consider that a wise choice of career has been made?

Room for additional comments should be left, as all possible considerations relating to suitability cannot be anticipated. But a thorough investigation of the duties of the position, and some experience as to what traits make for success or failure in this position, should enable the personnel department to make up a very thorough list of questions to be asked concerning the candidate.

III. APPLICATION BLANK

When a person wishes to obtain a position the employer tries to find out in some detail his qualifications, personal characteristics, training, and previous experience. Some of these may be derived from letters of recommendation, some from the application blank, some from the personal interview, and others from direct objective testing of various sorts.

The application blank is designed to record some of the more important bits of history and personal data concerning the individual, to show the position for which he is applying, and to furnish a nucleus for the permanent record kept of all employees. It indicates some of the capacities, general and specific, and the general ambitions of the applicant. There are some who feel that the application blank is of little value and should be kept as short as possible, but even they must admit that many important facts about the individual, the outlines of his past, the fact that he is literate, and to some extent the clarity of his thought and expression, can be discovered.

There is some variation in opinion as to the stage in the employment routine when the application blank should be filled out. In case the applicant is living out of the city, it may be mailed to him, filled out, and returned. Some companies have all applicants fill out

the blank as soon as they appear. Others prefer to have the candidate first to go through the preliminary interview (described in the next chapter), to make sure that he appears at least reasonably suited before making him go to the time and trouble of filling out a rather extensive questionnaire.

The blank may take care of three functions: an outline of facts about the applicant which he furnishes himself; rating by the interviewer on a number of other characteristics; and subsequent ratings and objective records of his employment history with the company.

Some of the more important facts called for on the application blank are outlined below, together with parenthetically introduced comments in a few cases concerning their interpretation and reasons for inclusion.

TYPICAL APPLICATION BLANK

1. Name: _____ Date: _____
 Last First Middle Initial
2. Address: _____ Telephone Number: _____
 (To keep out irresponsibles, floaters, and to check potential theft.)
3. Personal Data. Age: _____ Race: _____ Birthplace: _____
 Height: _____ Weight: _____ Health: _____
 Name any physical defects: _____
 (To avoid later trouble; often employee can be placed in position suited to any physical limitation he may have.)
4. Marital Status: Single, Married, Divorced, Widower, Widow.
 Number of dependents: _____
5. Education: Grade school _____ years;
 High school _____ years;
 College _____ years.
 Name subjects in which you specialized or in which you have taken special training.
6. Have you ever been employed by this company? Yes. No.
 If so, in what position?
 Date of entering service:
 Date of leaving service:
7. Have you relatives or close friends employed by this company?
 Give their names:
 (Many companies have found that new employees coming in this personal way prove very satisfactory, tending to remain on the job longer and to be more satisfied.)

If not, have you any special reason for seeking employment with this company?

(If the worker has come a distance to seek employment, or has heard the company well spoken of, it is a good sign.)

8. Are you employed at present?

If so, why do you wish to change positions?

(Reasons for changing positions are of greatest importance. If a person appears to be a drifter, changing jobs on whims, or because of disputes with authorities, or because of apparent but ill-considered betterment of status, one should beware. He may leave your company with as little genuine provocation.)

9. List previous positions held, in order:

a. Last position held:

Employer:

Work done:

Length of employment:

Wages:

Why left:

b. Position before last:

Same information requested.

10. Names of responsible persons, known to the company or prominent in their community, who can furnish character references.

Name, position, address, length of time of acquaintance.

11. Space may be left on the face or on the reverse side of the blank for the interviewer to enter ratings of the candidate as he is talking with him: personal appearance, alertness, ability to express himself clearly, etc.

12. The reverse of the blank may be designed to record the subsequent history of the worker as long as he remains within the employ of the company, incorporating such features as: successive positions held, wages, general ratings given from time to time, special commendations or irregularities.

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obtain the same information. The interview will probably always remain a central feature of hiring procedure, even if it becomes little more than a means of acquainting the applicant with the nature of the position and forming a judgment on the quality of the applicant as determined by his test results and records of his past experience. Actually, however, it seems very unlikely that there will be devised methods of ascertaining certain traits other than through the interview. Personal appearance, for example, may be such that a person of excellent qualifications otherwise might not succeed. Lack of ability to express oneself clearly, or extreme shyness or lack of color, will appear in an interview.

A very important advantage of the interview is that it is flexible enough to prevent the applicant's getting by with deception as to his qualifications and past experience. Occasionally a person obtains a job by falsifying, but in nine cases out of ten this deceit will only result in failure later, since the individual lacks the necessary qualifications to succeed. In the interview, questions may be asked in fairly rapid succession and may be worded in such a way that the applicant who has not really had the experience will not be able to give satisfactory answers, and possible inefficiency can be eliminated before actual damage or gross incompetence results.

II. PRELIMINARY INTERVIEW

In many large companies which employ large numbers of people it has been found advantageous to install a rapid means of weeding out those applicants who are obviously unsuited or for whom there is no position vacant at the time. Particularly in times of widespread unemployment a large number of persons will apply for positions without definite ambitions or qualifications, beyond the vague desire to "get a job." The large majority of these must be eliminated with as little waste of time as possible. Therefore the brief preliminary interview takes place before the candidate is asked to fill out an extensive application blank and is allowed to go through the more thorough personal interview.

As a concrete example of this preliminary interview we shall describe the procedure used by R. H. Macy & Co. of New York City. This has long been noted for being a department store of

sound and forward-looking personnel policies. The store employs an average of ten to twelve thousand workers, slightly over a third of whom are sales clerks. It enjoys a reputation of being a good place to work in, so that it attracts many applicants. Since most of the positions are largely routine in nature, and since it is in a city, there is a rather rapid turnover, which means constant replacement of forces. This in turn means that an efficient personnel department is essential, both to handle the large numbers and to attempt to diminish turnover by proper initial selection and placement.

In Macy's during the last few years as many as two hundred thousand applicants have been granted this preliminary, or "rail" interview. It is unnecessary to point out that this is a large number, demanding speedy methods. On the other hand, the interviewer cannot be too gruff or hasty, as this large number of individuals really amounts to a sizable percentage of potential customers. If treated well these applicants will feel that the store is doing all it can for them, even if they are refused a position; but if harshly treated they may withdraw their patronage from the store as well. With a manufacturing concern this feature might not be quite so important, but cannot be entirely neglected.

Special entrances from the street to the personnel offices relieve the store from congestion and confusion. Separate rooms are provided for men and women applicants, and lines form to file past the booths. Each applicant writes on a small slip of paper his name and the position for which he is applying, and hands this to the interviewer when his turn comes. This slip is not to be confused with the formal application blank, which is filled out only if the applicant appears superficially suitable and is allowed to go on for more extended investigation. No attempt is made to keep these slips if the applicant is not given a position.

The interviewer has a list of vacancies within the organization, and has a general idea of the qualifications of these positions. A few seconds to no more than a minute or so is spent with each applicant. The applicant is made to answer a few routine questions, during which time the interviewer can size up his experience and possible capacity, as well as noticing in general his appearance, behavior, and manner of expressing himself. The great majority are weeded out

on these two grounds: no position, and obvious lack of capacity to fill what positions are vacant.

Occasionally some one who applies for a position for which there are no vacancies appears unusually promising; he is questioned further with the idea of uncovering capacities in other directions. For example, a man may apply for a position selling men's suits, and may appear wide awake, alert, and a prospectively better than average salesman, possibly with apparent promotional potentialities, so that he may be decidedly worth retaining within the organization. He may be given a place selling shirts, neckties, sox, or other men's wear, until such time as an opening in the proper place occurs. This avoids losing what appears to be a very good man. On the other hand, a generally good man who is deficient in one or two respects for the position for which he applies may be asked if he is willing to accept a place one rank lower or of slightly different nature. A use of this nature would be a man who applies for a selling or executive position and who has a rather poor personal appearance or who speaks with a marked foreign accent. These items do not indicate any lack of ability, but might militate against success when he has to meet people, particularly for the first time. Applicants for factory positions would of course not need to be scrutinized for this type of deficiency.

If the applicant seems on this brief inspection to be suitable to fill a vacancy, he is asked to step inside the office to fill out the formal application blank and to receive a personal interview. Otherwise he is told very courteously that there is nothing available at present for which his particular abilities fit him, and possibly it is suggested that he return in a few months when there might be an opening.

Allowing him to make out the application blank and have an interview does not guarantee that he will be accepted into employment. The preliminary interview serves to weed out those for whom there is no possibility of being accepted and saves the time consumed in the more rigid inspection of those who seem reasonably suitable. Perhaps only one in ten gets by the preliminary interview, although the ratio would depend on the position sought and general industrial conditions. And perhaps only a third of this

selected group are ultimately accepted. But this procedure is the fairest method for both the employer and the applicant.

III. THE PERSONAL INTERVIEW

(1) *Purpose.* Usually after the applicant has been sized up in the preliminary interview as at least tentatively suitable for the desired position, he is asked to fill out the application blank and await his turn for the personal interview. During this personal interview a large part of the applicant's suitability for the job is determined. We may state briefly the essential purpose of the interview as a careful attempt to size up the capacities of the individual in terms of the occupational analysis, to see if he has the characteristics demanded by the nature of the position.

Another purpose, unfortunately not always observed, is to acquaint the applicant with the ideals of the company and in particular with the nature of the position for which he is applying. It is only fair to tell him as much as possible, not painting too glowing a picture, and not attempting to hide any unpleasant features. Most of the time these latter will be minor and will not serve as a deterrent, but just as when the dentist says "it will hurt a little," unpleasant duties will seem less troublesome if encountered when one is prepared and forewarned. The practice of a two-way interchange is not always followed, since there is usually more or less unemployment, and a man fears he may jeopardize his chances of obtaining the position if he inquires too carefully into the workings of the company. He fears the interviewer will feel that he (the applicant) is choosy about what sort of a position he might accept. Yet nine companies out of ten act the same way toward applicants and even toward employees. The interview should allow a check-up both ways, as the worker will earn his salary and will return a profit to the company. It is not an act of charity to give a man a job.

One other remark about the nature of the interview. The purpose of it is to allow a highly trained and skillful man to ascertain certain facts which cannot be obtained through objective records of past history or test procedures, but which are of the utmost importance in determining occupational suitability. Hence the interviewer should confine himself to discovering those facts which are not

amenable to some form of objective treatment. These latter may be handled by a clerk whose time is less valuable than that of an expert interviewer, or may be supplied in writing by the applicant himself. The interviewer will want to compare these with such personality characteristics as he notices, and to supplement with others, in order to build up the complete picture of the candidate from which to make the final decision.

(2) *Setting for the Interview.* Now that we are ready to undertake the interviewing, there are a few questions which must be decided. In the first place, who is to do the interviewing? Previous practice was to have the minor executive in charge of each department to do his own hiring. For a number of reasons this did not always work entirely satisfactorily. It presupposed that a man who had been placed in his work for his supervisory capacity and technical knowledge possessed other abilities. Centralization was lacking. Proper perspective of the whole organization could not be gained by each man. So at the present time it is the general custom in most companies to have one centralized bureau—usually called the Personnel Department—take over the whole function of employment. The department never sees the man until he appears ready for work. Some organizations have the applicant's immediate supervisor interview him after he has passed the preliminary interview and has undergone testing and a medical examination. Such a procedure might assure better coöperation on the part of the department, if it felt it had had a voice in selecting its own workers.

Specialization among interviewers is practiced by R. H. Macy & Co. Ten persons take care of this aspect of employment, five being delegated to assist in the selection of selling forces, and the other five conferring with applicants for non-selling positions. Some of the interviewers are men and some women, but an applicant does not necessarily talk with one of his own sex. Each of these ten has particular departments for which he hires new employees. In this way each interviewer will need to know in detail only one-tenth of the positions in the store, and also since he comes in contact with ten times as many applicants for any one position as he would if he interviewed at large, he can rank a candidate much more objectively in relation to all who apply. This specialization might have to be modified at times in accordance with varying proportions of vacan-

cies occurring in different departments due to seasonal fluctuations, labor conditions, etc.

In contrast to the preliminary interview, which at best is held in semi-privacy only, this more extensive interview is held in strict privacy. The interviewer has a room to himself, and just one applicant at a time is admitted. It has been suggested that the room have a glass door, so that those waiting, although not able to hear, may see what is going on; this should cut down their nervousness. However, most concerns prefer to have wooden or frosted-glass doors to insure visual as well as auditory privacy.

If interviews are held by appointment, the interviewer may be partially prepared by having before him data pertaining to the applicant: letters of recommendation; his letter of application if he originally applied from out of town; his application blank; his previous record if he has been employed by the company at some former time; and possibly any test results which may have been obtained, although these are usually given after the applicant has passed through the interview and seems thus far acceptable.

The duration of the interview cannot be estimated; rather it might be said that it should last until the desired information has been obtained. The usual range would fall between five and ten minutes, with less being consumed when a crude manual-labor position is concerned and more extensive questioning taking place when the applicant desires some position of supervisory nature or one involving responsibility.

(3) *Preparation for Interviewing.* To be of the greatest value the interview should not be a haphazard procedure. It should be carefully prepared. The first and most important item is that the interviewer understand the nature of the position and its requirements in detail. Preparation for this should consist in training and experience, not merely from consultation of occupational specifications just before the applicant enters the room. For this reason it might be an excellent practice for a person who desired to become an interviewer to work for a certain length of time in each of the various departments for which he may later assist in employing workers. Thus he will know just what qualifications are essential and what are unessential for the position in a way far more thorough than study of the occupational analysis card can give him. He will also be

better able to answer questions which the applicant raises. All these may not be entirely unexpected, but some might be embarrassing to an incompletely prepared interviewer because of their directness and search for pertinent details.

Next, the interviewer should know exactly for what he is looking. With a good working knowledge of the position and the occupational description, and possibly with some additional detailed requirements sent in by the superintendent of the department concerning the particular vacancy to guide him, he should be able to conduct the interview in a well-organized and straightforward fashion. The essentials should always be kept in mind, but one should also remember that each position differs from all others. Some personality characteristics may be of importance to any position, but others are of vast importance to some and of little consequence in others. For example, we should desire any employee to be honest and reliable. Facial regularity, however, might make a lot of difference in a salesman, but would make no difference in the success of a machinist. The latter needs a knowledge of mechanics, with which field of information the former may dispense without loss.

This means that the interview should have a generally outlined procedure, and should be that far standardized. But it should not be too rigid; there should be allowed opportunity for expression of individuality and initiative, and for the discussion of certain unexpected points which arise and which seem of importance. Flexibility should be allowed, too, to take care of doubtful points. Perhaps the interviewer will soon become satisfied as to the suitability of the candidate in a number of phases, but will be in doubt as to a few others, so he should be able to devote particular attention to the latter aspects of the individual's make-up.

(4) *Greeting the Interviewee.* The interview is frequently considered to be more or less of an ordeal, much the same sort of thing as a written examination. The applicant feels that he is being looked over in a very critical manner, that the interview is entirely a one-way proposition, and that he must be careful to be at his best all the time. From both theoretical and practical standpoints this is an incorrect approach. Not only should the interviewer ascertain astutely whether the applicant is suited to the position, but he should also make him a friend of the company, in case he is accepted into

employ. A kindly attitude not only serves the function of causing the worker to do better work after he has been employed, but it makes the interview more of a success. If a man is made to feel inferior and ill at ease, he will not be at his best and may make a number of awkward blunders which do not really indicate his true merit in any sense. One should place the interviewee at ease by being conversationally informal and by placing himself in the place of the applicant as far as possible. One may start the interview with a few pleasantries. It is recognized that the time of a highly efficient interviewer is precious, but a good deal of informal conversation can occur in half a minute, and if this sets the applicant at ease the remaining four and a half minutes (for example) will be worth far more than the whole five minutes of a poorly conducted interview. One can set up confidence in the applicant by asking him a few routine questions at the outset, such as his name, previous experience, and other points which can be easily answered and can lead up to less definite points.

(5) *Conduct of the Interview.* Asking the applicant questions about the previous position held is perhaps the most appropriate point of departure. The worker himself naturally knows more about his work than any other person, and is immediately placed in the position of informing the interviewer. His ego is flattered to some extent, and he has free rein to tell what he wishes. After all, the function of the interviewer, like that of the psychoanalyst, should be to listen as much as possible, and to learn thereby. The interviewee is not there for purposes of being instructed, but to be studied, and the interviewer should only participate in the conversation to the extent of guiding the applicant along desired lines and allowing him to talk as much as possible as long as he keeps within these limits. If one listens carefully and notes not only the words used, but the emotional background, he can find out many things about the worker's comprehension of the position he has held and that for which he is applying, his general social attitude, some important personality characteristics, his eagerness and enthusiasm, how he got along on his last job, and why he left. Even if a man is efficient, from a purely productive standpoint, he will not be of much service if he is inclined to stir up trouble or to quit easily.

To mention a concrete example, the writer has seen an efficient

and skillful interviewer encourage self-expression in an applicant in the following manner. Looking at the application blank, he asked: "I see you worked for Blatz and Company last—what sort of a store is it? Is it a high-class store, with a wealthy clientèle, or is it a middle-class place, or does it deal in cut-rate merchandise? Tell me about it. . . . What did you sell? . . . Did you sell all of the goods handled in the store or did you specialize in one type, or in one price range? . . . How did you get paid—salary, commission, or both? . . . What were your average weekly earnings? . . . Did you use high-pressure methods, or were your instructions to let the quality of the merchandise impress itself on the customer?" This sort of questioning, brought out gradually and skillfully, with more or less detailed answers by the applicant between successive questions, enables the interviewer to size up the nature of the past experience of the applicant, his adjustment to that type of work, and permits the candidate's potentialities for the position under consideration to be estimated.

One should remember that in an interview there is an interchange of ideas going on between two individuals, and should attempt to keep things on as objective a plane as possible. Prejudices may exist on the side of the interviewer as well as on that of the applicant, and the former should try to separate fact from emotional statements.

One should allow the applicant to express himself in his own words, and should not state questions in such a way that a certain answer, or a choice between answers, is more or less compelled. Also each statement should be understood thoroughly and clearly before going on to the next, since the interview only occurs once, and many data can never be obtained later.

The interview should be kept on essential facts, and not permitted to ramble along miscellaneous lines, which waste time and do not get anywhere. Also one must not interpret as general any trait or characteristic which may be observed. If a man happens to hold a certain attitude about one situation, this does not necessitate his being equally radical, or conservative, or emotional about others. Any such fact should be inspected from a number of angles before one goes on to the next point.

It is well also to check one's judgment by carefully thinking

over the rational grounds for the formation of opinions, to see if one has formed these opinions because of the particular merits or deficiencies of the applicant, or whether it is through some personal prejudice of the interviewer. The writer had an experience along this line, which sounds almost psychoanalytic in nature. I met a man named Snyder, and for some peculiar reason felt constantly suspicious of him. All his other friends liked him very much, and I could find no definite reason for disliking him, until one day it occurred to me that a number of years previously I had read a story in which a person named Snyder was a thoroughgoing villain. Having thought of this explanation, all my ill feeling departed and the real Mr. Snyder became a very good friend of mine. The same type of emotional attitude may occur in the positive direction; that is, one may immediately like an individual because of some physical or behavioral resemblance to a good friend or some well-known man of recognized merit. Religion, race, shape of nose, color of hair, cut or pattern of clothes, certain colored neckties, and names have all been known to have influenced judgments of interviewers, entirely apart from the genuine merits or failings of the interviewee.

One should always be on the alert during an interview to notice any bits of evidence which are not definitely on one's list to check up. These might be such as unpleasant personality traits which might antagonize persons whom he might meet, evidence of future development toward a position of higher rank, special training or aptitudes along lines other than those indicated, or physical characteristics which might unfit the candidate for doing successful work in the position for which he applied.

IV. RATING

All during the interview the interviewer is sizing up the candidate, with his opinion becoming more and more clarified as the conversation proceeds. The final decision is made from data secured on the application blank, disclosed during the interview, possibly from letters sent in by previous employers, tests of ability or knowledge which may be given subsequent to the interview, and a medical examination.

This final decision may be made at the termination of the inter-

view, if it is felt that all necessary information has been acquired. Some companies, including the Western Electric, have the applicant return to the interviewer after he has been given tests and a medical examination, and in some cases has interviewed the head of his prospective department. Naturally these latter aids to selection will be administered only if the applicant appears during the personal interview to be generally suitable. On return to the interviewer the records on tests and medical examinations are inspected, compared with previously obtained data, and the final decision may be made.

The individual may be rated on different traits during the interview, at the conclusion, or after he has left the room. If it is done during the conversation it is preferable to use a rating scheme which is as simple as possible, both to save time and thus enable the interviewer to concentrate on the interviewee as much as possible, and to keep the applicant at his ease without knowing he is being quantitatively rated then and there. It is perfectly feasible with a multiple choice rating scheme to rate a man without his knowledge, and at the same time prevent the interviewer from forgetting any material.

To bring out some of the more important considerations in sizing up an applicant for a position the following suggestive outline is presented. Some of the information may come from the application blank, but it is sized up together with data of a more personal nature, and the whole is fitted together to form a total picture of the suitability of the individual for the position.

I. OBJECTIVE QUALIFICATIONS. These are ones which can be estimated and recorded objectively, in terms of numbers, rank status, classes, or comparisons.

(1) *Intelligence* may have been previously secured, or can be measured during the employment process. Otherwise a broad general estimate may be made in terms of past educational and vocational success, although a number of discrepancies may creep in if only these performances are considered, and the opinion must be quantitatively and accurately verified later. General alertness and common sense may be noted.

(2) *Education*, both the extent and the attitude of the person toward it. This latter may be a personality trait; if he is rather short of formal education and tries to cover up this lack by jests or disparaging remarks, he would appear less promising than a man of

the same extent of training who regretted not having had more and who was doing his best to make up the deficiency. Marks in school give some indication of intelligence and application, although if the individual was not sufficiently interested or motivated his performance will be below his genuine ability. Just how much weight to give educational records will depend on the position and age of the applicant. If a man around forty is applying for a crude labor job, formal schooling will count for little or nothing. But a recent college graduate has little else tangible for rating except his academic record.

(3) *Technical Training*. This is another aspect of education, that followed along industrial or technical lines, with definite intentions of practical use. The question here would merely be whether the individual has had enough training, or whether he can acquire the knowledge in a short time.

(4) *Experience*. This is judged from positions held in the past, which should be described in detail, so that one may see if they have been of the same degree of complexity and of similar nature. Whether the position consisted only in doing, or also involved supervising or planning, are facts to be taken into consideration.

(5) *Success in Previous Work*, as well as the fact of having done it, is especially important. The number of positions held during the last few years, or conversely stated the duration of each position, indicates much concerning the stability and efficiency of the person. The reasons for leaving previous places, if the true cause can be discovered, may foretell future possibilities with a certain degree of accuracy.

(6) *Promotional Possibilities*, as well as the suitability for the present position. Some persons are capable of taking care of their present work, but would never advance, no matter how many years they worked. This is a rather hard problem to face, since the worker would become discouraged if more recently engaged employees passed him.

(7) *Physical Condition*. Suitability in terms of health, age, sex, and strength should be estimated. While the individual would suffer much more than the company if he broke down from over-fatigue or met with an accident because of some physical deficiency, even the most selfish employer knows that he would lose through the

turnover and its consequent waste, and will probably have to pay accident or sickness compensation. Some persons may be beyond the optimal age to break into new work, or may be too young to have acquired the mature stability necessary for some positions.

(8) *Home Conditions and Marital Status.* A person who has dependents to support will usually be more dependable, less irregular in attendance, and more hesitant to give up the job hastily, particularly if such change might mean removal to another city. In many kinds of work an unmarried girl may not take her duties seriously, as she is often living at home, not paying for room and board, using her earnings for luxuries, and inclined to be less stable. With general probability of marriage she is less interested in advancement. Married women similarly may work for luxuries and a generally higher plane of living rather than for necessities. And they may not give their best work to the job, since they have responsibilities elsewhere. We have all seen women who continued working after marriage and who did poor jobs both at work and in caring for the home. It is too much to expect of one person, and other things being equal an organization is taking a poor risk in hiring such a person. Severe poverty or illness in the home may distract the worker from his or her task, thus lowering efficiency and service rendered.

II. PERSONALITY QUALIFICATIONS. There are a number of more intangible elements, especially those relating to personal characteristics, which should be observed during the interview. One does not need to delve into these separately, but can observe them while questioning the applicant about the objective points just discussed. For example, while a man is describing his last position he may pick up a pencil and start drumming on the desk with it; he may get tangled up in his exposition and end up in more or less of a muddle; and he may wax bitter in regard to the treatment he received on the last job. Here are three personality traits which are evidenced while other points are under more direct consideration.

The interviewer must guard against forming personal prejudices and deducing beyond the facts which are actually brought forth, just as he must avoid the various systems of so-called "character analysis" such as phrenology and inferring traits from facial shape, complexion, or color of hair. He must remember at all times that

an interview is a conversation, and that its course is influenced by the personalities of the two persons interacting with each other.

(1) *Characteristics Which Make for Success and Failure in Each Position* should always be kept in mind. The interviewer should remember what traits are important for the position under consideration and watch behavior to estimate qualifications which might indicate potential success or failure in both expected and unexpected directions.

(2) *Mental Alertness* can be judged to some degree by the manner in which the interviewee answers questions, tells about his past experience and qualifications, and has sized up situations calling for some breadth of vision.

(3) *The Ability to Express Himself* is largely related to intelligence, but involves some personality characteristics, such as aggressiveness, poise, and clarity of thought as well.

(4) *Outlook*. One can notice, from the manner in which the individual talks, his general outlook on life: cheerful, gloomy, moody, cynical, critical, etc.

(5) *Social Traits* are important in many positions, although for some positions little more is necessary than ability to get along with a few co-workers. But for some, such as salesman or executive, social contacts constitute the fundamental aspect of the duties. One should notice whether the person makes a good initial impression, is graceful in social situations, is self-possessed or inclined to be shy, is conceited, and various other traits of related nature.

(6) *Energy*. Whether the individual is energetic or apathetic; whether he can concentrate for any length of time on a single task or is easily distracted and tends to be flighty; whether he is tenacious and keeps at a thing until he has finished it or is inclined to give up easily.

(7) *Introversiion-Extroversiion* characteristics are important for various occupations, both in terms of the quality of work that might be done, and for the sake of the individual's interest in his work, which in turn may reflect itself in his performance and in particular in the length of time he will stick at it. The introvert is unfitted for a few positions, particularly those demanding meeting many people, especially when many of them are seen for the first

time and once only. This factor was the subject of more extended discussion in Chapter III.

(8) *Egocentrism; Selfishness.*

(9) *Neurotic Tendencies* are occasionally evident, although it is probably true that these develop with service, rather than being apparent during the initial interview. Some individuals complain about treatment they have received in the past, about their health, about working or social conditions. All in all, their attitude shows that they are not properly adjusted to living in the world as it is and with other individuals. They are inclined to worry, to day-dream excessively, and usually to have more than the average number of absences and other irregularities. Their attitude, if extreme, may be such that they make rather poor personnel risks, even though their potential ability may be good. Their work may be poorer than it should be; they may disturb other employees, directly or indirectly; and they will quite likely become discontented and not remain long on any one job.

All of these points, in regard to both the objective and the personality characteristics, will not need to be observed in all cases. For some positions many of them can be ignored, as involving unessential traits; and for other positions certain aspects of ability or of personality not included above may be of extreme importance. Ability to observe these traits while the interview is in progress, or to bring them out by means of subtly worded questions, is what characterizes an expert interviewer.

Some specific comments given by experienced interviewers in sizing up the suitability for salesmanship positions are reproduced below.

"Lack of aggressiveness. This person will tend to let things take care of themselves, instead of going out to meet the situation and sell as much as possible. In a large store the clerk must greet people, take care of them rapidly, help them to make their decision quickly, and sell as much and as high-priced articles as possible."

"Has not enough taste, or experience along the right lines, to sell high-priced articles and those tending toward the luxury type."

"Seems rather lackadaisical; we want genuine enthusiasm."

"A bit older than the optimal age for breaking into a new system, so would probably lack adaptability."

"Seems over-confident; quite likely would be unwilling to take advice and to do things our way."

"This applicant seems barely on the line of suitability, but would always be a mediocre worker, and would never earn a promotion."

"Has too oily and swarthy a skin to be selling in the men's clothing department. Has good ability, however, so we can offer him a stock position."

V. SOURCES OF ERROR IN RATING

Lately the interview and its subsequent evaluation have come in for a good deal of abuse. A few individuals have become rather skeptical about the reliability of such ratings. They have felt that there were so many uncontrolled factors, such as prejudice, initial impression, and uncertainty as to what constitute the important attributes for any particular position, that different judges would vary among themselves as to the merits of any single individual; and even that one judge might give different ratings if he interviewed the same applicant several times. Some of the specific objections and suggested means of overcoming them will be discussed.

(1) *Disagreement among Judges.* If any procedure is to be used regularly in employment, there should be a good agreement among the several persons who might make the rating. One need not demand that it be as objectively and simply obtained as measures of height, weight, or intelligence, but it should be well enough standardized that men who are trained in personnel policies and interview technique, and who know the requirements of the position for which they are interviewing could come to a good degree of agreement.

Laird illustrates the uncertainty of interview judgments in Table 19 on the following page.

The correlations between actual rank, estimated in terms of production, and interview rating were $+.87$, $+.41$, and $+.44$, respectively. The first represents a very high degree of agreement, in fact much higher than might usually be obtained. The other two

TABLE 19. HOW SUCCESSFUL THREE EXECUTIVES WERE IN SELECTING SALESMEN IN A PERSONAL INTERVIEW

Salesmen	Rank in Production	Rank assigned the salesmen after interview with:		
		Supt. Book	Supt. Rowe	Mgr. Vance
Holly	1	1	4	8
Brown.....	2	3	5	2
Smith.....	3	4	6	9
Metcalf.....	4	2	9	1
Reed.....	5	5	1	7
Watson.....	6	5	8	2
Webb.....	7	8	2	4
Haines.....	8	11	7	5
Gray.....	9	7	9	12
Core.....	10	8	2	6
Ash.....	11	10	11	10
Cole.....	12	12	12	11

are not worthless, but contribute far less than should be obtained from as important a matter as the interview. The correlation with success need not be perfect, since the interview is not the only device used to size up the individual in employing him, and there are other points of vast importance. However, the interviewer is supposed not only to size up personality traits, but also to bring together the other sources of information and evaluate the whole to decide whether the applicant is suited for the vacancy. So the interview rating includes not only traits which appear during it, but those which are obtained in other ways.

It might be pointed out that different interviewers see men differently. In the table above we notice that two interviewers are superintendents and one a manager. The last might be looking for traits other than those emphasized by the other two. Then there is the fact of the interaction of the two personalities. All of us have had the experience of talking very easily with some people, but finding conversation difficult with others. These two groups might rate us very differently. The same tendency would appear in letters of recommendation. A former employer, the high school principal, and the minister might write vastly different letters, yet all be sincere and accurate.

(2) *The Same Judge May Differ from Time to Time.* Further evidence that ratings are unreliable is the fact that the same judge may evaluate the individual differently each of several times that he may interview him. Kornhauser gives a table illustrating this.

TABLE 20. CORRELATIONS BETWEEN RATINGS BY THE SAME INSTRUCTOR AT DIFFERENT TIMES

Instructor	No. of Ratings	Intelligence	Industry	Accuracy	Coöperativeness
A	50	0.80	0.64	0.49	0.34
D	39	0.77	0.36	0.59	0.26
GG	39	0.78	0.72	0.81	0.65
Average		0.78	0.57	0.63	0.42
		Initiative	Moral trustworthiness	Leadership ability	Average
A	50	0.64	0.63	0.73	0.61
D	39	0.50	0.63	0.67	0.54
GG	39	0.66	0.36	0.61	0.66
Average		0.57	0.54	0.67	0.60

The final figure, the average intercorrelation of $+0.60$, gives the general trend of agreement, although figures are higher for some traits and lower for some than this central tendency indicates. There is this factor, however: the individual himself is changing in many personality traits as he gets older, acquires experience, and is placed in different situations progressively. So a perfect agreement is not to be expected, at least over a period of time, which in this case varied between three and nine months (the college year).

(3) *The Halo Tendency.* This is the well-known fact that ratings of a person on different traits tend to cluster very closely together, which probably represents the general impression of the individual held by the rater. No one is superior in every respect, and we must admit that the most despicable character has his redeeming features. A rater, whether deriving his judgments from a personal interview or writing a letter of recommendation, will tend to rate a person whom he likes uniformly high, and a person who has not made a good impression will be given below average ratings in more traits

than he deserves. This can be avoided to some extent by the interviewer's realizing the tendency and doing his best to overcome it.

(4) *Some Traits Cannot be Judged in a Short Interview.* No single means of studying the individual covers all phases, whether it is his past record, his intelligence score, or his personality rating following the interview. No matter how good our methods of selecting new employees, there will be some failures, and undoubtedly there will be some potentially successful individuals whom we let go. The best we can do is to become 80 or 90 per cent successful, not 100 per cent. There are some factors making for success or failure which, as the popular saying goes, will have to "come out in the wash," *i.e.*, through the passage of time. Some of these are reliability, regularity of attendance, promptness, coöperation, sustained effort, ambition, accuracy, and trustworthiness. Some indication may be derived about many of these from past performance. But with individuals undertaking their first work we have to let experience bring out their true nature. Likewise, records about previous jobs may not be entirely honest.

VI. IMPROVING THE ACCURACY OF RATING DEVICES

There are a number of practical and technical means of improving the accuracy and reliability of ratings and interview evaluations.

(1) *Experience on the Part of the Interviewer Should Permit Better Judgment.* It has been suggested that the interviewer study carefully the requirements of the various positions for which he is to select men, and note the outstanding characteristics of those who are successful and those who do not do well. He can thus form more definite standards by which to compare later applicants. This procedure somewhat resembles the Army Rating Scale, where each officer within a certain group was ranked in relation to the others. Thus we had Captains Jones, Smith, Hoyt, Thompson, and Brown rated in that order with respect to general value to the service. This may be modified to use in employment procedure by selecting from individuals who are working on the job several good, average, and poor workers, and comparing later ones with these. A complete accurate rank order would not be possible, but the high and low

cases will usually stand out, and discrimination among those in the middle range is unnecessary.

(2) *Specialization among Interviewers* is practiced by some companies and should assist in making the general rank estimates of applicants suggested in the preceding paragraph. If each man has to deal with only a tenth of the number of possible positions, for example, he can know ten times as much about each. Similarly, concentrating on one group of applicants on a particular day will aid in making more definite comparisons, since judgments are closer together in point of time. Thus, an interviewer may talk with clothing salesmen on Monday, with yard-goods sellers on Tuesday, and applicants for positions in the sporting-goods department on Wednesday. This will help eliminate a systematic error that occasionally creeps in; the rater may forget that qualities necessary for different positions vary greatly. A rating of average on any single trait should mean that the applicant stands at the middle of those who are working on that particular job in respect to that feature. But for a higher position he might be rated inferior, or for a lower one as superior.

(3) *The Interview May Be Partially Standardized.* Questions asked and standard scores for evaluating answers have been carefully outlined to objectify ratings. O'Rourke has described methods used in the civil service to evaluate the judgment and resourcefulness of applicants for positions as prohibition officers. It might be remarked that these traits are among the more intangible qualities, as contrasted with more definite ones such as age, health, experience, and intelligence. Since the work of a prohibition officer consists of highly variable duties, which cannot be anticipated or outlined in detail, he must be able to decide his course of action for himself.

A typical problem is presented by the interviewer, and the applicant tells how he would handle it. One problem consisted in asking the candidate what he would do if a private citizen entered a complaint which directed suspicion against a certain taxi-driver for violating liquor laws. The interviewee is told to assume that the interviewer is that citizen, and to indicate what questions he might ask to aid in discovering information of value. In this way his skill in questioning, as well as his discrimination and resourcefulness, can be estimated.

The interviewers are carefully trained so that they present the problem in the same manner each time. They are also told how to reply to questions asked, as far as can be anticipated, and to give fairly noncommittal answers to unexpected queries. The usual answers are standardized as to scoring and rating. For example, in the problem just mentioned, immediate arrest would be a poor answer, since the suspect might not have any liquor in his possession, and would thus be warned. Catching him transporting or selling is better. The best answer would involve an intelligent attempt to discover the source of supply, rather than devoting all one's efforts against an incidental accomplice. If the answer covers only a partial solution, the interviewee is led on by further questioning as to his reasons for such action.

O'Rourke presents data showing how much better agreement there is between various interviewers in sizing up the applicants after training them in this standardized technique. Ratings were on a four-point scale in terms of estimated ability to profit by a training course and by experience. Under previous conditions the ratings for each applicant made by several judges were scattered over three or all four possible ratings. But after training, the agreement, while not perfect, was so good that of three sample cases presented two had ratings in only two divisions, of which about 90 per cent were in one, and the third showed about 60 per cent of ratings in one division, over 30 in a second, and less than 10 per cent in the third.

A variety of test situations have been worked up to prevent coaching and to provide additional material in case it was desired to study the candidate further in order to estimate more closely his true merits. The technique is the same in all cases, however. This method may be applied to any position in which judgment and resourcefulness enter, such as to aid in selecting salesmen, policemen, teachers, newspaper reporters, etc.

(4) *Have More than One Judge Rate the Applicant.* Several writers have urged having more than one judge rate applicants. The theory behind these suggestions is that each judge is fallible, and presumably fallible on somewhat different points, so a composite rating would tend to balance out errors and give a reasonably reliable average. Kornhauser has given data which show that the correlation between performance and ratings increases with additional

judges up to the number of four. Having five or six raters fails to add any reliability. There is a serious practical objection to asking more than one man to rate an applicant. An interviewer must be a highly trained and skilled man, and it would add immensely to the cost of the employment procedure to have, say, four men rate each person. It would seem to be a far more practical procedure to make the interview itself more reliable by the devices suggested in this section. Follow-up ratings, which are given every six months or so during employment, are a different matter. Various supervisors of the worker could rate the employee; thus all ratings would be on different aspects.

(5) *Have the Applicant Rated on Definite Traits.* Instead of the judges giving a snap judgment of good, fair, or poor, or being allowed to determine for themselves which aspects are to be given the most emphasis, the company may draw up a definite rating blank and ask the interviewer to judge the individual in terms of just these traits. In such a case it would be preferable to have different blanks for each position. The final decision should be made from only those traits which are essential to success on the job under consideration. Neatness of dress and a recent shave will not contribute to the success of a man in a laboring job, but lack of these touches might prejudice a rater at the outset against an applicant. The same facts are of great importance to a person applying for a position which demands meeting many others. Prepared blanks will place each fact in its relative importance.

If further refinement is desired, one may assign weights to certain traits, as 20 for intelligence, 35 for past experience, 10 for health, 10 for eagerness, and so on, totalling 100. This will not only include just the desired items, but will give each its proper weighting in accordance with its importance.

(6) *Define the Traits Accurately and Comprehensively.* Various raters may have different conceptions of what a certain descriptive term means. Mr. Brown might think a reliable employee was one who was never late; Mr. Johnson would think of reliability as the quality of doing assigned tasks accurately; Mr. Wallace might consider it largely the same as honesty. So we may insert in small type under the word "Reliability" these questions: Does he do things punctually? Is he careful and accurate? Is his work of a uniform

quality? Could you trust him to do good work in the absence of direct supervision? Such definitions will enable the interviewer to adopt a more definite mental set, and prepare him to see evidence of these traits when they appear.

(7) *Separate the Trait into Its Important Parts.* It was pointed out in our discussion of personality in Chapter III that traits are fairly specific; that is, a man may be punctual to one type of appointments and late to another; he may be very thoughtful toward his family but merciless in business relationships. Instead of having a trait like neatness rated as a whole, we might have the interviewer check the following points: cleanliness of person, cleanliness of clothes, clothes pressed, shoes shined, hair combed, finger nails clean, necktie neatly arranged, taste of clothing (conservatism and good taste, rather than expensiveness emphasized here), decorations in evidence (lodge pins, tie pins, flashy jewelry, loud sox). Agreement among judges should be much higher when these smaller items are rated, and we could be more certain that any aspects about which the interviewer himself was especially particular were not weighted too heavily.

(8) *Convert Ratings into Definite and Comparable Units.* Most letters of recommendation and many rating blanks describe the person in terms of adjectives: good, excellent, high, superior, outstanding. Some sort of quantitative scoring scheme is preferable. One method is to have a numerical value which may be checked. A superior person may be rated 5, and an average one 3, a very poor one 1, with 2 and 4 for intermediate values. A second method is to have a line on which the rater may place a check. A check at one end will mean very high, at the other very low, and in the middle a judgment of about average. This rating may later be converted into figures, such as those mentioned above. The graphic scheme is preferred by some raters over the numerical.

Occasionally a correction of rating values must be taken. One judge may be too lenient, rating everyone as high or superior. It is obvious that the average value should fall in the middle of the scale. If such a judge's ratings are found to average 4, we may multiply each judgment by $\frac{3}{4}$, and thus convert them to a good comparable basis.

(9) A final technical device to eliminate the halo tendency is to

reverse the ends of the scale. The usual graphic rating scale appears somewhat like this:

Trait	Rating		
Mental alertness	High	Average	Low
Enthusiasm	High	Average	Low
Self-confidence	High	Average	Low
Appearance	High	Average	Low

Uniform rating, whether high, average, or low, will result in the check marks falling in a vertical column, one directly over the other. Having rendered the first few judgments in this manner, it is natural to continue. On the other hand, let us alternate the high and low ends of the scale, as indicated in the chart below. Now the same ratings will fall at different ends of the line, and the slight trouble caused by the changes will slow up the rater, cause him to think more carefully, and give more honest ratings of each trait.

Trait	Rating		
Mental alertness	High	Average	Low
Enthusiasm	Low	Average	High
Self-confidence	High	Average	Low
Appearance	Low	Average	High

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only 5 per cent of those scoring less than 40 on a particular test, 25 per cent of those scoring less than 50, and 90 per cent of those over 70 do well and remain for a reasonable length of time, we can predict that later applicants making these same scores have chances in those proportions of succeeding and becoming workers who are valuable to the firm. We cannot say positively, except in extreme cases, that any particular person cannot do the work demanded in the position for which he applies, but we can say that his chances of success are so slim that it would be a very poor risk both for the firm and for the worker to let him attempt that type of work.

We may point out briefly at the outset a few other limitations of testing. In the first place, the same tests cannot be applied and be given equal weight for all positions. For some tasks intelligence is the prime factor; for others personality traits exert more influence on success; for still others mechanical aptitude, native or acquired, is the prime requisite. This is not a limitation of the tests themselves, but a warning against blind use of them. Second, test scores and later success must agree, and constant check-ups must be made. Third, there are some important traits which have not yet been successfully subjected to test techniques, such as honesty, reliability, promptness, persistence, and ability to keep one's head in a crisis. Fourth, there will always be some failures, regardless of how accurate or comprehensive our testing may be. These will occur because of some of the factors just named, because of conflict between personalities, or because of factors arising during employment, such as personal, health, family, or amatory difficulties.

We may list briefly, before describing in some detail, some of the large variety of tests which may be applied to persons seeking various positions:

I. Intelligence: general native ability.

II. Personality:

A. Introversion.

B. Neurotic tendencies: stability.

C. Social intelligence.

D. Dominance: leadership.

E. Interests.

III. Special Native Abilities:

- A. Musical capacities.
- B. Sensory capacities: balance, acuity of vision, color vision.
- C. Strength; health.
- D. Motor coördination.

IV. General Knowledge of Subject.

- V. Acquired Trade Skill, such as speed and accuracy in typing.

II. USE OF INTELLIGENCE TESTS

(1) *General Importance.* For practically all positions a certain degree of mental alertness is necessary. Even in the crudest type of manual labor the worker must use some discrimination, select his tools, and do some planning. Obviously in office work a higher degree of intelligence is necessary. And in planning or executive work one must think several steps ahead, select means of getting things done, and be able to keep matters coördinated.

Our discussion of Intelligence in Chapter II was from the standpoint of vocational guidance, but the principles suggested work both ways. If we could not advise a man with a score of less than 125 on the Terman Group Test to become an accountant, this means that those below that figure do not prove satisfactory, and as an employer we should not be interested in hiring such an individual. Since we discussed the problems of intelligence and vocational guidance and success rather completely, we shall content ourselves here with summarizing some of the important points from the standpoint of practical application to personnel procedure.

(2) *Intelligence Necessary for Different Positions.* In the first place, intelligence is of different degrees of importance in positions of different levels. This means that not only will lower scores be acceptable in the more routine jobs, but also that the factor of intelligence will be given less weight in determining the suitability of the individual for the position. With crude manual labor intelligence can almost be entirely omitted from consideration, provided that the man has the simple attainments of being able to talk, read, and

keep himself at his task. With the more highly skilled types of labor, such as electrician, mechanic, or plumber, abstract ability is of somewhat greater importance, although trade skill and aptitudes bulk much larger. As was seen in Chapter II, intelligence and vocational success do not begin to be at all well correlated until we get up into the complex clerical, executive, and professional levels.

It was suggested that critical scores be established for the majority of positions. One can give the test to workers over a period of time and study their later success. If it is found that very few under a certain score remain long in employ, we should hesitate before accepting anyone under that critical point. In the lower positions, possession of intelligence beyond the critical point seems unessential, since apparently ability to understand and plan routine performance is sufficient, and performance is not made more effective by additional intelligence. For positions with somewhat more exacting duties the critical scores will be correspondingly higher; and also efficiency is found to increase with scores rising above the minimum. These trends are often obscured since data come only from successful individuals. Failures are rarely included, and persons of lesser ability usually do not even attempt to work at the vocation of severe demands. This leaves only a narrow range of cases, which is well known by statisticians to lower the correlations. The bare fact of being able to succeed in earning one's living in, say, law or medicine bespeaks a high grade of intelligence to start with.

(3) *Promotional Possibilities.* Since intelligence scores indicate abstract potentialities one can estimate how far a man may go ahead. The score does not guarantee that a man will be an excellent employee, but it tells whether he can or not, depending on whether he works hard and consistently as well. By means of the test we can select persons who seem worth while training for executive, buying, research, and other responsible positions. Those with higher scores absorb training much better and with greater rapidity, as well as getting farther eventually.

The value of testing for mental alertness is seen in a study of messenger boys quoted by Scott, Clothier, and Mathewson. In most positions we find a rapid turnover at both ends; at the lower end because of inability to do the work and at the upper end because persons of greater ability are promoted or leave to undertake better

work. But with messenger boys the opposite was found to be the case; those in the middle of the distribution were leaving and those at both ends remained. Those at the lower end were capable of performing the routine duties, but could go no farther and failed to get promotions. The average individuals who resigned chiefly obtained middle-class jobs. The reason the more intelligent remained as messengers was probably due to the fact that acting as messenger gives one an excellent opportunity to learn all phases of the business, since the duties take one into all departments. So those who are bright and ambitious see their chance to lay the foundations for future advancement.

(4) *Administration of Intelligence Tests.* At present tests are so well worked out and standardized that lengthy training and experience are not necessary to administer them to applicants. One of the greatest bits of improvement occurred when the directions were printed at the top of each sub-test, instead of being given orally, which latter procedure allows more room for variability with consequent lowering of reliability. Reading the directions and getting an understanding of what to do on the test proper is included in the time allowed. This means that the examiner has little to do but keep time. The time limits may cover the entire test, or one may be allowed a certain number of minutes on each of the sub-tests. In the latter case close attention must be given to the time. If the whole test is timed as a unit one may set an alarm clock and allow the applicant to work until it rings.

Some training in the nature of tests and the workings of intelligence is desirable, however, to take care of unusual situations in the best and most expeditious manner possible: interruptions, questions asked, outside distractions, misprints on the blank, lighting conditions, broken pencils, etc. One must be prepared to handle these situations as rapidly as possible, so scores will not be affected by variations in conditions.

We shall not attempt to suggest any one of several tests which might be used. There are a number available which are thoroughly standardized and are highly reliable. No single test is useful for all purposes. A rather lengthy and difficult test will be desirable for selecting persons for executive and highly responsible positions. For the more complex technical positions any test designed for high

school levels will be suitable. Tests of the difficulty of Army Alpha are of about the proper caliber for the rank and file of occupations. For routine labor no test seems particularly necessary; ability to read and write may be taken as satisfactory evidence of intelligence sufficient to meet the requirements of the work.

Some firms have devised their own tests to take care of their individual requirements. There is no need of this expenditure of time and money if a test of medium or severe difficulty is desired; there are several excellent ones available. For the more routine positions one may modify existing tests, to include the easier items and to keep the test within shorter time limits.

III. PERSONALITY MEASUREMENTS

This topic was also previously discussed rather at length in Chapter III, treating vocational guidance through personality. Just as with intelligence we may reverse the conclusions, and apply them to employment procedures as well as to vocational guidance.

Selection by means of personality measures is not by any means so accurate as is a similar interpretation of intelligence test results. Personality itself is a far more complex matter than intelligence, and tests are still in a rudimentary state. Adding to the difficulty of a complete survey is the fact that there are a number of different aspects to personality, each of which must be studied separately.

Practically, we cannot say that personality tests are yet well enough worked out so that they can be of much service to the personnel department. This statement may sound a little paradoxical after the suggestions given in Chapter III concerning the personality requirements of various positions. However, the discussion there centered about the individual's selecting a certain *group* of occupations which might be suitable to his personality and eliminating others for which he did not appear well fitted. We did not suggest that we could find a *single* position which would be suitable for the individual. We could, for example, say that a person who exhibited marked introvert characteristics should not go into salesmanship or attempt to do executive work, because he would not be eminently successful or happy in meeting and handling people. If he seemed to be extroverted, on the other hand, we would say that in

this particular dimension he is fitted for these positions; but we could not say which of them.

This suggests a possible use of personality tests in employment procedure. We can find those individuals who are distinctly unfitted for certain positions, and eliminate the extremes. Probably as much can be ascertained about these traits through an interview as by the instruments of measurement at our disposal at the present time. The tests might serve to indicate trends which could be given particular attention in later interview.

Tests which might be applied, and the particular phases of the personality which are studied by means of them are as follows:

(1) *Introversion-Extroversion*. To discover if the individual is better adapted to deal with concrete objects and other persons or with ideas and abstractions; if he is shy and retiring, or if he can meet people with pleasure.

(2) *Ascendance-Submission*. An estimate of this trait is desirable to determine suitability of applicants for positions demanding leadership, executive responsibilities, and aggressiveness in dealing with others. This trait is perhaps not easily determined in a short interview, since the applicant is not given much opportunity to show initiative, and is usually forced into a submissive rôle. Therefore, ascendance should be estimated from a test; from past performance; or one must wait for a certain length of time after employment to see how the worker shapes up while on the job.

(3) *Neurotic Tendencies*. A person who is inclined to worry excessively, to day-dream, or to imagine himself suffering from various ailments will not concentrate on his work, with consequent loss in quality and quantity done. The detriment will be greater in positions demanding a high degree of concentration. We remember that Dixon, quoted on page 65, especially urged that persons affected by any of these neurotic symptoms should not be selected as cashiers. Incidentally, persons of this type often act as distracting and upsetting influences on other employees, as well as being of lower efficiency themselves.

(4) *Social Intelligence* is a different sort of personality characteristic. Anyone who is in a position of a social nature, such as executive or selling work, must be able to meet people and to conduct himself with tact and gracefulness. Actually the best test of

this at present is somewhat too highly correlated with abstract intelligence. Any test of this trait will always be open to the criticism that one has time to think over his behavior, while that actually carried on must be done practically automatically and without thought. Accordingly, the test should be supplemented by judgment of the same qualities during the personal interview.

(5) *Interests*. It is perfectly conceivable that an individual may be perfectly capable in all ways of discharging the duties of a particular vocation, and yet not be sufficiently interested to remain in it permanently. For the sake of reduction of turnover it is advisable to make sure that an applicant is really interested in doing the work demanded and not just looking for "any sort of a job." The necessity of checking this phase of suitability increases with the complexity of the task and the length of time it takes to train a man and lead him up to ultimate efficiency. It would be distinctly unfortunate, for example, to accept into one's employ a recent college graduate as potential executive material, give him a long course of training during which time he was making little or no return to the organization, and then have him decide to go into some other career after a year or so. With labor positions the need for checking on this characteristic is not so great, since the cost of turnover is very much less. Interests may be measured for a number of the higher-class occupations and professions by means of Strong's Vocational Interest Test (as described in Chapter IV), but this is not yet available for all, and for none of average or lower class status. For these latter types of positions, and perhaps for the others as well, it is advisable to sound out the applicant during the interview, to ascertain as far as possible his ambitions and reasons for seeking this position.

IV. TESTS OF MOTOR ABILITY

A large number of tests have been used to measure one phase or another of motor ability. In the laboratory they have been used mostly for demonstration or research purposes. In industry it has been the purpose to measure motor skill or coördination in general, with the hope that such skills will have broad applications in pre-

dicting proficiency in operating various types of machines or in carrying on other operations involving speed and delicacy.

(1) *Strength* may be measured by various types of dynamometer. One may test strength of grip by pressure exerted in squeezing; or measure the weight one can lift by hands alone, or with assistance of legs and back. There are few occupations in which a test of brute strength would be necessary, as speed and accuracy are more important even in the majority of manual-labor positions.

(2) *Reaction Time* of various types may be valuable to ascertain. Simple speed of reaction may be measured by the quickness of response of the individual in pressing a telegraph key after a signal, usually light or sound, is given. The time is generally between fifteen and twenty hundredths of a second, so a very accurate apparatus capable of recording thousandths of a second is necessary. A modification of this is to test the speed of tapping. The subject is instructed to tap a telegraph key as rapidly as possible for a certain number of seconds, usually five or ten. This activity is a bit more practical than simple speed of reaction, since it involves continuous motion. It involves wrist flexibility as well as speed in initiating movement.

Choice reaction time is perhaps better still as a measure of potential industrial efficiency. The subject may be told to press the key under his right hand if a green light is flashed, and with his left hand if he sees a red light. This demands discrimination and sensori-motor coordination as well as speed of action. This type of activity would be somewhat comparable to sorting out good from bad items as they are being carried past on a conveyer belt.

Serial action is more complex still, and accordingly is closer to actual conditions than the simpler forms of reaction. Ordinarily each bit of behavior determines the next, which is done in consequence of the degree of success or failure of the first. Action is continuous, as a rule. The card-sorting test is one of the simplest and easiest of this variety to apply. The subject sorts the pack of fifty-two cards into suits as rapidly as possible. For special operations one may substitute materials more nearly like those used in the particular operation, such as colors, or forms, say of thread, shoe laces, socks, etc. Speed of naming colors on a card containing one hundred colored squares is a similar test. A more abstract form is

R. H. Seashore's Serial Discrimeter. A number from 1 to 4 appears at a window; the subject presses a key with the corresponding finger. This brings another number into view; pressing the correct finger in turn moves this on and presents the next digit, and so on, until a revolution is completed, which involves 100 choice reactions.

Farnsworth, Seashore, and Tinker have compared simple and serial reaction times, and found practically zero correlations. This would suggest that speed of response must be determined for the exact operation which is to be used later; it cannot be measured in general and applied in blanket fashion.

(3) *Pursuit Tests* involve a somewhat more complex eye-hand coördination. A person's accuracy in following a moving target is measured. Practical examples are shooting a flying bird, judging whether one has time to get across a railroad track before the train gets there, or feeding a punching-machine between strokes. The Koerth Pursuit Rotor is a test of this type. This consists in following with a loosely hinged pointer a small target rotating near the periphery of a phonograph turntable. An automatic electric counter records contacts; if one keeps on the target, ten contacts are made each revolution, but no score is made when one is off the target. This calls for a smooth circular motion with accurate timing. Another form of pursuit test has been devised by Miles, and is called the Pursuit Pendulum. The pendulum has a nozzle with a small opening at the bottom. As it swings one tries to follow it and catch, in a container somewhat resembling an elongated shotgun cartridge, the water which flows out. The water flows at a known rate, and one's performance is measured by the amount caught in one swing of the pendulum. Miles has also devised an Electric Pursuitemeter, in which the subject tries to balance by means of a rheostat an electric circuit which is continuously thrown out of balance by a disturber mechanism actuated by a series of eccentrics connected by pulleys. The degree and direction of imbalance cannot be anticipated, so the skill of the subject is in terms of how closely he keeps the circuit balanced to the zero point.

(4) *Coördination*. A number of tests have been devised which measure speed and accuracy of coördination at various levels of complexity. A very simple one is Scott's three-hole coördination test. There are three holes in a square board; the subject is given a

pointer and told to touch the holes in succession as rapidly as possible. The score will be the number touched in a certain length of time, say one minute. Electric counters record hits, so if an individual goes so rapidly that he becomes inaccurate, no score will be recorded. The Brown Spool Packing test falls into this classification. One packs two spools at a time, one with each hand, into a tray. One may time the number packed in two minutes, or see how long it will take him to pack five trays full. This test is somewhat analogous to certain industrial operations, particularly those in loading small boxes or units into cartons.

The peg-board test studies coördination of the two hands. The worker has a box of pegs on each side of him, and takes one with each hand and places it in a hole in the board. The number pegged in a certain unit of time constitutes the measure of proficiency.

(5) *Mechanical Assembly Tests* have been devised to test general mechanical ability. To quote from Hull, "This test (the Stenquist) consists essentially of ten small mechanical devices, such as a paper clip, a bicycle bell, a simple lock, etc., which are presented with the parts disassembled. The task of the subject is to assemble as many of them as possible and as well as possible in a specified time." Using such materials enables a simple, cheap, and standard test to be applied to all applicants for positions within a certain range which demand the same general types of activities.

Before we can make practical use of such tests of general or specific motor abilities as those we have been discussing we must ascertain their validity. By validity we mean the accuracy of the test score in predicting performance on the actual job. If those who score high on the test succeed in their work, while those who make low scores do not prove to be efficient workers, we would say that the test has a high degree of validity. If, however, some who made high scores succeeded and some failed, and as many who made low scores succeeded as failed, the test would have no predictive value, and should either be discarded or improved in such a manner that its validity would be raised.

Unfortunately, most motor tests do not have a high degree of predictive value. This is because *motor skills seem to be independent of each other, and success can be predicted only in operations which are practically identical with those tested.* Thus, the spool-packing

test might prove to be very useful in selecting employees who are to pack cartons, but would not be at all correlated with success in some other type of operation.

Perrin, Muscio, and Seashore have studied the interrelations among motor skills, with a view to unearthing possible single, or groups of, fundamental motor capacities. Correlations have all been in the neighborhood of zero; certainly none attain any real significance.

We quote from Perrin a table showing the correlation between three comparatively complex functions and fourteen simple motor tests. Most of the tests explain themselves by their names; the Bogardus is a pursuit test, and the coördination test involves guiding styli with the two hands through different-shaped paths simul-

TABLE 21. INTER-CORRELATIONS OF MOTOR TESTS, FROM PERRIN

	Bogardus	Card-sorting	Coördination
Complex motor tests			
1. Bogardus.....			-.10
2. Card-sorting.....	-.06		.36
Simple motor tests			
1. Reaction-time....	.16	.21	-.06
2. Aiming.....	.24	-.09	.12
3. Balancing.....	.38	-.06	-.11
4. Tapping.....	.22	.02	.01
5. Steadiness.....	.09	-.04	.01
6. Tracing.....	-.11	-.01	.09
7. Dynamometer....	-.22	.20	.39
Lung capacity.....	-.14	.09	.22
Army Alpha.....	.03	.02	.10
University grades....	-.17	.01	.21
Simple color reactions and discrimination- and-choice color reac- tions.....		.59	
Simple color reactions and discrimination- and-choice card reac- tions.....		.40	
Simple color reactions and simple card reactions....			.33
Speed in tapping and speed in simple color reactions			.06

taneously. All correlations are observed to be low, mostly ranging slightly above and below zero. Only two rise above + .30, and this might easily be due to chance, and might not appear on a retest with another group.

Seashore presents inter-correlations of performances on eight tests, which are in general somewhat more complex than Perrin's

TABLE 22. INTER-CORRELATIONS OF MOTOR SKILLS TESTS, FROM SEASHORE

	Ataxia-meter	Pursuit-meter	Pursuit Rotor	Serial Discrimeter	Motor Rhythm	Pursuit Pendulum	Speed Rotor
Pursuitmeter.....	.19						
Koerth pursuit rotor.....	.12	.29					
Serial discriminator.....	-.15	.18	.25				
Motor-rhythm synchrometer.....	.03	.17	.40	.29			
Pursuit pendulum.....	.16	.14	.56	.33	.36		
Speed rotor.....	.12	.09	.33	.08	.63	.23	
Spool-packer.....	.15	.26	.26	.32	.43	.44	.38

battery. The correlations, with one exception, are all positive, and some rise to indicate a fair degree of relationship. Still they are disappointingly low to one who is hoping to discover a general motor ability, perhaps analogous to general intelligence as a concept. The fact that Seashore's coefficients are somewhat higher than those of Perrin is because more complex tests were used. It seems to be the rule that inter-correlations among human abilities become higher as we test more complex functions. As we get toward measures of abstract ability, namely intelligence, the agreement between functions becomes better.

What does all this mean? We may take the fact that simple motor abilities are practically unrelated and that complex coördinations are only slightly correlated as evidence that there is no general motor ability. Practically, this means that we cannot devise any battery of tests which can be applied to candidates for all positions demanding speed, accuracy, and coördination. Operations are so specific that entirely different tests must be devised to measure

potential ability for different positions, say driving a taxi, sorting out materials, or tending a machine.

V. TESTS OF SPECIAL CAPACITIES

For a number of vocations an individual must have special capacities or abilities of various natures, which are at a great premium in these occupations, but are of little or no especial significance elsewhere. Examples would be the high degree of auditory acuity necessary in a musician, and certain sensory qualities considered essential in an aviator.

The Seashore Musical Ability Tests have been designed to measure fundamental musical capacities of various types. As a matter of fact, they are apparently most useful in the public schools, to determine the desirability of giving any particular pupil musical training. The tests measure the following abilities: pitch discrimination, tonal memory, sense of time, sense of rhythm, intensity discrimination, and feeling for consonance. Since these have very limited application along vocational lines, we shall not discuss these tests at length. Suffice it to say that most of them measure functions which are apparently largely innate, and consequently not subject to training. From results in music schools it appears that no one who does not make a high score on the test can become a good musician, although a high score by itself does not guarantee success. Kwalwasser has devised another series of musical ability tests.

For a number of vocations it is essential that the worker have normal color discrimination. Color blindness would hamper success in railroad engineers, yard-goods salesmen, haberdashers, and others. If a man cannot distinguish between colored signals, the defect may endanger lives. If he cannot assist a customer in finding the proper tie or socks to match his suit he will not give complete satisfaction as a salesman. It is astounding to most of us to learn that nearly 10 per cent of men are weak in their color discrimination. (Women have this deficiency very rarely.) Yet a large percentage of them fail to realize that they have this weakness, since their perceptual world appears complete to them. If red never stood out to them as it does to the rest of us, why should they realize the lack, any more than we feel incomplete because we do not see ultra-

violet? Every year when entering college, a number of students are found to be color-blind who never realized it before, many of whom protest vehemently against the "accusation." The individual is none the less efficient in 95 or more per cent of occupations, but in those where color discrimination is necessary a deficiency makes success practically impossible.

It might be noted that the term "color blindness" is slightly incorrect. A literal interpretation of the term would suggest that the victim is totally lacking in color vision, possibly seeing things as we see photographs, in black, white, and the intermediate grays. Actually, as disclosed in a study by Sibyl W. Terman, "color weakness" would be a better term. To start with, it is extremely rare that an individual is totally lacking in color vision. The most common form is a deficiency in perception of red and green; blue and yellow are seen normally. In the next place, even red and green are not wholly absent; in most cases only a weakness in discriminating closely related shades exists. Therefore, figures on the extent of color blindness will differ, since criteria as to what constitutes a deficiency will vary.

A study of color blindness in dry-goods salesmen was conducted by Miles and Craig. They found an average of 7.2 per cent of color weakness among these salesmen, as contrasted with 8.4 per cent found among university students. Only in the silk counters did there seem to be selective factors at work; such close discrimination seemed to be necessary here that any deficiency was disclosed and scared off the color-weak person. No records of the various salesmen were available, to show whether there had been a greater percentage of returned goods or other forms of dissatisfaction in the cases of these color-blind salesmen, but the authors suggest that such may easily be the case.

For the aviator certain strict sensory tests have been devised. A high degree of visual acuity is imperative; in some cases even minor corrections through glasses will not be allowed. Depth perception has also been tested, and is one of the more important attributes of the successful aviator. Another sense considered essential is that of equilibrium, controlled largely by the semicircular canals. This needs to be especially good, since the aviator in flying, particularly among clouds, cannot depend on his eyes, and must become aware

of slight changes in balance. This is perhaps of less importance than formerly, due to perfection of recording instruments on the panel board of the airplane. This sense may be studied by subjecting the blindfolded individual to very slow and minute changes in bodily posture, and seeing how soon he perceives such shifts. Dynamic functioning of this same sense may be tested by whirling the applicant in various directions, and measuring the extent of dizziness and the length of time required to recover to normality. One other test which has been used is a measure of resistance to effects of altitude. The applicant is placed in a chamber, and the air pressure reduced, simulating conditions of high altitude with its thinner air. Emotional stability is important in an occupation of this type, with necessity of rapid action in crucial situations arising occasionally. This has been estimated from the behavior of the individual in standing up under rapid-fire questions, many of the "razzing" type.

VI. PHYSICAL EXAMINATION

Most companies require a physical examination in addition to evidence of ability to discharge the work satisfactorily. There are two chief purposes to such an examination: (1) to take care of the worker's health and protect him from serious injury or disease; and (2) to protect the other workers from being infected or in some cases from being injured by failure on the part of one individual.

The actual examination may vary greatly, depending on which of these purposes is considered, and according to the nature of the work to be done. For sedentary or semi-sedentary work, such as stenography, filing, or selling within a store, there are no severe physical demands, and a very brief examination will suffice to determine suitability. In fact, the chief consideration will be detection of active venereal diseases, tuberculosis, or other infectious diseases which would endanger the health of others. For heavy muscular work one must ascertain not only strength, but also see if there are any particular weaknesses, such as rupture. Persons responsible for the safety of others, such as locomotive engineers, should be very carefully examined. Anyone with tubercular tendencies should not be assigned to work where there is any dust in the air. If a man has lost the sight of one eye, he should never attempt work where

there is danger to the eyes, as loss of the other is a major catastrophe. A man can lose one eye and remain 90 per cent efficient; but the loss of the second is fatal to economic chances.

Other possible defects to be noticed in certain cases would be heart trouble, eyesight, deafness, throat infections, abnormal blood pressure, kidney disease, chronic appendicitis, flat feet, skin diseases, infantile paralysis, injured or missing limbs.

REFERENCES

References for this chapter will be found at the end of the next.

on whatever they are assigned, and one can find no fault with their work, but they never do anything additional or original.

(2) *Essay on a Special or Assigned Topic.* Instead of asking the applicant to submit something which he has done previously, he may be asked to write on one particular topic. One Civil Service examination, for example, asked for an essay on "Plumbing Sanitation." For positions beyond those of routine nature a man should know more than mechanical details. A topic such as this demands knowledge not only of plumbing in its routine aspects of laying pipes, use of tools and materials, angles, etc., but also of some broader aspects of the subject, involving a choice between mechanically correct alternatives. From the essay, furthermore, one can judge not only the knowledge and breadth of vision of the applicant, but his ability to think and to express himself clearly. This essay may be written at leisure, possibly with consultation of references, as, after all, these will be available later; or it may be done "at sight" along with the other parts of the examination.

(3) *Examination.* The applicant may be asked to demonstrate his knowledge by answering a number of questions concerning technical terms, tools, care of apparatus, and precautions necessary under working conditions. Knowledge may be tested in a number of ways. The completion type examination is recommended when written tests are used. One or a few words are added in writing to complete the sentence, and scoring is simple and accurate. Questions may also be put in the multiple-choice or true-false forms.

Samples of a few questions which are listed in a suggested test for general machinists are quoted:

A device used in machine shops for holding pieces for hand work is called

The process of lining a wearing surface or journal, for the purpose of reducing friction, is known as

Two common metals that require the drill point to be lubricated are and

These three questions, it may be observed, cover apparatus, processes, and knowledge of materials, respectively.

It might be objected that skill is not entirely measured by abstract knowledge of technical terms; but, while such knowledge does not guarantee skill in handling a machine, a mechanic would be handi-

capped without knowledge of his materials, tools, and equipment. And questions may be so devised that only one who has had experience can answer them.

A question arranged in multiple choice form, from this same test for general machinists, is this:

When the shavings made in turning metals come off in large curls and are very strong it indicates

- That the tool is dull.
- That the tool is properly ground and set in the machine.
- That the machine is rotating too rapidly.
- That the machine is rotating too slowly.

The following questions appear in a bacteriology test:

The one of the following organisms which shows the least resistance to heat is

- *Bacillus diphtheriæ*.
- *Streptococcus*.
- *Staphylococcus aureus*.
- *Gonococcus*.

By the virulence of a microorganism is meant:

- Its disease inciting power.
- Its power to adapt itself to unfavorable environment.
- Its power of reproducing, or tendency to be prolific.
- Its ability to do without free oxygen.

The first of these three questions calls for knowledge not only of ability to run the machine, but ability to perceive when the machine is working properly and when the tools are in the best condition. To answer the second and third correctly one would have to understand the behavior of the various organisms under different conditions, as well as the usual static identification and description.

Knowledge of parts of machinery and of tools may be rapidly tested by means of pictures. In the same test for machinist three figures are included. One shows a machine, with many parts numbered or lettered. The candidate must give the names of certain specified ones. The second picture shows a number of small parts, which must be named and their use described in a few words. The third figure which they use is a full-page illustration of a machine-shop, which the applicant is allowed to study for a minute and a

half. Then he answers questions about a number of points: equipment in the room, ventilation and heating systems used, and certain shop practices which are evident from inspection of the picture. This test again may not necessarily indicate mechanical knowledge or ability, but the man with a good range of information and experience would undoubtedly be able to size up the details in a short time much better than could an inexperienced worker.

A series of questions, which might be administered in oral as well as written form, has been prepared to measure various phases of a butcher's knowledge—terms, tools, knowledge of various meats, and practices.

TEST OF BUTCHER'S KNOWLEDGE

1. From what part are pork chops usually cut?
2. How many ribs are cut to a rib of beef?
3. What are two knives a butcher uses?
4. From what part of a hog do you get picnic or California hams?
5. What is located between the first rib and the hip?
6. What is the average weight of sweetbreads?
7. From what is tripe made?
8. From what part of a hog is salt pork made?
9. How many ribs are left on a chuck of beef?
10. What is the average weight of a plate from a 500-pound dressed steer?
11. About what should a hind quarter of a 500-pound dressed steer weigh?
12. What should a ham weigh from a 150-pound hog, trimmed to pickle?
13. What do you call the strip of fat along the back from which the loin has been pulled?
14. What is the average weight of a steer liver?
15. What is the part of a beef between the front legs?
16. How old should a calf be before it is butchered?
17. What do you call a calf under seven days old?
18. Where is the cross rib located?

Tests of duties constitute another aspect of information about an occupation. Examples from a test for patrolmen follow:

A patrolman should use his revolver on a man
— Who is breaking the speed limit in an automobile.

- Who snatches fruit from a stand and runs when ordered to stop.
 - Who sets fire to a crowded theater and runs when the policeman attempts to arrest him.
 - Who is drunk and disorderly.
- When entry to a residence is refused, a police officer may break open outer and inner doors to effect an arrest, provided
- The person who is to be arrested has defaced the plate glass of a department store by putting daubs of paint on it.
 - The property is not damaged in forcing entry.
 - The person who is to be arrested is on his own premises.
 - The person who is to be arrested is wanted for forging a note for \$73.80.

Under the heading of "best practices" may be included items which test the individual's common sense in addition to technical knowledge of his duties. These questions may be put in the multiple choice form, and the possible answers may include one that is outstandingly appropriate, one that is very inadvisable, and two more that are reasonable but not entirely satisfactory solutions. The next to the last question quoted above is of this type. Many of the questions in the Social Intelligence Test, described in Chapter III, are of this same nature.

It might be noted that tests of knowledge have only limited application. To start with, they cover just one phase of a person's equipment. They do not touch on several factors which make toward success or failure, chiefly personality traits, such as initiative and persistence. This, of course, is a limitation of all testing, and not of this type only. Also they test only acquired information, so are applicable only to experienced or specially trained men. They do not serve to predict the potential skill of a person who has just completed his formal schooling or is changing vocations, and has not yet had any contact with the occupation in question. This criticism is to be taken as a necessary limitation of tests of knowledge or of actual attainment, and not as a suggestion for removing this source of information from employment procedures. Probably it would be the best single test that could be applied in cases where the applicant has had previous experience, has worked up from the position just below in rank, or has attempted to fit himself for this

position by means of special study and training. Naturally an inexperienced worker could not be sized up by means of such a test, but would have to be measured through tests of potentialities and abstract skills.

VIII. TRADE APTITUDE TESTS

Trade aptitude tests constitute the most practical means of selecting employees for positions demanding perceptual or motor skills of one type or another. They are specifically designed to measure the same types of processes as are demanded in actual work, yet involve little or no learning, so previous experience is unnecessary.

Many of these are known as the "miniature" type. It is so called because the tasks form really a miniature of the duties demanded on the real job. The apparatus may be reduced in size, or the duties may be symbolic rather than actual in nature. However, the movements done should be the same as those actually used in working at the real job. A good example would be a hypothetical test for a railroad engineer. It is obvious that testing an applicant by letting him run a real train would involve considerable financial and human risk. So we could set up a dummy cab, with all the controls a real engine has, and test his speed and accuracy of manipulation under various conditions. To make such a situation completely realistic we could, as has been done in one case with motormen, have the candidate look at a screen upon which is projected the scenery as it might unfold before one, with curves, crossings, people approaching, etc., which would necessitate speeding up, slowing down, giving warning signals, etc.

One of the best examples of such a test is that for motormen used by the Milwaukee Electric Railway and Light Company. To vary speed, use the warning bell, apply brakes, and carry on other minor duties, the operator must have good coordination between his hands and feet, and between eyes and limbs. He must be able to judge the speed not only of his own vehicle, but that of other approaching from the front or from intersecting streets. These duties must be carried on in a largely automatic manner, since he has many variable duties, such as calling off the names of the streets, receiving fares and making change, and issuing transfers. One of the objectives in

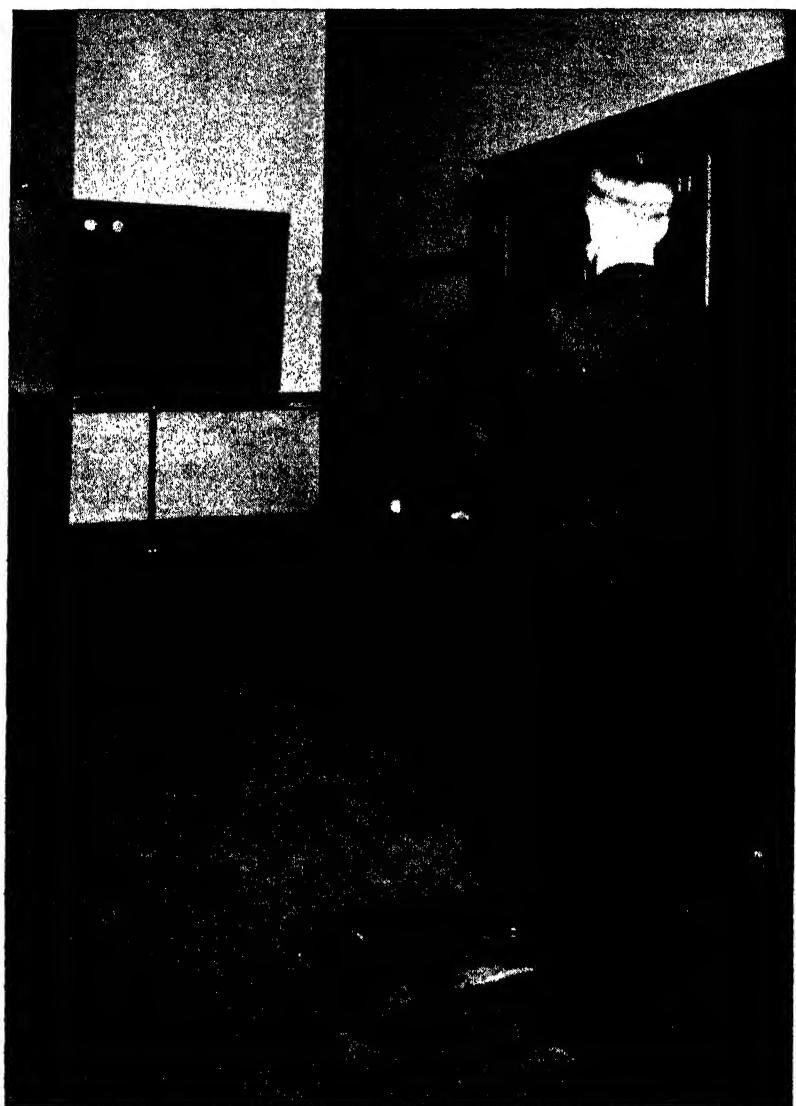


FIGURE 5. A REACTION'S TEST FOR MOTORMEN.

This brings out the ability of a subject to make the correct response at the right time without becoming confused. It also shows how quickly he is able to form motor habits. (Courtesy of The Milwaukee Electric Railway & Light Co.)

devising the tests was to reduce the frequency of accidents as well as to select motormen who were good in other respects. This test is shown in Figure 5.

The test for motorman has two chief parts. The first is a test of ability to handle properly the control equipment of the street car, which includes speed regulator, brake, and warning bell. A panel on the wall in front of the candidate has a number of glass insets which light up to indicate abstractly various possible situations which might arise. The lighting of this panel is controlled by an automatic stimulating mechanism activated by a perforated tape. Thus each subject is given exactly the same stimuli as all others, in the same order, and at exactly the same speed. Sample instructions run somewhat as follows: if the bell rings, both handles should be pushed forward; if the horn sounds, one should move the left handle toward himself and the right one way. Other instructions cover use of the feet in one way or another. Automatic devices record both the accuracy and the speed of the response.

The applicant is given a training period of fifteen or twenty minutes on this apparatus to familiarize himself with the responses to be made and to set up some degree of automaticity. The examiner watches him during the training period as well as during the test proper, so that he may see how rapidly the individual assimilates the appropriate movements and techniques. It has been found out that a man who cannot learn the responses to the four types of signals at the end of thirty minutes is extremely difficult to train in street-car operation, and not worth the time and effort necessary.

During the test period itself the stimuli come at a more rapid rate, about one a second, and in random order, with occasional unexpected distractions introduced. The responses the applicant makes are automatically recorded on a tape, which is later inspected for errors in response, complete omissions, and slow responses. A critical score has been established from testing men of *known skill* already in service, and is used as a standard to judge the applicant's acceptability.

The second test which is applied to applicants for motormen positions is one of judgment of speed and distance. It consists, as shown in Figure 6 accompanying, of two toy electric trains which run on tracks which are always close to each other, being in general



FIGURE 6. A TEST FOR JUDGING SPEED AND DISTANCE.

Applicants for positions of motorman, truck driver, and bus driver must be able to judge speed and distance accurately. The test consists of two cars running on separate tracks. The darker car runs continuously and is controlled by an electric clock. The lighter colored car is controlled by the subject. The subject is requested to have as few accidents as possible. (Courtesy of The Milwaukee Electric Railway & Light Co.)

parallel, which cross at two places and almost touch in two others. One train runs automatically, controlled by a mechanism which varies its speed now and then. The candidate is to complete as rapidly as possible a certain number of circuits with the train over which he has control. Naturally, the more rapidly a motorman can cover his run the more service he renders the public, provided he achieves his speed with safety. If he proceeds very slowly he might escape accidents, but would give less satisfactory service. Therefore the two factors should be balanced in terms of this miniature performance test; the applicant should keep his train going at a good rate of speed, avoiding collisions, derailments, and stops. The purpose of varying the speed of the other train is to avoid the individual's setting the speed of his car at a constant rate and always keeping the two trains well apart, for example at opposite sides of the track.

That this system of testing succeeded in selecting better motormen than those who were previously chosen by the usual methods, such as personal interview and evaluation of previous experience, is seen in the figures summarized in Table 23. In all respects it is evi-

TABLE 23. COMPARISON OF SELECTED WITH UNSELECTED MOTOR-MEN

	1924		1925	
	Not given Test Number	Per Cent	Selected by Test Number	Per Cent
Motormen employed In service at end of year	163	100	166	100
Out of service	98	60	119	72
Resigned	65	40	47	28
Discharged	27	17	33	20
Due to accidents	35	22	10	6
Other reasons	23	14	1	0.6
	12	7	9	5

dent that the group selected with aid of the test proved to be more stable than the 1924 employees. The turnover is materially reduced, which of course raises the efficiency of the whole system. About equal numbers of both groups resigned, but a voluntary resignation has little, if any, bearing on skill, so this point sheds little light. Perhaps the most striking figure is the great reduction in discharges;

with better methods of selection, less than a third as many were dismissed. The number of those who had been involved in sufficiently serious accidents to warrant discharge was reduced almost to the vanishing-point—one man out of 166.

As another means of validating the tests, a number of employees were given the tests and their scores were compared with ratings of efficiency made by their supervisors. The highest rated group had an error score of 30; those judged to be about average made 35 errors on the test, while those who were rated as poor workers averaged 57 errors. These figures suggest that there is not a great deal of difference in test performance until we get below a certain level, although the general rank order of the three groups by both estimates agrees perfectly.

Another test devised by this same company is designed to measure the potential abilities of sub-station operators. This, as does the other test, samples abilities under the same general conditions as are met with at work. The duties of a sub-station operator are in general to take care of the lines, which involves replacing fuses, changing to alternate lines if one is burned out, managing motors, generators, and lines to take care of peak and cbb loads, and to make various readings at odd moments. Rapid and accurate work is necessary, as switches must be thrown in just a certain sequence, both for the sake of the lines and for the safety of the operator. The applicant is set to work copying numbers from a special tachistoscope at the top of the switchboard, and he carries on this operation between the special stimuli which are given. Various signals, such as a buzzer, a horn, and a red light, indicate certain conditions which need remedying. These conditions are remedied when the warning noise has been stopped, which only occurs when certain switches have been thrown in one certain sequence. As in the motorman test, a training period is given, and the responses during the test period are automatically recorded on a tape for later inspection. Correlations between $+ .65$ and $+ .72$ have been obtained between ratings of efficiency and scores based on results from this test plus other test and interview information.

Hull points out that scores made on miniature performance tests of the nature of the last two we have described often furnish very satisfactory correlations with later proficiency. This is because the

miniature performance tests incorporate the same functions which are demanded while doing the work itself, and further usually have these functions included in about the same proportions, which gives weighting. The more abstract forms of test may not have as high validity for this reason. There is one criticism of the miniature test—training affects scores markedly. Previously formed specific habits carry over and may create the impression of a higher degree of skill or aptitude than actually exists. We have not claimed that tests will measure skill which has been acquired; they propose to measure aptitude for acquiring skill along certain lines. If a person has had previous experience or special training, it might be more suitable to give him an hour's test on the actual machine, rather than measuring his skill on an aptitude or miniature test.

Among a group of suggested tests for patrolman are three which attempt to measure accuracy of observation. A patrolman should be always on the alert for unusual incidents or for evidence that something out of the ordinary has happened, and should be both quick and accurate in observing things which do occur, such as motor-vehicle accidents. The first of these tests of observation is perception and memory for automobile license numbers, exposed for about three seconds.

The second test for accuracy of observation portrays the street accident scene reproduced in Figure 7. The applicant is given three minutes to study it, and is then asked to answer the following questions, of course without further reference to the picture.

1. What is the place of the accident (street intersection)?
2. How is the policeman attempting to identify the chauffeur?
3. What is the condition of the weather?
4. From what state is the automobile?
5. On which side was the automobile struck?
6. What is the number of the motorman?
7. What shows reckless driving on the part of the chauffeur?
8. At what time of day did the accident occur?
9. What is the date of the accident?
10. What is the number of the street car?
11. To whom does the automobile belong?
12. Name two injuries to the automobile.
13. Name two things which indicate that the chauffeur was killed rather than only injured.

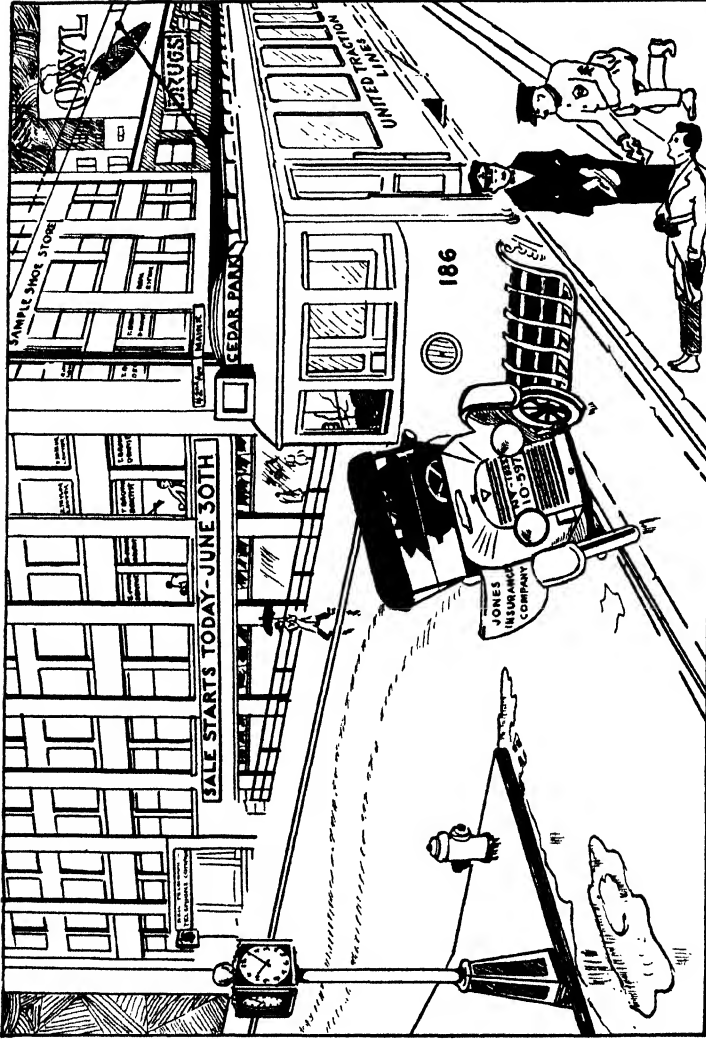


FIGURE 7. DRAWING REPRESENTING AN AUTOMOBILE ACCIDENT, TO BE USED IN CONNECTION WITH TEST ON ACCURACY OF OBSERVATION.

Study this for three minutes and see if you can answer the questions on page 181.

14. What is the first person you would call as a witness of the accident?
15. What is the route of the street car?

One might criticize a number of items in this set of questions, such as the date, the street corner, and the owner of the wrecked car, since they would either be obvious or could be ascertained very easily later. However, the principle is the important matter; to see how many items the individual can pick up in the three minutes allowed. A newly hired patrolman may be instructed as to what valuable bits of information he should notice and record when an accident, holdup, or robbery occurs, but there are always unexpected incidents, and the confusion usually attending a mishap prevents complete efficiency, so some items of information may have to be pieced together later on the basis of memory. Hence such a test as this is valuable.

The third test of observation and memory is of faces. Pictures of ten persons are shown, in profile and full-face views, and the applicant is allowed three minutes to study these. The men are of various builds, characteristics, and races. Later one is told to select the original ten from a second group of forty-eight.

Another miniature performance test has been devised by Wechsler, this one to aid in selecting taxicab drivers. The tests were installed to reduce turnover and to select men who would earn more money for the company, and at the same time have fewer accidents. A mental alertness test was first given; then the actual performance test. The subject is seated in a dummy cab, which has seat, steering-wheel, accelerator, clutch, foot and hand brakes. Signal lights flash on, in somewhat the same manner as we have described in connection with the street-car motorman test, to indicate symbolically various situations which might arise. The subject's responses are recorded on a tape, which shows both speed and accuracy of response. Thus alertness and speed of reaction, and errors, which are taken to indicate potential carelessness, are recorded. The test takes fifteen minutes.

The test was validated by comparing error scores with actual number of accidents the employees had had. Setting an arbitrary score of failure at five or more errors showed that those who made a passing score, less than these five errors on the test, had had only

1.3 accidents a man, while those who made a score which henceforth is to be considered as failing had averaged 3.0 accidents. Furthermore, 46 per cent of those who made no errors had never been involved in an accident, while only 18.8 per cent of those making one to three errors and 12.5 per cent of those who made four or more mistakes on the test had escaped mishaps. Naturally, we could not expect any perfect percentage regardless of the instrument of selection, since some accidents are entirely out of the taxi-driver's control, no matter how careful he may be.

Interesting trends show up when the relation between speed of reaction and number of accidents are compared. Those in the middle have the fewest accidents, the slow and the fast persons more. The slow men seem unable to avoid accidents, while those who are fast are likely to trust a little too much to their skill and become somewhat reckless or careless.

In the same study, comparison between intelligence test scores and earnings showed the same trends. The highest earnings are by the men who rate fairly high, but not at the very top. Beyond a certain point added intelligence is of no value, and it is suggested that men of much higher intelligence than one might expect to find in this occupation must have deficiencies in other directions, and so are not especially fitted or eager to succeed. They may have proved to be failures in other jobs, or are taking this merely as a stop-gap. (Cf. also page 156.)

A simple reaction time test has been used by Moss and Allen to measure the rapidity of stopping an automobile. Two pistols were mounted under the running-board of the car, one of which is fired by the experimenter, who sits in the passenger's seat. The second is discharged when the driver has released the accelerator and begins to apply pressure to the brake. The distance between the two smudges on the pavement by the two shots is measured and the individual's reaction time is computed in terms of the speed of the car. (At thirty miles per hour one goes forty-four feet a second, etc.) The average reaction time seemed to be about half a second. The speed of the car when the shot was fired made no particular difference in the reaction time. These results would suggest that the faster one is proceeding the more distance he must allow as a margin of safety between himself and the car ahead of him, so that

he can stop in case of a sudden unexpected stop or turn on the part of the preceding driver. Also the person who is extremely slow in speed of reaction should be instructed to allow a greater margin of safety.

Tests may be given to applicants to measure their acquired capacities, in terms of *present degrees of proficiency*. Those which we have just been describing rather approach the individual through potentialities. But in many cases we may demand that a worker acquire his skill before he seeks a position. Stenography is an example; a person takes his or her own training and then applies for work; skill may then be tested. A stenographer may be given a test of proficiency along the following lines: speed and accuracy in straight copy; ability to take dictation at the normal rate of speaking; knowledge of business English, punctuation, and grammar; and ability to compose and arrange on paper a properly worded business letter, taking care of various standard types of transactions, such as acknowledgments or small orders. The latter features help ascertain whether the applicant has a certain degree of imagination as well as knowledge of the mechanical aspects of stenography.

We quote several achievement tests for clerical positions used by R. H. Macy & Co. of New York City. The comptometer operator's test includes eight problems of various natures. The first three are straight addition, individual values varying from thirty dollars to over five thousand, mostly having odd cents, and there being from fifteen to twenty-five numbers in a column. The next three problems are of the accumulative type, involving quantities, often fractional, times their values. The seventh problem is addition of yardages; and the last is an accumulation of yardages, certain numbers of items of various lengths. The applicant is allowed ten minutes to complete the task, and nearly perfect accuracy is demanded. The writer might observe, after watching the performance of several individuals taking the test, that one must be very accurate and rapid to pass this test. It was amazing to see the speed and sureness of some girls who were computing, yet few completed it much ahead of time.

The cashier's arithmetic test involves a somewhat wider range of problems, but each is of simpler nature than those of the comptom-

eter operator's test. There are addition and subtraction, addition of several items of a purchase of various quantities and prices, and computation of the value of certain quantities (yards, dozen, or number of items) of goods at so much each. There are also certain transactions involving making change and balancing up an uneven exchange.

A test for file clerk includes a list of thirty-seven names followed by the ten cities where these individuals reside. The candidate is to rearrange the names in alphabetical order under the cities to which they belong. This naturally calls for both speed and looking ahead, sizing up the whole list before writing down anything, so that no name will be discovered later which occurs earlier in the alphabet. A card-sorting test has also been included in the file clerk's program. This test is borrowed directly from the laboratory, but is sufficiently like filing operations so that results may be transferred. Number filing is also included.

IX. TEST BATTERIES

With a complete testing program the worker is not accepted or rejected on the basis of performance on a single test. No position calls for just one type of ability. Therefore it seems advisable to test a person in various functions. We have already discussed a number of these functions—intelligence, education, personality traits, physical condition, previous experience, knowledge of the duties of the job, etc. Not all are of equal importance for all or even any one position, so some weighting scheme must be adopted. Normal eyesight may be a requirement, for example, but intelligence would be several times as important in most vocations. Personality is of vast importance in some positions and of little consequence in others. So let us examine a few test batteries to see how some testing programs are actually coördinated.

The test battery will have to start with the occupational analysis. This analysis, or description, as we saw in Chapter VI, contains a list of the duties to be performed on the job, and it was urged that a general estimate of the time spent performing each duty be included to indicate its relative importance. This will enable one not

only to determine what tests should be included, but also how long to make each and how much weight to give the results of each.

A battery of tests for a senior clerk has been prepared by Moss and Telford, and is outlined as follows:

TABLE 24. SUGGESTED TESTS FOR SENIOR CLERK

Nature of Suggested Tests	Suggested Time	Suggested Weights
Test 1—Office work and terms. (Twenty questions in the multiple choice form, each with four answers; required minimum rating of 70 suggested.)	10 (min.)	2
Test 2—Understanding and following written directions. (Ten directions as to the checking of items in a table; required minimum of 60 suggested.)	15	1.5
Test 3—Comparing. (Comparison of the original and a copy containing ten items to detect errors.)	5	.5
Test 4—Alphabetical filing. (The insertion of ten names in the proper place in a list of sixty names in accordance with rules given in the directions.)	10	.5
Test 5—Recognition of business transactions. (The recognition and naming of ten business transactions described in some detail.)	5	1
Test 6—Reading. (Ten questions dealing with the content of a quoted selection dealing with business practice or office management.)	5	1
Test 7—Business arithmetic. (Ten problems dealing with transactions such as occur in a public or business office.)	10	1
Test 8—Memory for office directions. (Five questions on the content of a set of oral directions such as are frequently given a clerk.)	7	.5
Test 9—Education and experience. (This is really a questionnaire, not a test.)	10	2
Totals	77	10

It might be noted, from a pure testing standpoint, that it might be more ideal to have the length of working-time and weighting values of the tests agree. One will notice that Test 2 takes 50 per cent longer than Test 1, yet is given only three-fourths the weight. However, these discrepancies may be justifiable, since some forms of answers, as multiple-choice or true-false, require much less time to fill out than the essay type, and some tests require reading lengthy directions or a paragraph of material, as in Test 6 above, and would thus require more time to sample each unit of information.

A series of tests used to select men for a different type of position is that for patrolmen. Qualifications are laid down as follows: "The equivalent of an elementary school education; intelligence equal to or greater than that indicated by a score of 65 in the Army Alpha tests; ability to comprehend and carry out instructions and to make simple written reports; ability to understand, interpret, and apply laws, ordinances, and police rules and regulations; ability to size up situations and people and to deal with people individually and in groups; keen observation; even temperament; good moral character; good physical condition; strength; agility; height not less than 66 inches; weight not less than 132 pounds and properly proportioned to height; age not less than 21 years and not more than 29 years." Certain additional desirable qualifications are also suggested, such as a greater degree of education, but these do not particularly concern us here. It is worth noting that experience is almost totally discounted, since there is no occupation which leads directly up to that of patrolman, not even the military or naval services.

The outline of tests for selecting a patrolman is on page 189.

The last item, which receives no rating or weight, suggests a form of treatment of certain facts which is slightly different from other methods. It is a qualitative treatment of very important data; if the person does not come up to a certain standard along a particular line he cannot be accepted, regardless of how high his qualifications on other points may be. To create an extreme example, no one would be acceptable as a patrolman if he has ever been convicted of certain crimes, regardless of his intelligence, his powers of observation, and his knowledge of police duties. It would be hazardous to employ a color-blind railroad engineer. A bacteriologist is re-

TABLE 25. BATTERY OF TESTS FOR SELECTING PATROLMEN

Test 1—One of the five alternative forms of the Army Alpha intelligence tests (total time required, slightly less than an hour). (A minimum required score of 65 on the Army Alpha scale is suggested.)	Weight 2
Test 2—Accuracy of observation (total time required, about twenty-five minutes). (Fifteen questions, based on some drawing or photograph, to be answered from memory, and the recording from memory of the identifying marks on ten automobile license tags.)	Weight 1
Test 3—Memory tests (total time required, about twenty minutes). (Five questions on a verbal order—or description—to be answered from memory; the recording from memory of ten facts from a description containing fifteen facts; and the identification from memory of the photographs of ten persons displayed among the photographs of forty-eight persons.)	Weight 1
Test 4—Understanding of laws, ordinances, police rules and regulations, and other printed material (total time required, about twenty minutes). (Forty questions based on the content of printed material placed in the hands of competitors when the test is given.)	Weight 1
Test 5—Police duties (total time required, about thirty minutes). (The identification of ten crimes from definitions of crimes and from descriptions of cases placed in the hands of competitors and the answering of twenty questions in the so-called “multiple choice” form with four answers from which to choose.)	Weight 1
Test 6—Education and experience (total time required, about ten minutes).	Weight 1
Test 7—Personal traits as determined by interview.	Weight 1
Test 8—Medical and physical tests.	Weight 2
Test 9—Character investigation.	No rating or weight.

quired to have normal eyesight, since he has to do a great deal of microscopic work. (See Test 5 in the battery quoted in Table 26.) Minimum physical ratings for patrolmen also come under this

TABLE 26. STANDARDIZED TESTS IN BACTERIOLOGY

Test 1—Organisms, methods, infection, and immunity. (Section A consists of fifty questions in the so-called multiple choice form, each with four answers suggested from which to choose the one correct answer. Section B consists of fifty questions in the true-false form. Each statement is to be read and the competitor is to indicate by encircling the T or F, whether it is true or false.)

Test 2—Recognition and diagnosis of bacterial microorganisms. (In section one are the names of fifteen microorganisms, ten of which are described in section two. The competitor writes the name of the organism listed in section one which most nearly fits the description given in section two.)

Test 3—Laboratory procedure. (Four procedures, each of which can be accomplished in five steps, are given. The five steps are listed, but not in the order in which they would actually be done; in addition, several useless steps are included. The competitor for each procedure numbers from one to five the steps that he would use to carry out the procedure in the order in which he would use them.)

(These first three tests take sixty minutes and are given a weight of 7)

Test 4—Identification of microorganisms from lantern slides. (Ten lantern slides of pathogenic bacteria showing typical colonies, various cultural characteristics, cell groupings, and the typical morphology of the organisms are shown. From the slide the competitor identifies the organism.)

Ten minutes; weight of 1.

Test 5—Eyesight. (The individual is given one of the standard tests of eyesight used by opticians.)

No rating.

Test 6—Education and experience. (A statement of the competitor's previous record, to be used only by personnel administrators.)

Ten minutes; weight of 2.

classification; unless a man is of a certain height and weight he simply cannot be accepted.

Another battery, that for selecting a bacteriologist, illustrates the method of selection in an occupation of a much higher level than

those we have just inspected. This vocation is one of distinctly technical nature, demanding a high degree of intelligence, specialized training, and knowledge of laboratory technique. And since it is research in nature, social aspects of the individual may be ignored. One may see that eight out of the ten total weighting points are given to technical knowledge directly, and the other two points, those in Test 6, Education and Experience, deal with somewhat broader aspects of the same topic.

X. VALIDATION AND INTERPRETATION OF TEST SCORES

It is obvious that one cannot just sit down and write out a set of questions and tasks for an applicant to answer and perform. One must make sure that he is testing the qualities which are necessary for success in the position under consideration, and that the test predicts future success with reasonable accuracy.

(1) *Constructing the Tests.* There are a number of points which must be taken into consideration in building up a test.

A. *Occupational Description.* We must first look over the position to see what are its requirements, and then design the battery of tests to measure capacity or attainment along just these lines. It is well to mention again that tests cannot measure ability along all lines; many items of information will be gathered from the application blank, previous records, and the personal interview. Our selection of functions to be tested may include some or all of the following: strength, health, sensory and other special capacities, motor ability, personality characteristics, intelligence, schooling, special training, and detailed knowledge.

B. *Selection of Items.* Having decided in which fields one will test applicants, we are ready to choose the actual items. To start with, one should select items which deal with capacities or knowledge possessed by those working in the occupation, but which would not ordinarily be known to those outside. For example, everyone has a few rudimentary items of information about physics, chemistry, and medicine. One should avoid these items, and include those which will be known to one who has a real mastery of the subject, but not to the average individual. For example, a true-false question from the test for a bacteriologist, "Pyemia is the

presence of bacterial toxins in the blood," may be simple for a trained bacteriologist, but is a little too specialized for the average person to answer. Selection of items must be carried on in relation to the demands of the occupation, however. A patrolman is expected to possess a certain degree of social grace and tact, but an average amount is sufficient, so we would not subject him to a test of more than moderate difficulty.

C. *Distinguish between Tests of Capacity and of Attainment.* One must decide, before making up the actual questions, just how much to weight experience, either as a separate test in the whole battery or implicitly by having many of the items directly ones of information. For such a position as the last discussed, bacteriologist, or for stenographer or high-grade mechanic, we should demand knowledge obtained through training or experience. But for a patrolman, an apprentice carpenter, or a salesman there are no positions leading up to the work, and there is no particular reason for one's taking special training; he can learn under supervision on the job. In these latter cases we are more interested in potentialities than in already acquired knowledge. So we should devise tests measuring learning ability, capacity for accurate observation, and mechanical proficiency—all aptitudes rather than accomplishments.

D. *Proper Proportioning.* If one is testing the different functions which go toward determining success in a certain vocation, he must be careful to sample each in accordance with its importance. A mechanic may spend seven and a half hours turning out his product, and the other half hour in cleaning, sharpening, and repairing his tools. This latter is an important function and cannot be neglected, yet in terms of time spent would be rated as only one-fifteenth as important as the first. Another point under the same heading is to avoid overlapping tests as far as possible. Each sub-test should study a separate function, and not duplicate any other.

E. *Easy Scoring.* The ease and certainty of scoring is not the least criterion of a good trade aptitude test. There are some tests which take about as long to score as for the applicant to fill out, and which two raters might score very differently. For both reasons an answer of the true-false, multiple-choice, or completion type is desirable. Answers will be far less variable, scoring methods can be devised in advance, and the examiner will have to read fewer words.

The writer would recommend the completion type of question as the most satisfactory. An hypothetical example would be: A rotating device which is used to separate liquids of different specific gravities is called . . . The applicant is to write in the answer: Centrifuge. The true-false or multiple-choice question often gives itself away, since it tests recognition rather than recall.

(2) *Validating the Test.* No matter how carefully we have made up the test, we are not yet certain that it will be accurate enough to select high-grade workers. So we need to check up on it in a number of ways.

A. *Reliability.* The tests must be accurate measuring devices; that is, they must give the same score every time they are used on the same person or on different persons of equal ability. An unreliable test has been compared to an elastic tape measure, which gives different distances according to the amount of tension applied to it. Reliability is achieved through two main methods: making sure that the items selected distinguish between the mediocre and the good man, and having the test long enough to eliminate the factor of chance. If a test is short the poor man may happen to know most of the items and the good man might happen to be ignorant of many; but one of somewhat greater length will more truly disclose knowledge and ignorance in their true proportions. Reliability is computed in two chief ways: by correlating scores on the even-numbered items against those on the odd-numbered items, and by correlating two successive performances on the same or on different forms of the test.

B. *Proper Difficulty.* In devising tests one should always bear in mind that most positions are largely routine in character, and as such will not be sought by persons of a high degree of intellect or knowledge. A question which to its composer seems perfectly fair may be entirely too difficult (for example) for machine operators, for whom it is designed. One cannot foretell in advance the actual difficulty of a single question or a group of questions; so this phase of validation will have to be experimentally solved. It might be suggested, in accordance with approved mental test procedure, that test scores should (1) cover a fairly wide range, so that the superior, the average, and the poor applicants are clearly separated; (2) closely approximate a normal distribution; (3) bring the median

to approximately 50 per cent accuracy; also, (4) there should be no perfect or zero scores. If two persons make perfect scores, one may be better than the other by virtue of his having consumed less time in completing the task, but from the scores there would be no objective evidence to that effect.

C. Items Should Work Selectively. Each item should be checked up while the test is being experimentally validated, to see if it distinguishes between the good and the poor applicant. This is done by dividing the group into three divisions: a superior, an average, and an inferior, in terms of the total score. The first division includes the top 25 per cent, and the third division the bottom quarter of the group. The middle half may be ignored for present purposes, or may be included as a means of comparison. If an item is valid, the superior group will be found to have scored better than average, and the inferior group will be below the average accuracy for that item. For example, the top quarter may get an item 80 per cent correct, the middle half 50 per cent correct, and the bottom quarter of the group only 20 per cent correct. If, however, about the same percentage of each group happens to get the item correct, it is said to have no validity, since it does not discriminate good from poor applicants. It should then be discarded. In standardizing the test one may try out several times the number of items he expects to use, and select those which work out best from among the whole number.

Some tests introduce the further refinement of weighting individual items in proportion to their validity. Thus one which is answered correctly by four times as many persons in the top group as by the bottom will be given twice the emphasis in the final score as one which only brings out a two-to-one ratio in the results. This decidedly complicates the scoring procedure, and is usually ignored, and all items which exhibit a good separative tendency are retained and counted alike.

D. Test on Workers of Known Ability. After the test has been satisfactorily arranged from a statistical standpoint, it must be validated in another way. We must find out if those who score high on the test do well on the job, and if those who make low scores prove to be less satisfactory workers. We can start this validation program on employees whom we already have in our plant, and whose abilities we know. Workers are rated for skill, speed of work,

quality of finished product, fewness of accidents, etc. Then we submit them to the test battery and make group comparisons. If those who are rated high also score high, and *vice versa*, the validation has gone one step farther toward completion. If the test fails to discriminate between groups, it must be revised as to individual items and perhaps even as to the major functions tested.

E. Check on New Employees. There is a slight loophole in stopping after using the last suggested technique for validation. Scores may be considerably affected by what has been learned since the individual entered the employ of the firm. As such it would not be measuring aptitude; rather it would be an examination on the practices of the firm. This is the same principle which was set forth previously—to distinguish between tests of capacity and of attainment. So, after verifying the items of the test on present workers, we next subject applicants for the position to the tests and compare their later records with their test scores. It is ordinarily not considered advisable to lay much emphasis on test scores until this particular aspect of verification has been made, as we cannot tell just how much knowledge might be acquired on the job, and how many potentially valuable employees who might learn very rapidly might be lost because they scored low on the test. This means that a trade test cannot very well be put into complete operation in less than a few months, or even longer in the case of some complex jobs where a good deal of training is necessary. We must wait until the new employee is thoroughly trained and at home on the job, and has worked long enough so that we feel we can take his work as a good consistent sample of his true ability. Then we can check his efficiency against his original test score.

F. Critical Scores. From our survey of workers, as taken up in the last paragraph, we are in a position to see what degree of proficiency we should demand on any test. As has been emphasized in dealing with the various employment procedures, there is no sure method of predicting success at work. A person may have plenty of ability, but fail because of an unfortunate personality trait, or because he has outside worries which prevent complete concentration, or because he loses interest in his work. So all interpretation has to be on the basis of probability. If it is found that 90 per cent of persons below a certain score fail, that most of those over a somewhat

higher level can earn a living wage, and that those over a still higher level become superior workers, we can use this information in interpreting scores. Our decision may take three forms: (1) We refuse to accept any applicant below a certain score; (2) we may accept those above that limit (provided their other qualifications are satisfactory); and (3) we may eagerly receive those who earn a high score, and keep them in mind for promotion.

A high score on one test may in certain cases be allowed to compensate for a slight deficiency in some other measure. For example, both experience and score on a trade-aptitude test may be considered in determining an individual's suitability. If he has had no experience, but makes a very high score on the trade test, the deficiency may be ignored, since he must have acquired much information in an informal manner, or must have a high degree of potential ability to make that high score without formal training. Columbia University has admitted students with a good high school record who could make 70 or more on the Thorndike intelligence examination, but has waived the high school requirement in certain cases, provided the individuals scored 80 or more on the test. Their ability and knowledge are such that they should make good college material.

The critical scores are set up in various terms. If it is found that the majority of workers who score below a certain point on the test have more accidents, spoil more materials, produce a lower output, or sell fewer items than seems permissible, we can set our critical score there. Just where to set it will have to be determined in the individual cases. If labor is plentiful and the work requires a good degree of skill, the dead line may be fairly strictly set. Financial analysis should assist here. One may figure just how much goods a salesman must sell to earn a living wage and a profit for the store, and perhaps set the figure from this, in terms of the test scores made by salesmen who sell just this amount. With machine operators the quantity produced will be the essential factor. In mentioning the tests used on taxicab-drivers both earnings and freedom from accidents were used as factors determining success. The critical score might be set at a point where it has been found that two-thirds or three-fourths of the individuals succeed and remain in employ a fair length of time. It is probable that no score could guarantee more

than nine chances out of ten of success, due to the various causes of fallibility always present.

Sometimes a second critical score is also included; this is considered a desirable score. For example, applicants for a routine position may be accepted if they are grade school graduates, but if there is a choice between a number of applicants one who may have gone through high school will receive the offer. The same principle may be applied to intelligence and trade-test scores, where minimal and desirable levels of performance may be established.

G. *Later Revisions.* In science it is said that nothing is stationary; this applies to personnel work and industrial conditions as well. Due to mechanical advances, style changes, and economic fluctuations, any position is bound to change. The worker may alter the job himself, especially if he has a position of the type where initiative may operate. Later when a vacancy occurs the original standards may not be applicable; tests must be modified and even new ones placed in the battery. The personnel office must keep alert to this constant growth.

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ADDITIONAL REFERENCES

In the discussion we made direct reference to only a small portion of the literature on testing. From other sources, however, we derived ideas and noticed trends in techniques of testing. Among original sources of test batteries and questions the series of Public Personnel Studies is outstanding. Practically every month over a period of several years a test for a different occupation was suggested. Some of these were partially or completely standardized. Those published between 1924 and 1929 are listed here.

1924: Patrolman; high-grade public service; prison guard; hospital attendant; senior clerk; fire-fighter; food inspector; and supervising clerk.

1925: Janitor; bacteriologist; senior library assistant, circulation department; painter; automobile-driver; pathology; female playground supervisor; road inspector; plumber; shift engineman; and junior clerk.

1926: Private branch operator; electrician; patrolman; senior account clerk; probation officer; general machinist; automobile mechanic; elementary teacher; carpenter; vegetable gardener.

1927: Fire lieutenant; instrument man; police sergeant; alphabetical filing; steam fireman; cook; senior clerk; junior personnel examiner; laboratory assistant; policewoman.

1928: Food inspector; stenographer; rodman; blacksmith; statistician; cottage master and cottage matron; storekeeper; addressograph operator; housekeeper; laborer; and baker.

1929: Medical social worker; dietitian; head farmer; patrolman; senior statistical clerk; water-meter reader; and occupational therapist.

to his work, and that of training him. These stages may last from only a few minutes to a number of weeks.

He has gone through a more or less stringent process of inspection for suitability and is now to be put to work. Naturally, he is ill at ease. He is largely or totally unfamiliar with the methods of the company, knows few, if any, of the other employees, and is a little confused as to what he should do next. It is particularly perplexing in a large plant, where there are many buildings, where even the task of finding one's way about is not easy, and where personal contact is slight.

Here the personnel department has its first opportunity to make a firm friend for the company. As we pointed out in Chapter VI, in discussing the Occupational Description, the candidate has as much right to ask the management to show that the place is a good one to work in as has the management a right to test the applicant to see if he is worthy of being given a position. A little personal interest and an attempt to sell the company to the new employee will be decidedly repaid in terms of reduced turnover, longer employment, increased satisfaction, and consequent increase in production. It has been found that a large share of resignations occur very shortly after initial employment. This again shows the importance of bridging the gap between employment and later normal working conditions.

(2) *Acquaint Employee with Nature of Company.* Just after the employment process has been completed the new employee may be told in an informal way certain facts about the company—history, principles, and methods. This will enable the worker to understand the nature of the company better than acquaintance with his single position will admit, and will give him a feeling of belonging to a high-class organization. He will take pride in describing it, just as one does in showing a stranger about one's home town and pointing out the sights of historic and present importance.

Tell how the plant started in a small way, with perhaps the original owner, his sons, and a few workers; and how it grew and expanded; finally how it moved to a new and better location and expanded to its present large size. Then one may tell about it at the present time—if a factory, what products it makes, where the market is, and what uses the various products have. If it is a store,

one may describe the types of goods handled, the merchandising policy, and the general methods.

A trip around the plant should be of great interest and value. New employees of one general classification, regardless of department, may be taken in small groups under the leadership of a guide, and shown the various aspects of the organization. This will allow the worker to see the scope of operations, and understand the exact relation of his work to that which precedes and follows it.

Finally, description of the services which the plant renders its employees will help sell the organization to its new members. This will include sickness and accident benefits, medical assistance, lunch-rooms, discounts on purchases, library facilities, savings plans, vacation provisions, etc.

(3) *Taking to Department.* Attention is paid to the apparently simple process of conducting the newly hired employee to the department in which he is to work. In a large plant the task of finding a certain department may not be the easiest thing, and a person who is already ill at ease may be a little hesitant to ask questions lest he disclose his ignorance. Also he may be a bit nervous about seeking out his supervisor and informing him that he has been sent over to work. A third reason for taking care of this matter is that it affords an excellent opportunity for the company to get across a few ideas and bits of information, and thus make the person more familiar with some of the customs of the plant.

Therefore it has been suggested that a responsible person who has some logical connection with the worker conduct him to his department and introduce him to his supervisor. This should be either a member of the personnel department or a fellow worker from the department he is to work in. There are points in favor of each. The member of the personnel department has become acquainted with him already, and is in a better position to give him appropriate and unbiased information. On the other hand, a fellow worker will inspire less awe, and can tell about actual working conditions in a personal way.

(4) *Reception by Department.* The superintendent of the new employee's department should be notified by telephone that a man is on his way, so that he will be ready to greet him and to assign him a place of work. This reception need not be elaborate, of

course, but it should be sincere and friendly. The first impression of the department in which he is to work will count for a great deal, since people whom he will actually see every day will be concerned.

After a brief chat of a minute or so, the supervisor can make arrangements for training the new man. In a department doing routine work the boss himself may devote a few minutes to showing the man what he is to do, or he may delegate a fellow worker to tell him what is necessary. With more complex tasks, where definite training is demanded, one expert worker may have the duty of instructing all new employees, or a separate training department may carry on this function.

Introduction to the work takes the form of telling the regulations of the plant and location of various things, as well as assigning the man to a place of work. A good suggestion that has been made is to have a fellow worker meet him at the noon hour the first day, show him where the locker and washrooms are, take him to the employees' cafeteria, and show him how to sign in and out.

(5) A *Sponsor System* has been installed in some organizations. A certain fellow employee is assigned to look after the new man for the first few days, to see that his work is going along all right, to give him suggestions and information about necessary points, and to give him some of the information about the plant which was mentioned in the last paragraph.

The greatest advantage of this sponsor system is that it gives the new man a friend to whom he can go and ask for information without embarrassment or fear of being misinformed. Some persons seem to delight in practical jokes at the expense of neophytes, and they may hesitate to try these if they know that an older employee is taking responsibility for the welfare of the new worker. The new man is not completely at ease and will be more sensitive to practical jokes than one who is more thoroughly established, and he may easily form a lasting bad impression of the company and of a few individuals in particular if he has been made the butt of some ill-timed attempts at humor.

(6) *Follow-up Interview*. Another personal touch may be added by holding an informal interview a few days after employment, or a few days after the worker has finished his formal training and is

working on his own. This may take place on the floor, or by appointment in the personnel office. The purposes would seem to be better satisfied if it occurs at the place of work. Possibly the interviewer who engaged him may drop by, ostensibly on other business, and chat with him a few minutes on how he finds the work, asking whether he likes his fellow workers, whether he is being treated all right, and whether there are any questions he would like to ask. Very little concrete information comes from this interview, but it reassures the worker and shows him that he has not been forgotten as soon as employment was completed.

III. TRAINING

(1) *Problem and Types.* In almost any position beyond the most elementary a new worker needs some instruction as to how to carry on his duties. This may vary all the way from handing him a shovel and telling him to heave coal or sand, to the many years' training necessary to become a doctor. The type of instruction as well as the length of it may vary decidedly. One may be "shown how" very briefly and then turned loose on his work; he may be given some instructions, and then criticized and taught additional refinements from time to time; or he may be given instruction by a special teacher on the job or in the training department for a certain length of time before he is permitted to engage in actual productive work. Instruction may be along specific lines, it may follow general education, and it may include some general features about the company. Finally, we may have training for promotion as well as for efficiency in the present position.

(2) *Training on the Job.* The simplest type of training is learning how while actually doing. This naturally demands work of such simple nature that it is safe for the product, the machine (where one is used), and the worker, to turn him loose on it as soon as he is employed. This type of work involves a small amount of "showing how," and then allowing the worker to proceed. The supervisor or a fellow worker may show him how to tend the machine, and tell him what to do with the finished product and how to get additional materials. Examples of other simple tasks of this same nature would

be sorting packages for delivery according to streets or towns, or keeping others supplied with materials.

Tasks of slightly greater complexity may be taught in the same general way, by showing the employee how while he is working, but with additional instructions interpolated from time to time. For example, a man hired to do general laboring work may be set to shingling a roof. With a little observation and brief instructions he can start out and carry on all the straight work. When it comes to finishing at the gable or going around a dormer window, he may be given specific instructions. Another example is seen in delivering packages; a new man is sent out with the driver of the truck and is given definite instructions as to how to deal with each kind of transaction until he understands all the various types he may meet. The expert gives the new man hints from time to time, as in watching him he notes something done wrong or not quite so efficiently as it might have been. This is comparable to the informal suggestions given one while playing golf with a friend who is an expert player.

At the next level of complexity, the worker may still be allowed to learn his duties on the floor, but is given more definite and formal instruction by a skilled worker in the department. One man may be delegated to take charge of breaking in all new men who are learning a certain operation. He must be carefully selected, not only as an expert worker, but also as a good teacher. These two abilities do not always go together. This system is most suitable where definite training is necessary, but where it can be taken care of in a few hours. If longer directly supervised training is necessary it would probably be better to have the training department take care of instruction.

(3) *The Training Department.* For those positions where it is considered more advisable for new employees to receive formal training than to start right out on the floor, the training department takes care of instruction. It is usually a part of the personnel organization, and frequently employment is not considered complete until training has been satisfactorily finished.

There are several advantages in having one department handle training functions. Members of it are selected primarily for their teaching ability, which we cannot always assume even in expert

workers. Since their entire function is to train certain types of people, say sales clerks or section managers, they will know just what points to emphasize and how long to spend on each. All persons employed for a certain type of work can be trained in a group, which consumes far less time than if each department has to train its own workers individually. For example, salesmen, regardless of department, will have to use the same kinds of sales checks, handle the same general types of transactions, and meet the same problems in dealing with customers. A central bureau can set up more objective standards for passing the training course than can each department, which has had less experience along these lines. Finally, the training department can best impart desired information about the history and nature of the company.

In building up a course of instruction the training department should make use of the occupational description as outlined in Chapter VI. This tells the major duties of the position, gives each its proper significance, and indicates just what facts and methods are important to teach the new employee.

The remainder of the discussion concerning training will center about the various activities of the training department.

(4) *Training by Exercise.* This term, taken from Allen, refers to training a person on tasks exactly similar to those met in the actual work, but not with the same machines, materials, or in the actual work situations. The salesman, to use one example, may be given a printed sheet which says that Mrs. Z. Y. Cohen of 538 West 135th Street, New York, has ordered to be sent, collect, 8 cans of peas at 2 for 25¢ and a dozen bars of soap at 3 for 23¢. He is to write this order correctly and fully on the right type of sales check and record it on his tally sheet. A man in training for riveter does riveting, but uses old plates. It might be dangerous to allow him to pound rivets into a bridge or ship under construction. The theory underlying this training by exercise is that it is better not to let the inexperienced worker do the real tasks for a while, for fear of injury to himself, damage to a machine, or waste of materials. He is taught under standard conditions, along with others who are in the same stage of proficiency, and with correct methods of working emphasized.

(5) *Apprentice System.* This may be mentioned as an example

of a combination of learning while working and receiving formal instruction. While the end result is the acquisition of extremely complex and varied types of accomplishment, requiring in some cases several years, the work is usually so graded in terms of difficulty that even the beginner can engage in profitable labor. If one wishes to become a carpenter, he starts out by doing scaffolding and rough outside work, and gradually works up to the point of doing floors and roofs, and then to the more complex tasks like installing windows, staircases, and intricate paneling.

A concrete example of an apprentice-training course is shown in the following schedule used in training tool- and die-makers by the Western Electric Company at Hawthorne, Illinois.

	School Shop	Regular Toolmaking Departments
Small-tool work	600 hours	600 hours
Lathe work	1000	700
Milling work	1000	700
Grinding	400	—
Heat treating	—	100
Jigs and fixtures	800	900
Punches and dies	1900	900
Total	5700	3900

The whole course of 9,600 hours covers 200 weeks, which amounts to four years, assuming two weeks vacation a year. It is noticed that training takes place both in the school shop and in the regular working departments. In most cases both theoretical and practical instruction are given in the same phase of the work.

(6) *Salesman Training.* Let us look over briefly the way in which salesmen are trained in a large store as an example of a type of work different from factory labor. Salesmen are not given their book for four days. During this time they are on the selling floor about two-thirds of the day, learning the stock and becoming accustomed to dealing with customers. When they happen to close a sale they turn it over to one of the regular clerks to write in his book.

They meet in the training department for instruction during two or three designated hours of the day. This instruction deals with three chief phases: certain general facts about the store, technical

details about writing sales checks and handling various types of transactions, and methods in dealing with customers. Major attention is paid to writing the sales checks. While this is a routine matter, it is very important. Mistakes may be costly; at any rate, they will create confusion and delay. The more speedily and automatically one is able to write them the more attention he can pay to waiting on the customer and the more customers he can serve during the course of a day. One who has never acted as a sales clerk may not realize the complexities involved in writing out these checks. In the first place, different ones are used, depending on whether the customer is to take the package himself or desires it to be delivered; whether it is a cash or collect transaction; and whether it is to be charged or not. Further, certain transactions, like acceptance of personal checks, exchanges, refunds, special orders, and deliveries at a specified hour demand different forms of treatment, and may call for authorization on the part of some executive. The third group of facts, how to deal with customers, includes such items as form of greeting, what merchandise to bring out, how to present arguments, how to answer objections, how to handle complaints, etc.

After the specified number of hours of training, an examination is given, to see if the prospective salesman can perform the necessary functions by himself. Some specific training may also be given on the floor, as to the goods handled, the models, colors, sizes, etc., available. This will be discussed at somewhat greater length in the chapter on salesmanship.

(7) *Supervisor Training.* It is of great importance to train people to handle others, as well as to train workers to carry on their individual duties. Men in positions such as foreman, section manager, or superintendent, where the duties involve guiding and regulating employees, can do much more toward determining the success and failure of the company than can any single worker. Before scientific personnel work began, a man who had shown himself to be a good worker and who possessed an ability to so browbeat his men that they did pretty much as they were told, at least while he was looking, was considered suitable to be a foreman. It is now realized that these qualifications are inadequate: treatment which is too rough increases turnover; fear never increases output except mo-

mentarily; and the desirable spirit of hearty coöperation is lacking. What is needed is men who can handle others in a friendly fashion and can provide leadership of a type to bring out the best in each man under their direction.

Many positions demand handling of customers or visitors, as well as of subordinate employees. The section manager or superintendent in a store will have to answer questions of inquiry, settle complex transactions equitably, and take care of complaints of all natures from people whose emotions are already badly stirred up.

People in positions of responsibility and authority like these must be made to realize the value of judicious handling in keeping things going smoothly. Good treatment is probably best summed up in the familiar Golden Rule: Do unto others as you would have others do unto you. If one is tempted to display his authority, to make a person feel ridiculous by means of a sarcastic remark, or to be gruff toward some one, he should stop and consider how he would feel if the positions were reversed and the other should make that remark to him. Since few persons think over their actions as rationally as this, supervisor training will usually have to take more definite form. Each executive may be given specific instructions as to how to handle the various situations which tend to arise under his jurisdiction.

However, it is almost impossible to lay down rules that will cover more than a very small share of situations of this nature which do come up. Therefore, the burden of having in these positions men who will do a praiseworthy job falls on the personnel department in the matter of initial selection. Men must be selected who seem to have grace, tact, and poise in meeting people. A few main points may be suggested to them, but the bulk of their conduct depends on the social qualities they already possess.

(8) *Developing Versatile Employees.* It is desirable if a worker can handle other jobs in addition to his own. The organization is better equipped to take care of emergencies, seasonal fluctuations, and other variations in demand. The employee is more valuable to the firm and to himself, and becomes eligible for promotion along several lines, so that he may step ahead when any one of several positions becomes vacant. Examples of this type of training would be a typist learning shorthand, filing, some aspects of bookkeeping,

and similar office duties. This may be accomplished in evening or late afternoon work, or may be done during working hours in slack times, when the pressure of work is not very great.

(9) *Training for Promotion.* Many companies make provision not only for the training of workers when they come into the plant, but also for their future development so that they may advance. This type of training is usually voluntary. It may take a number of forms. Lectures, demonstrations, or moving pictures may be given occasionally after working hours. Notices are posted throughout the plant or store, and the meetings are open to any employee who wishes to attend. Special courses may also be conducted. Skilled laborers may be given the opportunity to learn more specialized and valuable operations, such as electric welding, dynamo repairing, or operating special types of calculating-machines.

Library facilities, within the plant or by arrangement with the city library system, and general night-school courses, will also give the ambitious employee a chance to better himself. This improvement may be general, rather than specific, or along the lines of trade skill, but will be of equal or even greater importance in many cases. One may infer that the individual has a desire to improve himself and has ambition, which factors may make him a likely candidate for advancement when an opportunity arises.

(10) *General Training.* The employee may wish to continue his general schooling after he has gone to work, and many companies provide him the opportunity to do so. This serves several purposes. It enables some who have not yet reached the age for leaving school to continue working and schooling together. This affects messengers, parcel-wrappers, delivery boys, etc. It enables adults to learn subjects which they have never had the opportunity to acquire. It also enables some to take more advanced courses and place themselves in line for promotion. Another type of course is known as "Americanization," in which the laborer, possibly an immigrant, is taught the language, government, and customs of his new country. Classes may be held just after working hours or during the evening. In some plants they may even allow an hour off during the working day, on the theory that the plant will be more than repaid in terms of the betterment of the working force.

IV. FLYING SQUADRON

(1) *Purposes.* The term Flying Squadron has been used to designate a group of employees whose duties are not fixed, but which is assigned to help out temporarily at any place where there is need of extra help. If there is a large sale in a certain department, or if a factory has great demand for a certain article at the beginning of a season, this group may be placed there for a few days. Potential executives may also be placed in this group so that they can learn various phases of the business.

(2) *Smoothing Fluctuations.* Variations in business will probably be much greater in a store than in a factory, since in the latter seasonal fluctuations can be anticipated and largely smoothed out by careful planning. But demand in a store around holiday time, on Saturdays, or at the start of a season must be satisfied as customers appear in the store.

This force of extras may be either full-time or part-time workers. In the latter case boys or girls going to school or college may come in for Saturdays and during holiday seasons. This arrangement is very satisfactory all around. The workers will be enabled to earn a little money the only day they are free, and the company will have an enlarged force at peak times without the necessity of keeping them the rest of the week. Such students may furnish executive material after they have finished education.

(3) *Executive Training.* The second purpose of the Flying Squadron is to train men and women to undertake positions entailing responsibility or authority. The more they know about the activities and positions within the plant the better they can manage others and handle responsible matters. In talking with a number of well-known executives the writer has always been impressed with the mass of information, down to the smallest details, possessed by these men whom one might think would have all they could do to take care of major items of policy.

So it has become a common practice to have this group actually work at as many different tasks within the store or plant as possible, spending time on each in accordance with its complexity and probable relationship with later executive function. Actually doing

the work enables the individual to learn much more about the real problems, tasks, and difficulties than a lecture or inspection tour would permit. Further, he is productive at the same time that he is learning; so his salary is not a dead loss, although it is usually somewhat higher than the work he does would warrant otherwise. Another benefit of shifting about is that special abilities and interests may be disclosed, which may warrant later placement in one particular department or in one phase of work.

It is recognized that the work done by these individuals may not be fully efficient, since they are only a few days on each job, but their abilities may be assumed to be above average, so they undoubtedly learn rapidly. And many tasks are related; for example, they may sell in various departments over the course of several weeks. After they have learned something about salesmanship and have acquired confidence they should be able to step into any department and do a good job, having only to check up on a few minor details, such as prices and technical points about the goods.

A sample schedule of a Flying Squadron used for executive training by R. H. Macy & Co. is as follows:

Position	Duration
Service shopping.....	2 days
Selling.....	5 $\frac{2}{3}$ weeks
Section-manager training.....	2 weeks
Section manager.....	6 weeks
Head of stock.....	5 weeks
Bamberger's (branch store).....	2 weeks
Special assignments, such as Merchandising, Management, Finance, or Publicity.....	5 weeks
Total.....	26 weeks

In this way the candidate for future executive position has made contact with nearly all the important functions of the store: selling, minor executive work, handling stock, various aspects of merchandising, working in a smaller store where a better perspective of the

whole can be obtained, and finally, under special assignments, opportunity to study certain special phases of work for which he seems to have special interest and ability.

It is to be understood that many of the general duties listed are in actual practice further subdivided. The time spent in selling or in acting as section manager is not entirely devoted to a single department, but a person is shifted around from one department to another in accordance with trends in volume of business and with the plans of the superintendent of the training department as he desires to have the individual see different phases of the organization.

After the course has been completed, the placement of the individual will depend on ratings and on his own preferences. If he does not seem as yet quite satisfactory for a responsible position, he may be given further training, or he may be assigned on a semi-permanent basis to a slightly lower position. He may be made a section manager or head of stock until he seems to have learned enough and matured sufficiently so that it appears suitable to let him become an assistant superintendent or buyer. During the course, also, special abilities may be disclosed which suggest his placement in one particular department, such as advertising, comparison, or auditing.

V. PERIODICAL RATING

Even when the employee has been selected, introduced to his work, and properly trained, the responsibilities of the personnel department toward him have by no means ended. It is normal for a man to improve so that from time to time he may be promoted, or change so that he may take on a different type of work from that for which he was originally fitted. So that we may be sure that he has not reached the limit of his possibilities with his present job, and that he has been conscientious, reliable, and efficient at his work, he must be rated from time to time.

Needless to say, this rating should be as accurate, objective, and appropriate as possible. The custom of automatically promoting the oldest man in point of service is antiquated. Likewise, the most efficient worker is not necessarily the best man to promote to fill a vacancy occurring above. Although two men might be equally

efficient salesmen or machine operators, one might be better fitted to become a buyer or a tool-maker, while the other would do better as a superintendent. Likewise, promoting an individual because of personal liking is not only inefficient, but upsets the morale of the organization.

Another reason for making periodical ratings is the unfortunate habit some persons have of "going sour on the job." They start a new task enthusiastically, but become easily bored, with consequent lowering of the quality of their work. Such persons will be the first to be weeded out if reduction of the force is necessary. Bailey points out the special merits of having definite and objective ratings for purposes of promotion or force reduction. The Department of Public Printing and Stationery of the Dominion of Canada substituted what is termed a "Review Blank" for the customary spoils system, so that each man must show his actual merit not only to advance but to keep his job. In the public service it is essential to be able to justify failure to promote or to justify dismissal, since frequently certain appointees have influential friends. One case was instanced about which there was a very strong protest. Consultation of the records showed not only that the individual's work had been poor, but that his attendance had been decidedly irregular and that he had been surly and uncoöperative. All raters had judged him to be poor, and a rather interesting fact was that the lowest rating had been given him by a member of his own political party. When this evidence was presented, the protests died down immediately.

Finally, the management wishes to assist the worker in improving himself and in eliminating any weak points. If these are detected early, constructive guidance will result in profit for both parties.

A periodical rating every six months seems to be the common practice with most organizations at the present time. Some companies have a full-time man, connected either with the general manager's office or with the personnel department, whose function it is to confer with each employee's immediate supervisors with respect to his merits and deficiencies. The rating includes both objective and subjective estimates. The objective points cover his production in terms of sales or output, and record of attendance, lateness, and other irregularities.

The subjective rating is probably more important, since many of

the most critical points concerning a man's value to his organization can only be given a final estimate in this manner. His supervisor is more intimately acquainted with him than is anyone else, so should be best able to size up his points of strength and weakness.

An example of a very complete rating blank is given here. This was used in the State of Delaware to rate their teachers. We might call special attention to the way in which broad traits are subdivided. In this way the rater can concern himself with just one aspect of the individual's personality or behavior at a time and thus prevent the confusion in rating where different judges might place several interpretations on the meaning of one trait.

TEACHER'S RATING CARD (MODIFIED)

I. Personality

1. General appearance
2. Health
3. Voice
4. Initiative
5. Enthusiasm
6. Integrity and sincerity
7. Self-control
8. Tact
9. Sense of justice

II. Scholarship

1. Academic preparation
2. Professional preparation
3. Grasp of subject-matter
4. Daily preparation
5. Use of English

III. Executive Ability

1. Class-room management
2. Playground management
3. School organization
4. Care of health of children
5. Community coöperation
6. Neatness of room

IV. Teaching Power

1. Definiteness of aim
2. Skill in habit formation

3. Questioning
4. Teaching how to study
5. Organization of subject-matter
6. Assignment of work
7. Motivation of work
8. Care of individual needs
9. Development of initiative
10. Class interest
11. Class progress

V. Professional Spirit

1. Coöperation
2. Loyalty
3. Professional reading
4. Attendance at meetings
5. Fidelity to work
6. Reports

The Civil Service Rating Blank, reported by Bailey, does not appear on the surface as quite so good as this teacher's rating card, since the former asks for rating on very broad traits. One is requested to rate the individual on a scale from excellent to poor as to "quality and quantity of work done," for example. This is further qualified by this description: "The accuracy, thoroughness, neatness, and care with which work is done, and the amount of work accomplished; that is, the steadiness, industry, willingness, and application of the employee." Suppose a man were very accurate, but rather slow and did not produce such a large quantity; or if he produced a lot of goods, but his work inclined to lack of neatness—how could we give him one rating on this point? It is really a group of points. We should suggest breaking up this point of the quality and quantity of work done into six or eight subdivisions, each dealing with one particular aspect of the work.

Different positions, held at the present time or to which one might rise, demand different traits; so no single list of traits to be rated in the follow-up inventory can be specified and used universally. Different points are valuable in a teacher, a machine operator, a statistician, a private secretary, or a labor gang boss.

The rating may include a personal interview, perhaps with the same interviewer who handled the original employment. This inter-

view has a different fundamental purpose, however, being undertaken largely for the purpose of finding what changes and points of development have taken place since the worker first came within the organization. If he has acquired new methods or new information, he may be advanced. If his interests have changed, and the change seems to be more than mere temporary whim, he may be shifted to another type of work. If he is not doing so well as he should, the interviewer may be able to uncover the reasons and give some constructive advice.

Problem cases can also be handled in the follow-up interview. Some people do not adjust themselves to their working conditions as well as they might, but may seem to have sufficient potential ability to warrant keeping them. They may be straightened out from their personality difficulties, reveries, losses of temper, lack of interest, perpetual lateness, anxieties, etc., by means of sympathetic and understanding guidance.

VI. TRANSFER

Another major function of the personnel department in dealing with employees is concerned with changing them from one position to another. This change may be either on the same level or to a different level. The first type of change is transfer; the second promotion, or in very rare cases demotion.

There are a number of questions which come up in connection with transfer: 1. Why change a worker at all if he is doing well in his present position and is not being advanced? 2. Should the worker be transferred at his own request, if he thinks he will be more interested in another type of work? 3. Should he be transferred if his boss wants to get rid of him? 4. Should regular transfer be practiced, to give variety and to make the worker more versatile? In some cases transfer is justified; in others it should not be done without careful investigation.

(A) *When Transfer Is Justified.* In many cases transfer is perfectly justifiable. By doing it judiciously we may save possible turnover and raise efficiency. A man who is already within the organization can learn a new job more easily than an outsider.

(1) *To Smooth Out Seasonal Fluctuations.* A golf salesman can-

not handle his specialty all year round, and rather than let him go during the winter months, it would be better to have him sell skates or basketball equipment, or to move him to some entirely different department. Similarly a machine operator may be transferred from one machine to another in accordance with demand. Such shifting has an advantage in that it makes the man more valuable to his department, since he acquires wider abilities and becomes excellent promotional material.

(2) *Flying Squadron; Executive Training.* When a man being trained in various aspects of the organization is sent to a department it is understood that he will be shifted from time to time, so there will be no complaint or hesitation on this score.

(3) *When Vacancy for Which Employee Is Better Fitted Opens Up.* While discussing the employment interview (Chapter VII) we suggested that a potentially valuable employee for whom there was no vacancy at present might be placed in a related department, and shifted to that of his preference and training when an opening occurred. A man who has had experience selling something requiring detailed information, like shoes or suits, could be placed in the shirt or necktie department until he could be moved to his regular position.

(4) *When Employee Has Developed a New Capacity.* A man may prefer to work in some coordinate department, but at time of employment has not the requisite ability. For example, he may wish to sell radio sets, but is retained in the hardware department until he has acquired enough technical knowledge to make him competent to handle radio goods. This type of transfer is halfway toward promotion, since the new work is more specialized and will likely pay more in salary and commission, although it is listed in the files as of the same general rank and level.

(5) *When the Interests of the Employee Lie along New Lines.* The abilities and interests of men do not remain constant, but shift from time to time. A man may never realize how interested he may become in a certain type of activity until he tries it or sees it going on. He may see others working in a near-by department, be fascinated by that work, and desire very earnestly to do it himself. He then will request the personnel department to allow him to change. Such request should be granted only after careful investigation of

the case. If the desire seems genuine, likely to last, and qualifications seem good, transfer can be permitted, and we may get a better satisfied and more efficient worker because of the change. But if the wish seems to be merely a temporary whim, boredom with the present task, or a desire for novelty, the management should be hesitant before assenting to the request.

(6) *To Remove Friction, Provided It Does Not Seem Likely to Occur in the New Department.* Occasionally a worker does not get along well with fellow workers or with the foreman, and one or another may ask that he be transferred to some other department. Such cases should be investigated very carefully. No one can get along with every other person with whom he is thrown into contact. If the friction seems unavoidable and no one's fault, a change may solve it to the satisfaction and profit of all concerned. But if the worker is inclined to be a trouble-maker or is neurotic, it may be better to get rid of him entirely, as he will only stir up trouble in his new department. Occasionally the foreman or superintendent may be at fault, and may need a little advice from the personnel authorities on better treatment of his subordinates.

(B) *When Transfer Is Not Justified.* Transfer has been used at times as a rather weak solution of a difficult situation, as a timid man walks away from the scene of a fight. While it works for the best in some cases, in others it only shifts the difficulty to the worker's new department.

(1) *To Satisfy Whims on the Part of the Worker.* Another person's job always looks more interesting and easier than our own, and unless we realize that this liking is formed from superficial appearances only, we may wish to change our work. Further, many persons like to try various operations for the sake of novelty. This lack of persistence should ordinarily not be catered to, and requests for transfer, if they seem based on these scanty reasons, should be denied. Legitimate exceptions would be cases where all employees share in taking turns at certain unpleasant tasks, as night shifts, working in hot rooms, exceptionally dirty work, or occasional extra duties of minor nature.

(2) *To Rid the Foreman of an Embarrassing Situation.* A foreman may request to have a certain employee moved out of his department because he does not get along with him. As a matter of

fact, the man of lower rank is the one who suffers, as a general rule, but conditions should be studied before a change is made. The foreman himself may be at fault, in being ignorant or gruff or in treating the workers in a way which a man of any pride will resent.

It might be remarked that some companies prefer to transfer employees from one task to another at regular intervals. They feel that this practice is valuable in keeping them alive and flexible, and makes them more valuable to the company. The Western Electric Company does this with their office workers, although the machine operators remain at the same task continually. On the other hand, some other companies which have tried periodical transfer have received more complaints than favorable comments. This is particularly true with machine operators, who prefer to get in a rut and stay there, as it requires less mental effort to do the same task than to change from time to time. The intelligence factor is undoubtedly operative here; the higher the capacity of the individual the less he likes to do repetitive work and the more he profits from engaging in a variety of activities.

To sum up, it is to be strongly recommended that a thorough investigation of the merits of a case be made before any transfer is effected. We must make sure that transfer will be best from the standpoint of the individual, the organization, and both departments concerned. In many cases it will be justifiable, but one should be hesitant and careful before granting a request.

VII. PROMOTION

To fill higher positions which may be vacant within an organization and to show recognition of valuable service, worthy employees are promoted from time to time. Promotion is usually thought of as involving a raise in rank, but it may also include an increase in pay or in responsibility. Walters lists the forms of promotion as

1. Advancement in wages or salary.
2. Increased responsibility, authority, position, or title.
3. Decreased working time, such as hours per day, days per week, or increased vacation.
4. Transfer of employment to better location or department.
5. Betterment of working and living conditions.

6. Provision of opportunities for greater training, experience, and outlook.
7. Increase in security of position and benefits offered.
8. Extension of length of service because of outstanding work.

He suggests judicious use of all of these methods at one time or another. Promotion is a matter of pride as well as of economic return. Therefore, instead of giving several forms of promotion at once, we could grant each at a different time and make progress seem more consistent and rapid. The usual practice is to accompany an increase in rank with a raise in pay, a slightly longer vacation, and a later hour of coming to work in the morning. These four might be given one at a time, if possible.

It is considered an advisable personnel procedure to promote from within the organization wherever at all possible. It is rather discouraging for a man to work hard and faithfully over a period of years, expecting to be promoted when a vacancy occurred, and then, when it does occur, have a man brought in from the outside over his head. The morale of the personnel can suffer decidedly from such failure to recognize meritorious service. However, it is justifiable to bring in an outsider when no one within the present organization has the proper qualifications to accept the responsibilities of the position. An example which the writer has seen was in a rather small bank, where retirement or death of three of the higher officials within a short space of time left only very young men as possibilities for the responsible positions thus left vacant. The directors selected a middle-aged man with a good deal of experience in a large city bank to become president.

Promotion should be carried on in a systematic manner, since it means a lot to the workers, and any other method will be bad for the morale and reputation of the organization. It should be given for genuine and demonstrated merit. Such an objective procedure will provide the employee with incentive to work hard and to study the position ahead of him, with confidence that his efforts will be recognized and rewarded.

Like initial employment, promotion should be a process of fitting the most appropriate man to the position. Automatically raising the employee with the longest service can be as serious a mistake in procedure as not having any system at all. The worker may have

reached his ultimate limit with the position held now; his personality may be such that he is not suited for a position of leadership; or he may not have certain technical knowledge necessary for success on the higher level.

To match the man and the work we make use of two instruments previously discussed: the occupational description and the periodical rating. The first will tell what the duties of the position are and what type of person is needed to fill it, and the second will give a description of the characteristics of any individual who may be a logical candidate. The points to consider in determining promotion are about the same as those for employment, although slightly different interpretations will be placed on some of them.

(1) *Experience*. Most positions of responsibility call for a certain amount of experience in work related to that demanded in the vacant position. The length of service is included in this requirement. Regardless of a man's potentialities, it takes a certain length of time for him to assimilate all features of the work. If he is promoted too rapidly, he may make some hasty and inadvisable decisions.

(2) *Age*, apart from experience, is an important consideration. Just as the age of twenty-one has been arbitrarily set as that at which a person is considered mature enough to vote and to claim certain other privileges, there are certain ages below which it might be rather risky to allow a man to undertake certain responsibilities.

(3) *Training*. The applicant's record must be inspected to see if he has undergone whatever technical or general training may be required. Experience in a lower position may in some instances be substituted for formal training.

(4) *Intelligence*. A man may be highly successful in a position of medium difficulty, but be totally incapable of doing satisfactory work in one of higher nature. Quality of work in the present position should not be interpreted as perfectly predicting merit or as showing that the person deserves promotion. For this type of person a salary increase is better than a raise in rank.

(5) *Personality Traits*. These will differ according to the position; so no generalization is possible beyond pointing out that the higher the position the more strict the demands will be. These demands will include such traits as continued effort, reliability,

willingness to accept responsibility, capacity for leadership, and originality. Some will be important for one position and others for different types of work. In our discussion of personality (Chapter III) we pointed out that one type of man, the extrovert, is especially suited for promotion along executive lines, while the introvert is better equipped for technical or research work. Similarly, the ascendant person can be promoted along one line, while the submissive individual will advance in a different direction. Social qualities are to be included here also.

(6) *Performance on the Present Job*, emphasizing factors of willingness to do more than absolutely necessary, understanding of this and related positions, responsibility, influence on others, leadership, and similar items of behavior will also be taken into consideration.

VIII. RESIGNATIONS AND DISCHARGES

It is not expected that the personnel of any organization will be permanent. At best there are bound to be some resignations, a few cases of discharge, and some new employees taken in. It is very important that the company study the reasons employees leave, especially when such departure is voluntary. The fact that they are through with the company and will not render any future service is no reason for letting them go without inquiry as to cause.

Many companies have instituted a resignation interview, and require all persons who are leaving to go through it. Since some workers may hesitate to go around to the personnel office for this specific purpose, it may be disguised by having the visit ostensibly for the purpose of receiving an order to the cashier to issue pay for the last few days' work. While this is being filled out, the interviewer can informally draw out the employee and find the real reason for his leaving.

The attitude of this interview should be entirely friendly. The resigning worker should in no way be made to feel uncomfortable or embarrassed. The real reason of the study is to improve practices and conditions within the plant, and this should be explained to the departing employee. If this attitude is taken he is more likely to tell the truth, whereas if he is asked in a blunt manner he may

make up some noncommittal reason and the whole purpose of the investigation will be defeated.

Turnover is expensive in a number of ways, and should be cut down to a minimum. The cost of employing and breaking in a new man has been estimated as between thirty and fifty dollars in the majority of cases, with even more for positions demanding longer training. An experienced worker will produce more and be more valuable to the firm. The employee himself will in most cases earn more if he has remained longer on the job. For all these reasons it is desirable to increase the length of employment and reduce the turnover to as low a figure as possible.

Some turnover is unavoidable and nothing can be done about it. Deaths and retirements constitute one source. Illness may necessitate temporary or permanent cessation from work. Women getting married or having children will often give up their positions. Young workers often accompany their families if they move to another city. But apart from reasons of this nature we should like to eliminate resignations.

One of the first problems to be studied is the location of the turnover. If we find that a certain department or a certain position within a department provides many cases of resignations we should investigate the basic causes. It may be because of the treatment by the superintendent or boss, because the pay does not equal that given by other companies for the same work, because the hours of work are too long or at bad times of the day, because the working-room is too hot or badly ventilated, etc. These factors are within the control of the company, so can be studied and evaluated, and changes made if feasible and advisable.

First-hand study of causes will often reveal surprising facts. One store found that a large number of delivery boys were resigning; investigation disclosed that rival stores of the same general class were paying sixteen dollars a week as against fifteen for the same service. This may sound rather minor; but the salary is rather small to start with, and one dollar a week bulks larger to the boys than it would to the personnel manager. Also it does not matter greatly to a worker holding one of the lower ranks what place he works in, and with other conditions equal the difference in pay would prove to be the deciding factor.

We have seen that the treatment given the new worker during his first few days of employment has been found to make a considerable difference in turnover; in general, more employees quit within the first month than in the next several combined. Occasional judicious transfer may also serve to cut down turnover, if it makes an unsettled worker satisfied with his work and with the company. For example, a number of fellow workers may belong to one religious or racial group, and others find it a bit unpleasant to be in that atmosphere, and a change might prevent a resignation.

A type of turnover entirely out of control of the worker is that of lay-offs due to seasonal fluctuations or ebbs in business cycles. The best policy would be for the management to attempt to anticipate these as far as possible so that peaks and valleys in production may be somewhat smoothed out. Different forms of work may be planned for different seasons of the year, and repairs and other routine work can be deferred until slack times so that the regular force may be retained and render productive work.

Records of discharges are just as important to the company as those of voluntary resignations. In many cases it is safe to say that a person who is discharged should never have been employed in the first place, and study of the causes of failure will suggest improved methods of selection. Brewer has presented the following table summarizing the reasons a large number of workers were discharged from various industrial establishments. It is very instructive to note, in the first place, that only half as many were dismissed because of lack of ability as because of maladjustment or social failure.

If the individual proves unable to do the work demanded in the position, higher critical scores may be set or the tests used in selection revised. If failures are because of personality defects, it is the interview and possibly letters of recommendation which should be checked over. It is very difficult to detect during the interview signs of laziness, potential insubordination, or likelihood of frequent absence. But with particular attention to these points which have been found to appear most frequently, either in general or in the particular plant, a good share of necessary separations should be avoided.

TABLE 27. REASONS FOR DISCHARGE FROM INDUSTRIAL ESTABLISHMENTS

Lack of Skill (or Technical Knowledge)	Number of Cases	Per Cents
Incompetence	1,110	25.3
Slow	200	4.6
Physically unadapted	170	3.9
Spoiling work	16	0.4
Lack of Social Understanding		34.2
Insubordination	486	11.1
General unreliability	453	10.4
Absenteeism	442	10.1
Laziness	317	7.2
Trouble-making	179	4.1
Drinking	179	4.1
Violation of rules	142	3.2
Carelessness	120	2.7
Fighting	104	2.4
Misconduct	100	2.3
Dishonesty	91	2.1
Loafing or sleeping	77	1.8
Dissatisfied	23	0.5
Habitual lateness	17	0.4
Unclassified	149	3.4

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minimal point tend to earn rapid promotion, we may consider that the measure is highly valid. If we do not obtain such agreement, the test should be improved, a new one should be substituted for it, or we should select workers by some other means. Any new methods will of course be subjected to the same scrutiny, to make sure that they are better than those they have supplanted. It is a waste of time to gather data that have no prognostic value.

We have also emphasized the fact that each organization is confronted with problems all its own. Some general principles can be suggested and applied to the majority of concerns. These have been taken up in the last six chapters. But the detailed method of application will depend on the situation and the requirements. Each plant must determine just what types of workers it wants, what types will not be suitable, how it will select them, and what it will do with them after they have been received into employment.

No generalizations will cover all the problems of all firms.

The best work in personnel research can be done if the department is allowed to take its own initiative, use its own judgment and discretion, and take its own time. In conducting research one cannot produce significant findings at will or on schedule. Some leads turn out to be unprofitable. This should not be held against the personnel organization, as it can never tell which lead may turn out to be highly valuable. Exploration by a competent man will be far better than random, of course. Further, any research takes time, particularly that of the validation type. One cannot judge for certain the efficiency of a worker for some months after employment, so it may easily take a year or more to bring employment procedures up to a satisfactory level. And this obviously does not indicate any slowness on the part of the personnel department.

Finally, research may be conducted in a laboratory as well as in the place of industrial operations. Devising, testing, and validating tests, fatigue studies, and similar topics of investigation belong in this class. Better controls are possible in the laboratory, since one can avoid the distractions and complications always present in a working environment. However, for this same reason, one must be careful about accepting laboratory investigations too literally, since conditions may be a bit artificial.

II. PERSONNEL RECORDS

One of the most important functions of the personnel department is to keep records. These records are valuable both for the sake of maintaining the organization—promotions, transfers, discharges, etc.—and for the sake of research, which brings about improvement in these methods.

Records may be of two general types—individual and group. The individual records contain pertinent data about the worker, prior to time of employment, the interview and test records at the time of employment, and his subsequent career within the organization. Group records contain data about various departments or about certain functions of the concern, such as accident statistics.

Records must be carefully planned for the needs of the plant, so that they are appropriate and contain all information which will prove valuable. Yet there should not be so many details recorded that the expense and trouble of keeping them in order become out of proportion to their value. The error, if any, in most concerns is usually on the side of too few records. Certain bits of data absolutely cannot be replaced later, such as test scores or personality ratings at time of employment, since they change with the passage of time and with the acquisition of experience. On the other hand, some items are ordinarily valueless, such as religion, birthplace, and occupation of parents. Therefore it is essential that one should look ahead and establish a consistent and carefully planned program when this phase of work is started. He should also be willing to make modifications if it appears at any later time that certain records are pointless or that certain other valuable bits of information are not being recorded.

Having the personnel department keep these records is a good practice, as it permits centralization, and the work is done by experts. If each department head is asked to keep his own records, the duties are usually side-tracked until the last minute and then done perfunctorily.

Records which may be kept about each individual may contain all or many of the following items:

- (1) Personal data: sex, age, race; education, training; address.
- (2) Previous experience.
- (3) Interview ratings.
- (4) Test scores.
- (5) Physical examination, with any special pertinent comments.
- (6) Position in which individual is placed.
- (7) Other positions for which he seems suited or in which he desires to be placed when possible.
- (8) Successive positions held, with dates and salaries.
- (9) Periodical ratings (these trace development of employee).
- (10) Objective records: production, sales, etc.
- (11) Attendance: latenesses, absences, irregularities.
- (12) Health: absences, medical treatment.
- (13) Accidents.
- (14) Training, special or general, undertaken since employment.
- (15) Special commendations, signs of initiative, valuable suggestions offered, and other bits of evidence of value to the firm.

These records will enable the management to determine who is the proper man to promote when occasion arises, when a man is ready for a salary raise, who shall be retained if some of the force must be laid off in times of necessity; and will assist in checking up employment and training methods.

Group or mass records are also kept for various reasons. Among prominent items of record are:

- (A) Status of Working Force:
 - (1) Vacancies or shortage.
 - (2) Resignations.
 - (3) Absences.
 - (4) Irregularities and deficiencies.
- (B) Accidents:
 - (5) Causes.
 - (6) Individual involved.
 - (7) Machines, processes, and departments involved.
- (C) Production Records:
 - (8) Employment procedures and relative productive efficiency.

- (9) Incentives; methods of payment.
- (10) Seasonal fluctuations.

The exact status of the working force is the first group of points. The supervisor in direct charge of the workers in each department is required to report every day the vacancies, resignations, absences, and other irregularities and deficiencies in his group. This enables the central office to avoid gaps in production. The interviewers, both preliminary and personal, will be furnished a list of vacancies each morning so that they can be on the lookout for suitable men to fill the empty positions.

Accident records are also kept very carefully. In case of any mishap the superintendent of the department in which it occurred must make out a complete report. Both the human and material sides of an accident will be analyzed. It has been found that some individuals contribute several accidents apiece to the total, while the great majority are never involved. As to the material side, a certain type of machine or a particular operation may be found to cause an unusual number of accidents, so the management can use the analyses to provide proper safety devices.

Records of production by various departments will also be analyzed. These records may be checked up in terms of various points, among which are the efficiencies of workers hired by different employment procedures, proper incentives to work, output under different systems of payment, smoothing out seasonal fluctuations, etc.

III. STATISTICAL METHODS

It cannot be emphasized too strongly that the personnel manager and others engaged in personnel research need a thorough knowledge of statistical methods. There is nothing mysterious or abstruse about statistics. In all the work that one will need in personnel management it will suffice to have a knowledge of arithmetic, elementary algebra, some common sense with figures, and a short course or independent study of best procedures.

The purpose of statistical methods is to enable one to summarize his facts briefly and appropriately, so that others may be able to interpret them correctly and objectively. For this reason it is neces-

sary that one follow, in presenting his data, the methods recommended by the recognized authorities in the field. One may draw a graph in unorthodox fashion and be able to understand it himself, but others would not be able to make head or tail out of the material so presented. In this connection the writer is reminded of a bridge-teacher who, on being asked by one of his pupils whether she had made a correct bid, replied, "If your purpose was to deceive your partner, your bid was excellent." Similarly with orthodox and unorthodox statistical procedures. As important as learning how to use methods and formulæ is learning when not to use them, and to recognize the limitations of obtained results.

It is not the place here to engage in lengthy discussion of statistical procedures. To do so would require several chapters. Anyone interested in learning the methods will do well to study any one of the several available texts on psychological, educational, or economic statistics. We shall limit ourselves here to mentioning briefly some of the more important procedures with which a personnel man should become familiar.

(1) *Tabular Methods*. While it looks very easy to draw up a table such as we see in print in scientific discussions, there are certain conventions which one must follow. One should take into consideration the order of arrangement of columns and rows, proper titling and labeling, and general form of presentation in such a way that the reader will be able to understand the points you are trying to demonstrate.

(2) *Graphic Methods*. The same principles hold for graphic as well as for tabular methods. If distributions or learning curves are presented in certain accepted fashions, they may be interpreted correctly and without danger of confusion. If one does not follow these established principles, it is very easy to draw up curves which are difficult or impossible to understand.

(3) *Means and Medians*. In discussing performances of an individual or a group over a period of time, the first measure we think of is the central tendency. The usual measure employed in presenting this is the simple arithmetical mean, the total of all scores divided by the number of people or days or cases.

Occasionally this does not seem so accurate as it might be, because a few very good or very poor cases can throw the average

decidedly toward one or the other end of the distribution. To avoid this error, the median is presented. This score is the midmost case. The various scores are arranged in order from highest to lowest, and the median is the one in the middle. For example, if there are twenty-five cases, the median is the thirteenth in order, since there are twelve better and twelve poorer. Ordinarily the mean and median will lie very close together, and will coincide in a perfectly normal distribution.

One should be warned against over-use of decimal places in quoting a mean or other statistical figure. As a general rule, it is a safe procedure to give derived figures to one more decimal place than the original scores. With fewer than a thousand cases it is unsafe, as well as meaningless, from a standpoint of interpretation, to quote to further decimal places.

(4) *Variation*. Not only is the average of the group important, but the extent of spread conveys valuable information. If cases are grouped rather closely about the mean, a divergence of a few points will establish definite superiority or inferiority of one group over another. But if the scattering is great, a difference of a few points from the mean will be inconsequential. The Standard Deviation is a synthetic mathematical concept used to express the extent of divergence in a single figure. In a normal distribution 68 per cent of the cases lie within one standard deviation of the mean, and about 97 per cent of scores fall within the range of two standard deviations above and below the mean. These facts about the distribution may be used practically as follows. Suppose a person scores 110 on a test of which the mean is 100 and the standard deviation 10; we should say that he is one standard deviation above the mean. This places him in the eighty-fourth percentile, which indicates that in a hundred employees only sixteen are better, while eighty-three are poorer, than he. If he is two or more standard deviations above the mean he is at or practically at the top. One can use such norms to rank applicants in comparison with one's working force.

In comparing groups we make use of a further refinement, known as the Standard Error of the Difference. A problem in which this technique is used is a comparison of production of two groups of employees, half of whom were hired by interview alone, while the

other half were selected through testing in addition to the personal interview. The second group will probably be superior to the first, but by how much? And does the difference mean negligible, slight, or marked superiority? To make up a concrete example, let us say that machine operators selected by the two methods produced, respectively, 150 and 160 units an hour. This difference of 10 is compared with the standard deviations of the two groups to see if the obtained superiority is sufficient to justify the additional time and expense consumed in testing. Many similar problems can be imagined in which two or more groups are compared with one another.

(5) *Correlation.* We usually find that those who make high scores on tests do well as workers, and that those who score poorly do not make successful employees. But this does not say how certain we are of these conclusions, nor how many exceptions there might be. We may express the extent of agreement quantitatively in terms of a single figure through the Coefficient of Correlation. Perfect agreement is expressed by a coefficient of $+1.00$; this is never actually obtained, since no test itself is ever perfect, and the workers vary from expected performance from one day to the next. But in general there will be fair agreement between test scores and production. Any coefficient of over $+0.80$ shows a high degree of relationship, and a test correlating this well with working efficiency is very valuable. Between $+0.50$ and $+0.80$ the agreement is not quite so good, but is as high as can be generally expected between a single test and the complex factors involved in working over long periods of time. If the coefficient is under $+0.50$, however, prediction is so uncertain that the means of prognosis should be improved.

Regression equations may be built up through use of the mean, standard deviation, and correlation coefficients, so that one is able to predict with a good degree of accuracy future efficiency from knowing the scores in a number of measures. College grades have been predicted in this manner, using high school grades, intelligence scores, and one or two other less important variables.

This treatment of statistical methods is very scanty, and is included only for the purpose of suggesting the types of problems arising in analyzing and interpreting data. It is not expected that the Personnel Manager will carry through all the routine computa-

tions, but he must be able to do them himself in order to appreciate and properly interpret the figures presented him.

IV. SOME TOPICS OF PERSONNEL RESEARCH

It is not within the province of this chapter to discuss in full detail the manner in which personnel research may be conducted. We have pointed out many important problems as we have taken up one topic after another in connection with the employment and maintenance of an efficient force. For example, in the discussion of the interview we not only gave general recommendations, but we based them on facts which had been discovered, such as the number of interviewers, methods of conduct, and the particular points which can be ascertained accurately as well as ones which are not amenable to interview treatment. In connection with tests, we suggested means of making up reliable and valid examinations, and pointed out ways of ascertaining how well they worked in actual practice.

As we stated in the first section of this chapter, personnel research is not a field by itself. Rather it is the study, through statistical and experimental means, of all matters which are within the scope of the personnel department.

We shall list here in classified fashion some of the more important problems of personnel, and give hints as to how each may be handled in actual practice.

A. *Employment Problems.*

(1) *Sources of Labor Supply.* There may be striking differences in the quality of worker who comes from each of various possible sources of labor supply:—school or college, employment agency, in response to newspaper advertisement, or as a friend of an employee. It is well to make occasional comparisons of the relative efficiencies and average lengths of service of each of these groups.

(2) *Personal Data of Workers.* We may also see if workers of certain types or classes, such as age, race, sex, etc., prove to be especially efficient or are rather poor material. These facts will have obvious bearing on subsequent employment practices.

(3) *Effectiveness of Different Interviewers.* Follow-up ratings of workers accepted by each interviewer may be studied. It will

be of particular interest to see if a number of persons with a certain defect slip by one interviewer, while another fails to detect a second possible drawback in other applicants. The interviewer's methods and techniques are just as subject to experimental investigation as are tests or other phases of employment.

(4) *Rating Scales* may be verified similarly. Each individual item as well as the scale as a whole should come in for careful scrutiny as to its effectiveness. If important points are neglected, new items may be added. Others may be further subdivided if they seem to cover more than a single phase. Still others may be omitted if the information obtained from them proves to have no diagnostic value.

(5) *Validation of Tests* of various types: intelligence, trade aptitude, knowledge, performance, personality, emotional stability, etc. One should check up to see if those who score high on the tests prove to be valuable employees, and *vice versa*. Some tests may need to be made more severe, some should measure new functions, and others may be eliminated entirely. Validation will extend to the separate parts, and even to each item, as well as to the test as a whole. This process will always take a certain length of time, while the ultimate value of a man to the organization is being determined. But after the prognostic value of a test is known, its application to subsequent applicants will be immediate.

(6) *Study of Individual Differences*. Some individuals are more fitted for some types of work than others; each should be placed where he will be most effective. Thus we may bring about a progressively greater suitability to the work, with resultant increased satisfaction to the worker as well as heightened production. This idea is recognized as the fundamental principle of scientific vocational guidance as well as of industrial placement.

B. *Problems Relating to Training and Promotion.*

(1) *Analysis of Training*. The proper length of training is the first consideration. One naturally wishes to bring the new worker up to his full limit of efficiency as quickly as possible. So we try different amounts of instruction, to see what combination of training and practical experience enables him to arrive at this point in the shortest time. We must also determine the appropriate contents

of the course. We wish to emphasize the important matters, and pay less attention to those of lesser value. Proper proportioning may be determined in part from the occupational description, which outlines the various phases of work and tells the importance of each. Deficiencies in an individual's training can be detected from errors committed during the first few days of work. Analysis of these errors can also be used to improve the training program.

(2) *Relation of Training to Occupational Success.* Training may be either of the general or the specialized type. Is a high school graduate necessary for this particular position, or will a person with a grade school education be satisfactory? What particular technical courses prove to be of especial value in various kinds of work? Is training best done within the plant, or should it be undertaken independently and previous to applying for work? Each question will have to be studied separately in relation to the position under consideration.

(3) *Predicting Limits of Progress.* By analysis of scores on trade and intelligence tests we can predict within reasonable limits just how far each employee can possibly progress.

(4) *Training for Promotion,* through evening courses, shifting the worker to different parts of the plant, flying squadron, etc.

(5) *Promotion.* Just who should be promoted? We may ascertain experimentally the professional and personal characteristics demanded in each type of work, so that we may promote the candidate who is best fitted for that particular activity. Considerations for promotion are excellence of work, experience, special training, personality characteristics, age, etc. We may study each of these to discover special causes of success or failure in the higher positions.

C. *Efficiency of Work.*

(1) *Fatigue Study.* A number of problems within this field are: hours of work, rest periods, the effects of night and day shifts, overtime; conditions within the working environment such as ventilation, lighting, temperature, odors, humidity; locations of benches, materials, tools. These problems are very easily studied experimentally, by comparing the output of the group working in the way now in effect with the production of various groups doing the

same tasks under slightly changed conditions. These problems will be discussed at some length in Chapter XIII.

(2) *Motion Study*. Proper methods of work will add greatly to output, as well as lessening fatigue and raising earnings. This includes not only manual movements of the worker, but routing, supply of materials, proper speed, avoidance of errors, etc. These topics will be taken up in Chapter XIV.

(3) *Efficiency of Each Department*. The financial side of management belongs more to the field of economics than to psychology, but it is of sufficient importance to us to deserve passing mention. The fact that the whole organization is earning more or less profit does not prove *ipso facto* that each department is operating at its maximum efficiency, or that each worker in each department is fully productive. Comparative outputs of the departments may be analyzed in terms of expenditures, expectations, and previous records.

D. *Industrial Relations*.

(1) *Methods of Supervision*. Ascertain carefully the types of motivation which will appeal most to the workers, bring out the best that is in them, and create the maximum satisfaction. This will include the negative aspect of elimination of unsatisfactory methods of driving men.

(2) *Study of Labor Attitudes*. It is of great value to the organization to eliminate strikes, to better the morale, and to have a general air of contentment pervading the plant. One must find out the real facts, and not try to deal with these problems through surmise or theory. This will be discussed in some detail in Chapter XV.

(3) *Payment*. Not only is the total amount of pay important, but the way in which it is given can make a great deal of difference. Several possibilities are: straight salary, hour, piece rate, commission, combinations of salary and commission (or piece rate), profit-sharing, stock dividends, partial ownership, etc. Fair adjustment of the wages when the organization has increased profits will do much to invite coöperation and to raise the morale of the whole force.

(4) *Lateness and Absenteeism*. Anyone may be unavoidably or accidentally late or absent occasionally, but frequent occurrence of such irregularities will demand some adjustment. A straightforward

talk, a warning, or even a lay-off may be necessary to improve habits. Reasons may be studied, and a consultation along mental-hygiene lines may bring about better planning and increased regularity.

(5) *Regularization of Employment.* It will mean a great deal to the morale of the organization if the men know that they will have steady work. Since a large share of industries are affected to greater or less extent by seasonal fluctuations, the personnel department will have to make a survey of the situation. It can try to anticipate demand so that the peak periods will be spread over as much time as possible; men may be shifted around from one department to another; and repairs or similar work may be planned for slack seasons.

(6) *Life Outside Working Hours.* Employees' organizations, athletic clubs, coöperative stores, savings plans, use of leisure time, home conditions, food and sleep problems, and standards of living all come within the scope of this heading.

E. *Turnover.*

We discussed this topic in a length as great as we wish to devote to it in the last chapter, so we will confine ourselves here to merely suggesting in question form the important problems. Among what class of employees is turnover greatest? Is it greater in certain departments than in others, even though they all may be of apparently coördinate nature? What is the average total length of service of employees, and how great are the variations from this average? What are the reasons for resignations? Is the fault within the organization, or is it possibly because of the types of applicants accepted for positions? Can conditions be improved so that we may maintain a more efficient and experienced force? What are the chief reasons for necessary discharges? Can our employment and supervisory methods be so improved that we have to dismiss fewer workers?

F. *Health and Casualty Problems.*

(1) *Analysis of Accidents.* Lately a number of investigators have come to the realization that accidents are not merely unfortunate

occurrences, but that the larger majority of cases have some definite and preventable cause. Several studies have disclosed that a large share of accidents are experienced by a small percentage of workers, some men having several, while many others suffer no accidents at all. A good example of analysis has been furnished by a bus company, which studied one driver who had been involved in a number of collisions. Although he had been exonerated in every case and the driver of the other car had appeared to be at fault, still it seemed peculiar that so many collisions had happened to him. Careful investigation disclosed that the bus-driver failed to give the warning signal sufficiently in advance for the other driver to stop. There may be deficiencies in the worker which prevent his avoiding occasional mishaps, such as poor vision, insufficiently acute hearing, slow reactions, poor coördination; he may be too old for the work, or have faulty methods of going about the task.

(2) *Safety Measures*. These may be undertaken, through either mechanical devices or education, following analyses of accidents and their causes. Several different types of safeguards are: shields over revolving machinery, insulating devices, goggles, warning signs, education in correct methods of working, etc.

(3) *Health of Workers*. Study of conditions within and without the plant which influence the physical efficiency of employees will often eventually raise production and satisfaction; this will apply to periods of work and rest, night shifts, overtime, etc.

(4) *Employment for Handicapped, Cripples, and Older Workers*. A serious sociological problem is that of taking care of individuals who are handicapped or otherwise unable to perform strenuous or high-speed work. It is important both for the individual to be able to support himself and for the community to be saved the expense of caring for him. A number of industries have generously cooperated and have studied the various positions within their organization to see which might be fitted for individuals who are limited in their vocational possibilities. The result is that certain positions within each of these establishments are reserved for persons who are crippled in various ways, such as loss of an arm or a leg, or are defective in vision or audition, or are older but still not decrepit. This is of great benefit to society as well as to the individual.

G. To Maintain Constant Progress.

No personnel system, regardless of how complete or effective it may be at the present, can remain in its *status quo* permanently. Constant revision and validation are necessary. Positions change with time, fluctuations in demands, and new inventions. New procedures may render existent tests obsolete. New methods are being discovered in both the mechanical and the human phases of industry.

(1) *Check Occupational Description.* One must make sure that it is accurate; that the qualifications, conditions, and duties are just as the card specifies. Since the nature of a position may change as time goes along, it might be profitable to check each place within the organization at least once each year.

(2) *Constant Revision of Tests, Methods, Etc.* A position may change so that new functions are incorporated. The tests and other means of selection will no longer be valid, and will therefore have to be changed so that the exact abilities demanded will be measured. Progress in objective measurement may be achieved by discovering means of testing certain functions which heretofore have been estimated only subjectively, usually through the interview. Any other discoveries which may be made in methods of selecting and maintaining the force should be incorporated if suitable and appropriate for the particular organization.

(3) *Institute New Methods.* One should always be on the alert to adopt new procedures which industrial research, conducted in other companies or in laboratories, discloses to be better than those now in use. This point is a general statement of the suggestions given about many of the specific problems of research.

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of law, medicine, engineering, forestry, and others have as their objective a competence in well-defined fields. The college of liberal arts stands apart from these in the fact that its aims are not quite so narrow nor so tangible, but its purpose can, nevertheless, be clearly stated. The latest declaration on this point defines the aim as that of "giving its students the body of knowledge, the training, the impetus which will enable them and lead them to think clearly and justly on the questions which touch our common life."

The colleges set as their standard the training of students to take an effective place in their environment after their college course is completed. They are, therefore, concerned in the development of students in all parts of their being which will be brought into play when they pass from the college itself. They are interested in the intellectual, moral, and physical improvement that is possible during the four years of a college course. A personnel office is concerned in all these matters.

There is one major difference between industrial and college personnel outlooks. The chief concern of industry is to produce as much and to earn as great profits as possible, and its personnel department takes care of the human aspects of this efficiency program. The emphasis is on mass relationships and dealings. Education, on the other hand, has as its fundamental purpose the preparation of the *individual* for life. The emphasis is on the individual rather than on the group or the management. In this respect it is somewhat like the Church, which does not exist for its own ends, but to prepare the individual for the future.

Another important phase of college personnel work is the maintenance of personal relationships with the students. When colleges were small it was possible for members of the teaching and administrative staffs to know each student personally. In present-day large universities it is not possible to know the strong and weak points of each student in order to give him appropriate educational and vocational guidance. The personnel department, therefore, takes on this function. While it is not literally possible to know each boy or girl personally, the members of the staff will be able through their specialized training and experience, and the complete records they have of each student, to size up the individual and handle his problems comprehensively. Being able to spend full time on this

work, they will naturally be able to furnish better service than any other agency of the university could.

We might outline, without expanding at this point, the main functions of the college personnel department. The discussion will follow during the rest of the chapter.

1. Selection of students most likely to succeed.
2. Orientation:
 - a. Freshmen, at time of entrance.
 - b. Efficient study habits.
 - c. Mental hygiene; emotional problems.
3. Elimination of waste, through straightening out possible failures, disciplinary and problem cases.
4. Curricular guidance, adapted to the individual's needs.
5. Preparation for life:
 - a. Vocational, direct.
 - b. Vocational, indirect—general mental training, etc.
 - c. Contacts with industry.
 - d. Cultural, social, and physical development.
6. Constant research, to improve methods in handling all the preceding five problems.

II. PURPOSES OF COLLEGE

As suggested in the quotation in the preceding section, the college personnel department must know just what the functions of the college are before it can operate in the most complete and comprehensive manner. The purpose of a factory or a store is to manufacture or sell in the most efficient and profitable manner possible. But the purposes of college are not so simply defined.

The first question each institution, or school within an institution, will have to answer is whether it will attempt to engage in a practical program or whether it will have cultural development as its chief objective. Medicine, law, engineering, dentistry, forestry, physical education, and theology are examples of the first type of program. The great majority of individuals, however, graduate from liberal-arts curricula without specialized or professional training.

College men are in demand for many positions, which suggests that leaders in industry realize that college-trained individuals have something which others do not have. It is uncertain just what this something is. Education is traditionally supposed to train the mind, and certain subjects are supposed to develop certain phases or functions of the mind. Mathematics, for example, is said to develop one's ability to think exactly and precisely. This type of theory is founded on a "faculty psychology," an assumption that the mind is built up of a number of independent abilities, which can be developed and applied to practical situations of similar nature. Actually, such transfer has been found to work only within very narrow limits. Certainly it does not hold between the classics or mathematics, on the one hand, and business, on the other. On the basis of this evidence the common practice of requiring all students to take certain required courses would appear to be based on a rather shaky foundation. At the same time it is interesting to find how many well-known business executives and financiers majored in history, mathematics, languages, and other seemingly impractical subjects. In fact, one begins to wonder whether the real reason that college men are in greater demand than those with less education may not be that they are more intelligent to start with, and might have done just as well without the higher education.

On this basis, then, the chief value of college would be cultural and broadening—which, after all, is of great importance in itself. An individual is missing a great deal in life if he is unable to appreciate literature, art, music, and similar things apart from daily work. One is not working all the time, and to live a complete and satisfactory life he must be able to entertain himself in the evenings, on Sundays, on vacations, and when he retires. This is particularly true for women, since their environment is generally not so stimulating as that of their husbands.

A social objective of colleges is to train leaders, to select men and women of superior ability and to equip them so that they can guide others. I feel that this objective has been partially lost at the present time. The American urge for quantity has crept into education, and there are now many individuals in colleges who are not capable of assimilating properly the materials given in class-rooms. The result is that many persons are being given college degrees,

with the stamp of having intellectual and leadership abilities of a high degree, when actually they do not have such attributes. This means that a diploma is progressively cheapened, and its possession will mean less and less. Universities which realize this situation are taking increased care in their admission practices.

III. THE STATUS AND ORGANIZATION OF THE PERSONNEL DEPARTMENT IN THE UNIVERSITY

One of the most important things about a college personnel organization is that it must be an entirely separate department, composed of men who are able to devote their full time to this work. It does not pay to have this function carried on as a part-time activity by men who have other work as their primary duties. Personnel work is a specialty, a field entirely by itself, and cannot be engaged in in any casual manner.

A second necessity is that the department must not be connected in any way with the regular administrative or disciplinary offices. It is only through this provision that the best coöperation can be obtained, and that students will eagerly avail themselves of the opportunity to talk over perplexing matters, whether academic, vocational, or purely personal. If it is suspected that the personnel officers are in league with the administration, their effectiveness will be greatly reduced. For this reason many of the early college personnel directors specifically requested when they were placed in office that they should be given absolutely no authority in any way. They preferred to act in a purely advisory capacity.

The organization of the department, naturally, will vary greatly with the institution and with the breadth of program attempted. The director is usually given the rank of dean, so that he has the status of a head of a separate and important branch of the university. He may have one or more assistants under his direction, to help him in interviewing students and in conducting research projects. There may also be a person or two to devote full time to research. These latter may be graduate students working toward degrees or may be young men on full time. Finally, some less highly trained clerical aid is necessary for stenographic and routine statistical

work. An excellent suggestion, which has been put into practice at Northwestern, is to have one of the assistants a young man of recent graduation. He is chosen because of prominence in campus activities and broad appreciation of the purposes of higher education. He is still in contact with the thought of the student body and knows most of its leaders, so that he can act as an excellent intermediary between the students and the older members of the personnel organization.

A few points about the physical equipment of the personnel office is in order here. Each person, particularly the interviewers, should have a private office, so that complete privacy may be attained. A student will be somewhat reticent in discussing personal problems if there is a second person in the room, even if he appears to be busy and out of earshot. A waiting-room can be provided, furnished attractively and with a table in the center filled with appropriate magazines on topics such as vocational guidance, opportunities in various industries and professions, curricular suggestions, bulletins of postgraduate schools, and other literature on problems which come within the scope of the personnel office.

Complete records of each student are also kept in this office. In general they deal with the following topics, which we list here in outline form:

1. Personal data:
 - a. Name, date and place of birth.
 - b. Parental data.
 - c. Nationality, religion.
2. Admission data:
 - a. Preparatory school.
 - b. Method of admission, and record.
 - c. Deficiencies and special comments.
3. Intelligence score:
 - a. Total score, and percentile rating.
 - b. Scores on sub-tests, to show special abilities.
4. Physical examination:
 - a. General rating.
 - b. Special comments.
 - c. Subsequent history.

5. Activities:
 - a. Athletic.
 - b. Debating, literary, artistic, dramatic.
 - c. Social.
 - d. Hobbies.
 - e. Vocational ambitions.
6. Earnings:
 - a. During college; total and method of earning.
 - b. Holiday or summer; total and method of earning.
7. Personality ratings:

To include such traits as effective intelligence, energy, initiative, originality, coöperation, trustworthiness, social grace, and outstanding characteristics not listed.
8. Scholastic record:
 - a. Grade in each subject.
 - b. Commendations or disciplinary action.

IV. METHODS OF ADMISSION

As in industry, we wish to make up our group of those who seem most likely to succeed. In the past fewer individuals desired a higher education than at present, and the desire could usually be taken as evidence of ability to profit. But with college education becoming more in demand and more fashionable, unselective admission brings about several sources of waste. (1) Some potentially very worthy students may be prevented from getting into college if their places are filled by others of poorer grade who chanced to apply earlier. (2) The university endowment fund or the taxpayers' money is wasted as long as unworthy individuals are in attendance. It is well known that each student costs several times the amount he may pay in tuition, so the university and society in general have a right to demand a certain return from each person in whom it is investing. (3) Dismissal of a student who has been accepted into a college community involves the same elements of waste that discharge causes to industry. (4) Poor students retard class work for the length of time they are in school.

It is imperative, therefore, that some sort of selective admission program be devised. Each university will have to set up its own

standards and requirements, which will depend on its nature and on the pressure for admission. Private schools are usually more highly selective than state universities, which are dependent on public tax support and cannot resort to too rigorous methods. Actually, the latter admit practically all high school graduates who have taken the required courses.

The subject requirements for admission are becoming fairly well standardized. English, mathematics, and languages are almost universally required, with other optional subjects from a specific list to bring the total to approximately fifteen year-courses (units). The principal variations in admission policies consist in the strictness of interpretation of what constitutes satisfactory fulfillment of these course requirements, and in deciding whether other data shall also be taken into consideration.

Types of data which are used by various schools in determining entrance suitability are:

1. High school grades.
2. University entrance examinations.
3. Standard entrance examinations.
4. Intelligence scores.
5. Personal ratings.

(1) *High School Grades* need little explanation, beyond mentioning that different colleges require different standings. State universities may accept a "C" average, or may in addition require a certain percentage of course grades to be higher. Private colleges may demand standing in the upper half of the class, the upper third, or even higher. In some cases a worthy applicant who has had an irregular preparation will be allowed a slight amount of deficiency, provided his intelligence score shows that he is high-class material.

(2) *University Entrance Examinations* may be given to all applicants or in single subjects to those who are below the certifying level. They are being largely replaced by standard examinations, although they do have a certain advantage in being adapted directly to the university and can be given and scored at any time.

(3) *Standard Entrance Examinations* are given by independent boards, with advice and sanction by many colleges. The College Entrance Examination Board and the New York Regents' examina-

tions are examples of these. As a rule they do not set up any standards of passing or failing, but report to the college the numerical score of the applicant, and let it establish its own criterion.

(4) *Intelligence Tests* are used in the majority of universities for personnel, diagnostic, and research purposes, but a few include them in their entrance requirements. Stanford and Columbia are two prominent examples. The former weights intelligence equally with high school grades in determining admission. In addition, no one scoring below a certain minimum will be admitted, since it is assumed that his high school grades, even if satisfactory, were achieved by virtue of extremely hard work, and even this would not procure success with the more complex subject-matter studied in college. An individual with high intelligence but poor grades would be a much better risk; at least we should know that he *could* succeed in college. Columbia has used an interesting procedure; adults who are deficient in high school preparation are admissible if they attain a certain rather high score on the Thorndike Intelligence Examination. It is assumed that if they could make such a high score on this difficult examination they must possess a good share of the information acquired in high school, regardless of the actual source.

(5) *Personal Qualities*. Personality characteristics play a very important part in college success, and many universities are attempting to use some estimate of these as part of the admission procedure. In fact, some authorities have stated that more failures occur because of personal deficiencies than because of lack of ability. Some of the traits concerning which we might like estimates are: general scholastic promise, initiative, seriousness, vigor, industry, perseverance, regularity of habits, promptness, accuracy, integrity, social qualities, manners, respect for authority, sense of responsibility, participation in activities, interests, vocational purpose, health, financial condition, and earnings.

Information on these may be obtained in a number of ways. In the first place, the applicant himself may furnish some data. Often on the application blank there is a space provided to write one's purpose in coming to college. From this we can form some sort of estimate as to whether he understands the opportunities available in and through a college education, and to see whether he thinks

and expresses himself coherently. He may be asked to list books which he has read within the last year, how he has earned money, and what his outside interests and hobbies are. The high school principal and possibly a responsible person outside the educational field can be asked for statements, either in the form of letter of recommendation, or by answering specific questions asked by the university. Finally, candidates may be asked to have a note concerning themselves sent in by an alumnus.

The exact value of these estimates of personal qualities is rather uncertain, as are all personality estimates and measurements. It is admittedly important to find out certain traits, and if at present they do not seem to be perfect measures or to have high prognostic value, improvement rather than abandonment of the devices is in order. Stanford University feels that its estimate of personal qualities is valuable enough to give it half the weighting accorded intelligence. Its scheme allows four points each for intelligence and high school record, and two points maximum for personal traits, making a possible total of ten.

V. PREDICTION OF COLLEGE SUCCESS

When we set up certain standards of admission we implicitly assume that these predict with at least a reasonable degree of accuracy the subsequent performance in the university of the students thus selected. College success is bound up in many different factors, most of which are included in this list given by Toops:

- a. Intelligence.
- b. Application.
- c. Nutrition.
- d. Hygiene.
- e. Study efficiency.
- f. Difficulty of course.
- g. Load elected.
- h. Previous preparation.
- i. Adequacy of study environment.
- j. Errors in marks.
- k. Errors in traits.
- l. Other factors.

Figure 8 shows the relation between mental alertness scores and college standing. One notices that there are honor men and men who failed in each of the five intelligence levels. But the proportions are not equal. Sixteen per cent of those in the top group earned an honor standing, while only slightly over 1 per cent of those in the lowest intelligence group had such outstanding success. It might be further remarked that study of this last group disclosed that their high marks were obtained only at cost of exceptionally strenuous efforts. Of those who were separated because of poor scholarship there were five times as many from the bottom intel-

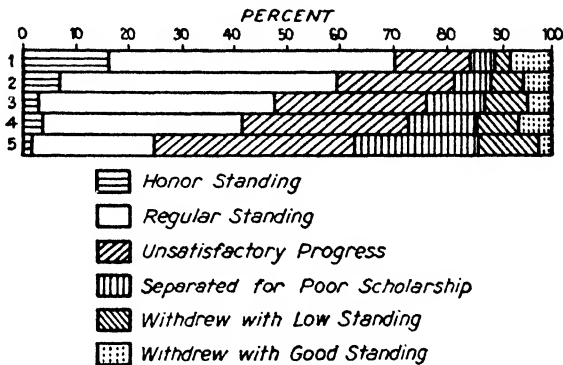


FIGURE 8. RELATION BETWEEN MENTAL ALERTNESS SCORES AND COLLEGE STANDING.

ligence group as from the first fifth. The intermediate groups had varying proportions of high and poor stand students about as one might expect. Approximately equal numbers of all five groups withdrew voluntarily, although we notice that as we go down the scale progressively greater proportions were in bad standing.

In general the correlations between intelligence and scholarship run between $+.35$ and $+.60$. It is interesting to note that the higher correlations are obtained when the test is used in determining admission. If it is taken by students already in the university, there seems to be less conscientious effort, and correlations are lowered. High school grades are correlated very little higher with freshman grades than are intelligence scores. Johnston reports correlations from Minnesota of $+.63$ between high school and freshman grades; and of $+.50$ between intelligence scores and grades. Combining and

weighting the two equally, he obtained a predictive correlation of $+0.68$ for women and $+0.65$ for men students. An important finding, from the standpoint of admission procedure, was that some students succeed despite their being below the usual required level in one of the two measures, but that none who were deficient in both intelligence and high school scholarship were able to make satisfactory progress in the university.

Henmon and Holt used the percentile ratings for high school standing and intelligence test scores to build up a prediction equation. Achievement predicted by this correlated $+0.71$ with the grades actually obtained. It was also predicted that 147 freshmen had only slight chances of making satisfactory grades. Of these it was found that 123, or 84 per cent, actually fell below a "C" average. Of the twenty-four who did passing work during their freshman year many failed later, withdrew under doubtful circumstances, or fell behind their class. The six who remained in satisfactory standing were studied individually, and it was found that at least one had failed to try on his intelligence test, and three others majored in music or physical education, which require special types of ability. Such agreement between prediction and actual attainment is certainly remarkable, and suggests that in the future we will be able to use more refined measuring instruments and increased knowledge of the factors contributing to college success to make almost certain prognoses.

Certain other minor factors aid in success. Age is one. It has been found that students entering college below the median age contribute as a group several times their share of honor men. This is rather to be expected, since most of those who have prepared themselves for college in less than average time must have superior ability. However, intellectually mature as these individuals are, many are not sufficiently matured along social and emotional lines to get the most well-rounded development from college contacts. We are not interested in a person's merely getting by, even though that may be remarkable at an early age, but in his living up to his full capacities.

Remmers found from a survey of superior students that the following, among other factors, correlated with success; coming from a city high school, coming from a professional family, participating

less in sports than the average, and rating oneself superior in intellectual capacity.

VI. FRESHMAN ORIENTATION

Just as in industry, when applicants have been accepted and have become members of the organization, some *introduction to the work* is necessary. Colleges have an excellent opportunity to carry out this function thoroughly, since all new students enter at the same time. Large-scale methods may be used, and certain university officials may devote their full time to this problem for a few days.

A number of universities have instituted a short period before classes begin in which they carry on this freshman orientation. During this time various formal and informal meetings and programs are arranged to enable the new student to start his class work as well adjusted as possible. The administration may be aided by upper-class men and women who act as leaders of groups and keep things moving.

To start with, the new students learn the locations of the various buildings of the university and the use of each. Thus they can find their way around and take full advantage of all the services offered, such as coöperative stores, book shops, cafeterias, medical facilities, gymnasium, etc. At the same time they may be told the history and ideals of the institution, so that they will feel that they belong to something definite and alive, not just a collection of buildings and class-rooms.

Definite instruction may be given along several lines which will be found necessary later. Study hints constitute one important item. For the great majority of students this is the first time they are away from home, and there will be no one either in or out of school hours to tell them when to do anything. This means that time must be budgeted and that some sort of planning will be necessary. The study environment will be much more distracting, so some suggestions on concentration and overcoming distractions will be in order.

Proper use of the library may be explained in an hour's informal talk. This will include instruction as to how to look up desired

books or periodicals in the card catalogue, information as to where reserved books are to be found, etc.

The social side of freshman week is an important, even if less tangible, aspect to this period of orientation. Many who are away from home for the first time will feel lonesome and out of things until they form a few friendships. Becoming acquainted will be easier and more informal if all persons present in a group are known to be freshman. Dances, informal suppers, smokers, athletic rallies, and trips around the campus all serve this purpose in various ways.

From an administrative purpose freshman week is also useful in permitting testing of various sorts—intelligence, English or language placement, scientific aptitude, etc. The group is all together and more easily available than at any time later; no classes will interfere; and better coöperation is secured before the individuals become thoroughly “collegiate.”

VII. CURRICULAR GUIDANCE

It seems a logical function of the personnel department to give advice on the appropriate courses to be taken by each student. This guidance may be general or it may take the form of voluntary consultation for those who have special problems.

Most universities have some sort of guidance system for program elections. A very common practice is to have each faculty member take charge of a number of students, major or lower division. This system has several serious disadvantages. To start with, few instructors are competent to give advice which is broad and adapted to the individual's desires and needs. Secondly, these advisory duties are in no way related to the professor's major endeavors, and are often discharged in a perfunctory manner, as a necessary evil. Thirdly, each person possesses only a partial knowledge of the curriculum. He is likely to suggest with undue enthusiasm courses in his or related departments, or given by those he knows to be inspiring teachers.

For these reasons it would appear advisable for some centralized bureau to take complete charge of this curricular guidance; and none is better equipped than the personnel office. This might introduce some mechanical difficulties, due to great pressure at certain

times of the year, but this could be taken care of by spreading out the dates for election of courses. Only those cases which present special problems need be delayed until just before the semester begins.

The first consideration is the choice of school within the college or university. In entering, one may elect a general course, either liberal arts or science. Or he may choose more directly practical curricula, such as medicine, law, engineering, agriculture, forestry, nursing, pharmacy, or home economics. The great majority of students take some general program, and allow their special interests to develop with further education, experience, and maturity.

In advising about actual courses one has to look out for required subjects, major possibilities, and breadth. Ordinarily the first two years are fairly completely prescribed, and it is a good idea to guide the student into fulfilling his requirements then, instead of letting him find some elementary subject hanging over his head later when he wants to devote his time to more advanced and specialized work. Optional courses should be so chosen that they are suitable and valuable for the needs of the individual. This will include selecting not only those for which he has particular aptitude, but also those which will develop him along lines of apparent weakness. We no longer accept the old educational theory of taking an undesired course solely for its disciplinary value. But if a student shuns science or mathematics, for example, we should find the reason. It may be because he is unwilling to be careful, to take pains, and to go slowly enough to be accurate. This is a personality deficiency as well as an intellectual shortcoming, and should be remedied, for an all-round carelessness of this sort will be serious in any vocation he may follow later.

The student should also get a certain amount of breadth in his courses. There is a tendency among many to specialize too narrowly after they have developed a real interest in some subject. While it is all to the good if a person does develop a genuine interest, this should not exist to the exclusion of absorbing other material. One will soak in his professional atmosphere all his life, and will not have again such an excellent opportunity to learn other fields of knowledge. The laboratory sciences cannot be easily acquired later. Such subjects as sociology, economics, philosophy,

biology, history, languages, and literature have great cultural values. Education not only prepares a person to earn his living, but should make him a more valuable member of the community and give him a keener and more balanced outlook on society.

VIII. STUDY OF ACADEMIC FAILURES

Turnover in the academic world, apart from normal graduation, is as serious as it is in industry. Only about half of those who enter college eventually graduate. Some are forced to withdraw because of financial, health, or other reasons; we cannot avoid this turnover. But there is no excuse for a person's failing either in his first semester or later, or doing very poorly in comparison with his native capacity. Either such individuals should not have been admitted at all or the causes of their failure should be studied and remedied. Since the purpose of college is the training and benefit of the individual, separation should not be resorted to unless it is evident that the student has an intellectual or personality deficiency which makes his ultimate success seem doubtful.

It is of special importance to study students who have a high degree of intelligence but who are doing unsatisfactory work. Such persons have the capacity to do outstanding work, both in college and in later life, and it is a good investment to devote extra time and energy to such potential leaders. Looking toward the other end of the scale, it is doubtful whether we should waste time with cases of failure where there does not seem to be any evidence of real ability or other mitigating factor. Several colleges have found that only a small fraction of those who have gotten into scholastic difficulty once eventually graduate; readmission only results in a second failure. For this reason these institutions are refusing to readmit those who are separated.

Studies of academic failures have been conducted at the University of Wisconsin by Dean Bayliss and by Findorff. The first study attempted to analyze the causes of failure in freshmen women who had a high school intelligence percentile rank of above 90, but who failed to earn better than a "C" average. The second research tried to discover causes which prevented students with high intelligence scores from standing equally high in their class

work. It made the assumption that a "B" average on the part of a student at the top of the list in intelligence was a partial failure. Both studies used the interview method, and presented case analyses. No formula could cover all causes of failure; each presented its own problems. We list some of the more frequent causes.

(1) *Family Background* may contribute toward failure. From Bayliss's study, it seemed that a disproportionate number of girls who were doing poor academic work were either "only" children or "only" girls. Over-indulgent and indifferent parents may do their children actual harm, unless the individual has sufficient balance in himself to regulate his efforts sanely.

(2) *High School Factors* may be responsible for difficulties when the individual gets to college. The source is rarely in poor quality of the high school, however. Frequent transferring from one school to another interrupts the continuity of preparation and gives an insecure foundation for more advanced study. Bright children are able to get through the public schools with a minimum expenditure of effort, and may fall into slack habits of study. Engaging in too many outside activities may also prevent a sound foundation from being acquired. This may also produce a nervous tension which persists into college, prevents good concentration, and gives the individual an exaggerated idea of his own importance.

(3) *Change to College Freedom*. During high school, both within school hours and at home, one has fairly close supervision. In college, however, there is no one to tell the student when to work on a certain subject, or even to study at all. With the lecture method instead of constant recitation, there is less check-up on the progress of work, so that daily study does not seem to be so immediately imperative. Occasionally a student expresses the wish that study hours were more closely dictated. Doing this, it seems to the writer, would defeat one of the main purposes of college, which is to develop independence and the ability to guide one's own affairs. However, the personnel office may render valuable service in aiding the student to make this transition to independence by drawing up with him tentative study programs, and by conferring with him in time to prevent actual failure when it begins to be evident that he is not doing satisfactory work.

(4) *Study Faults* form another important source of college failure.

Probably the most important item within this group is a lack of real purpose in going to college. The person may study enough to get by and to keep out of trouble, but he performs far below his real capacity. It is difficult to supply such a student with the proper motivation, since he does not want to do better and will not pay much attention to advice or threats. Some will respond to mild insults; I have waked a few up by remarking during the course of an interview that with their present attitude they were not fit to be in college. Some are so indifferent that remarks as strong as these are shed like the proverbial water off a duck's back.

Lack of interest in specific courses is a similar cause of difficulty. Freshman studies, particularly, are largely routine in nature, and are frequently taken with a negativistic attitude. It might be worth while to have the instructor take up the first class-period with an explanation of the purposes and values of the course.

Failure to study consistently and to plan ahead are other major sources of college failures. This is comparatively easily remedied if the personnel interviewer assists the student in mapping out his program of study and recreation. The schedule is first filled out with the regular classes and other specific engagements; then appropriate vacant hours are designated for study. Particular care may be taken to utilize time often wasted, such as hours between classes, periods just before and after lunch, etc. If periods such as these are used for study, one will be surprised at the amount of work accomplished, and the freeing of other and more desirable hours for systematic and pleasurable recreation. Distribution as well as length of study is important. (More detailed discussion of program-mapping will be given in Chapter XXVI.)

(5) *Social Distractions* rank with inefficient study habits as serious causes of inferior scholarship. One causes the other; giving in to social pressures results in failure to study properly and sufficiently. Fraternity and love affairs form the greatest distractions. Students often spend too much time with friends at the fraternity or sorority, or with the person with whom they are infatuated. Or some who have not joined a fraternity or who are unrequited in love worry too much over this and fail to concentrate on their work. It is no wonder that it has been humorously observed that one's love status,

whatever it is, should be reversed; if he is in love he would be better off otherwise, and if not he should fall in love.

A person must learn to inhibit himself against social distractions. One living within a social group is constantly subjected to movie, dance, bridge, and other invitations. Many students run into trouble simply because of inability to refuse such demands. This results not only in less time for studying; they usually attempt also to study late at night, when they are tired and cannot concentrate effectively. Late hours not only result in inferior work, then, but through the resultant loss of sleep prevent one's doing his best the next day. It seems best for most individuals to confine themselves to week-end nights for late social engagements. Just how much time can be taken off during the week will depend on the ability, health, and program of the student.

(6) *Health Problems* sometimes prevent the individual from studying properly. It would appear better, in cases where the trouble is not serious enough to warrant withdrawal, to have the boy or girl carry a reduced program and try to do a good job with fewer courses. Ten hours of "B" are better than fifteen hours of "C" from the standpoint of the student's deriving good from going to college. If the difficulty is more serious it might be better to stay out of school and return when one feels able to work up to his real intellectual capacity.

The personnel and medical directors should cooperate in handling health cases. Many individuals claim health reasons in order to drop out of school or to drop courses when they find themselves in bad standing or hopelessly behind in their work. Health problems may not exist at all, or they may be caused by late nights, from partaking in too many outside activities, from worry over bad standing, or from simple hypochondria. Some cases will call for mental-hygiene treatment rather than medical handling.

(7) *Financial Shortage and Employment*. Like social distractions, working prevents one from devoting his best energies to studying. Earning a part of one's expenses should not be a serious handicap, provided the occupation is favorable. By far the best is waiting on table at a fraternity, sorority, or dormitory. The time consumed is about an hour at each meal, and this occurs during hours which are

usually wasted. Night restaurant or switchboard jobs should be avoided by all but those who have the strongest physique and who seem constitutionally fitted for getting along with less than average sleep. Telephone or elevator jobs during the daytime may permit one to carry on a certain amount of studying during lulls, but one must have excellent concentration to work effectively in these unfavorable surroundings.

Administrative officials universally urge the freshman to be prepared to finance himself without outside work for at least a semester after entrance. He has to go through the period of adjustment to college surroundings, and there is the practical difficulty of obtaining employment in a new community.

Most colleges and universities have a number of scholarships available for worthy students, or grant reduced tuition to those who are needy and maintain a certain scholastic average. It might be better for the destitute individual to borrow money to finance himself through freshman year, and try to become a strong candidate for a scholarship subsequently.

It is very difficult for one to earn his way entirely through school. Analysis of many cases leads one to discourage all but the most robust and intelligent from attempting to do so. One who is not quite so exceptional might better earn money during summer vacations or even stay out of school a year and save up enough to carry him wholly or partially through the school year. Or he may carry a reduced program and plan on taking five years to graduate.

Anyone who has to work more than a few hours a day will lose some of the intangible, although valuable, benefits of going to college, in particular the social and cultural contacts. It is inadvisable for him to try any outside activities, such as athletics, writing, or acting. A person cannot put out more than a certain amount of energy in the course of twenty-four hours without something suffering; and he will fall behind in his work sooner or later.

IX. MENTAL HYGIENE

One needs development along all lines to take his place satisfactorily and happily in modern society. In many vocations personality

traits actually count for more than purely intellectual factors. Maladjustment can cause failure as easily as mental incompetence. Since the college tries to prepare the individual to live well, its duties are not confined to intellectual lines alone; it should furnish some aid along the personality and emotional sides. This guidance will concern itself both with present efficiency and with adjusting minor difficulties now so that more serious trouble will be averted later.

The term mental hygiene might be expanded, and the field said to include guidance in mental efficiency and emotional adjustment. The problems are matters of minor maladjustment—emotions, personality, and adjustment to social and environmental conditions. We give below an outline which classifies many of the more important problems which have been reported by several college mental-hygiene experts.

Students should get into the habit of consulting the mental hygienist for guidance in dealing with all these problems. People have no hesitation in consulting a doctor if they are feeling below par physically, or a golf professional if their game is falling off, so why should they not avail themselves of expert guidance on matters of mental and emotional efficiency?

The mental-hygiene officer will have to take care to build up an attitude in the student body which avoids placing any stigma of mental incompetence or definite imbalance on those who consult him. It is rare that cases of definite insanity appear in a university, although, as Groves points out, the tremendous amount of attention following one of these occurrences warrants great pains to avoid this adverse publicity. The strain of constant study or the presentation of upsetting ideas are blamed for cases of suicide or mental breakdown. The fact that thousands of other students suffer no ill effects is ignored; also the fact is not mentioned that frequently such students are failing and so may be presumed not to be overworking or not to be taking their work seriously enough to stir up emotional conflicts.

The actual counseling procedure will naturally vary with the type of problem. Many are minor emotional disturbances, and the solution will usually come when the individual arrives at an understanding of the causes and workings of his maladjustment. In

TABLE 28. MENTAL HYGIENE PROBLEMS

- I. Emotional.
 1. Discouragement, depression.
 2. Love.
 3. Fear, grief.
 4. Constant strain.
 5. Stammering.
 6. Threatened suicide.
 7. Religious conflicts.
- II. Attitude.
 1. No genuine, or very narrow, interests.
 2. Lack of purpose.
 3. Bored.
 4. Dissatisfied.
- III. Social.
 1. Homesickness, and failure to adjust to college environment.
 2. Difficult home life.
 3. Inferiority disturbances.
 4. Fraternity or sorority disappointments or maladjustments.
 5. Love.
 6. Cultural maladjustments.
- IV. Health.
 1. Strength.
 2. Nervousness.
 3. Definite disorders.
- V. Planning.
 1. Haphazard work; no definite schedule.
- VI. Disciplinary.
 1. Cheating.
 2. Trouble-making.
 3. Stealing.

other words, his emotionally toned system of ideas is placed on a rational plane. Most fears, resentments, discouragements, and other emotional upsets vanish when their causes are understood. They may seem very important and inescapable to the individual afflicted, but the hygienist can assist in making them appear in their proper perspective by a common-sense approach. The counselor must also keep entirely open-minded; diagnosing cases by fitting them into

predetermined classes leads to many mistakes and can cause much harm. The writer knows of one man who failed utterly in carrying out a college mental-hygiene program because he thought that every case of failure to live up to apparent potentiality was caused by sex perversion. Others have felt that the inferiority complex was all-powerful, or that willfulness was responsible for all low grades or social maladjustment.

Another main function of mental hygiene is to diagnose and straighten out problem cases which come to the attention of the administrative officers. Cases of cheating, chronic overcutting, persistent incompleteness of work, or conflicts with authorities may frequently be traced to emotional conflicts or to health difficulties. Cooperation with the medical department will assist in this latter case. An interesting example of emotional conflict was that of a student who got into trouble in several classes because of his extremely pugnacious and negativistic attitude. It was found that his home environment was such that he was constantly repressed and held down. In class he was trying to recover his self-esteem, and was somewhat overdoing it. When this basic explanation was made clear to the instructors and to the student himself, the resultant mutual understanding improved relationships all around. The most valuable aspect to such handling of problem cases is that the person is aided in making a better adjustment to his environment. This is especially important in college work, since its purpose is to develop the student, and summary dismissal only relieves the university of an embarrassing situation, and leaves the source of trouble still within the person.

Only in cases such as these should any information gathered by the hygienist be disclosed to other university officers. And then it should be made clear that discussion of the case is for the benefit of the student, and not to aid in any administrative or disciplinary action. In all other cases strict secrecy should be preserved. Only in this way can complete confidence of the student body be gained, and without confidence any mental hygiene or psychiatric work will fail. Even the mildest antagonism or hesitation will cause repression, and the counselor will be as handicapped in his work as would a doctor if the patient refused to disclose his symptoms.

X. VOCATIONAL GUIDANCE

Colleges are interested in fitting the individual for occupational, cultural, and social places in society. To prevent occupational choices from being haphazard, college personnel officers attempt to guide the individual and to act as intermediaries between industry and the student body.

The general principles of college vocational guidance are the same as those we discussed in Chapters I-IV, so they need no review here. Through interviews the student may be assisted in deciding his suitability for vocations in which he professes an interest, in terms of his general ability, personality, fundamental interests, physical qualities, and other factors.

It is of the utmost importance to recognize that *the college personnel office is not an employment bureau*. Its function is that of an intermediary between the student and industry, and it should recognize its obligations to both. Its duties toward the student consist in putting him in contact with appropriate opportunities for earning a living, or in suggesting suitable post-graduate study to fit him to enter his intended occupation. A mere job, or opportunity to work, is not of necessity a right contact. Students should be protected against such contacts as would not furnish them with opportunity for the fullest degree of self-development. At the same time they should be made to realize that they will have to work hard for advancement, and that it may not come immediately; however, they have a right to expect it to come sometime. The obligation to industry is that of supplying appropriate men for the positions to be filled.

To carry out this program the personnel department will need to establish close contacts with various companies, particularly those which are in the habit of employing a number of college men each year. The personnel director should find out what opportunities these companies offer the college graduate. He may ask the representative from the business institution questions substantially as follows: "To be perfectly frank, I would like to know what opportunities our boys who go with you have. In what sort of work are college men started? Into what positions will they be promoted?"

How long should this promotion take? What features are there in your company's personnel policies which will allow a person who has taken four years of college training to advance farther and faster?"

It must not be inferred that the spirit of these questions is to challenge the industrial representative or to search for flaws in any way. There exists a spirit of excellent friendship between college and industrial personnel departments. Each realizes that the other benefits him in his work, and that the more he coöperates the better it will be for him in the long run. It has always been recognized that the applicant must demonstrate his worthiness for the position; we are here urging that the organization demonstrate its worthiness as a place for a well-educated person to work.

The contact with industry may be established in the college personnel office, by a visit to the factory or store, or through both. A visit to the organization will give one a chance to see what type of work college graduates are doing, how long it took them to get that far, and to notice conditions and the general atmosphere surrounding the work. One may talk with graduates of one's own and other colleges and see what progress they have made, are likely to make, and their general attitude toward the company. Inspection of the records of the personnel office will also show clearly and objectively the rate of rank and salary advancement of college graduates.

With the knowledge thus obtained concerning an industry, the college personnel director is ready to guide students and to assist them in finding appropriate work. *This counseling should begin as early as possible in the college course.* The student who fails to take advantage of the personnel office until a short time before graduation is missing most of the service which can be rendered him. He should be preparing himself over his whole college course by courses, extra reading, observation, interviews, and by becoming acquainted with various occupations during vacations. Occasional interviews appropriately spaced during this time can keep him progressively developing, so that his final choice at the time of graduation will be more systematically based.

It would also be making an entirely wrong approach if the personnel interviewer answered a student who came in for vocational aid by saying: "Here, I just received this letter from the telephone

company. They want a number of men. Will you take one of the positions?" The individual may not have definite aims, and may grasp the first job that offers itself so that he can earn his living, without due thought as to his permanent likes and dislikes. Rather, the interviewer should study the intellectual and personality characteristics of the student and ascertain the probable direction of vocational interests. These may be initially divided into broad fields, such as independent business, executive, professional, artistic, and research; and then each may be split up to further narrow the range of desires and suitabilities. The following points have been suggested by Bingham as important for the individual to consider before committing himself to an occupation: financial return, steadiness of employment, rate of advancement, personal satisfaction derived from the work itself, prestige connected with it, and the usefulness of that work to society. We might add to this list some more detailed facts about the work itself: hours, strength necessary, speed, monotony, responsibility, initiative possible, etc.

Counseling during the interview should center around matching these two sets of variables, plus any other points which have special application in the particular case. A certain trait may be an asset for one position, a handicap for a second, and of neutral value in determining suitability for a third. Likewise a certain fact about an occupation might be highly attractive to one individual, and a prohibitive detriment to a second. Such facts might be working in isolation, or in a hot or cold place, or for commission alone.

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shorter hours, both of which give the individual higher standards of living.

There are certain ethical aspects about work and fatigue. It is not right that the worker should end the day so tired that he is unable to use profitably and enjoyably his leisure hours. He should not have to go to bed immediately after supper, nor should he be so exhausted that he becomes more tired each day during the week. He should be able to devote a certain amount of time to his family, attend social gatherings or engage in moderate exercise, and have enough energy left to do profitable reading at home or to attend evening school. One has to spend a good share of his waking hours in work, and if he is not in condition to enjoy himself in off hours, life itself is not worth while.

At the same time the worker must adopt this doctrine with reservations. Enjoying himself during the evening does not mean all night, nor should he have a week-end of debauchery or over-strenuous efforts. He should not resent being somewhat tired at the end of the day; if he were not he would not have accomplished much work of any nature. He owes it to his employer to get seven or eight hours' sleep, as individually needed, and to conduct himself otherwise, so that he arrives at work in a condition to put forth his best efforts.

II. THE NATURE OF FATIGUE

(1) *General Cause.* Fatigue is caused by muscular work, more specifically by contractions which are repeated rapidly enough so that certain chemical changes take place faster than their reverse actions can bring about recovery.

(2) *Chemical Nature.* There are several major chemical activities accompanying work and fatigue. (A) The energy for muscular contraction is furnished by at least two chemical systems. The first of these is a combination of creatin and phosphorus known as phosphagen, which on breaking down yields energy for the immediate shortening of muscle. The second system involves a change of glycogen to lactic acid by way of another phosphorus compound, lactacidogen, which yields energy for restoring phosphoric acid and creatin to the original form of phosphagen. (B) To restore the

second system oxidation becomes necessary; for this about one-fifth of the lactic acid, or an equal amount of carbohydrate, is burned.

It is evident from this that work must result in the immediate production of phosphoric and lactic acids and the somewhat later formation of carbon dioxide. These compounds are therefore known as fatigue substances. They are invariably present in fatigued muscle and their injection will bring on a state of fatigue. In mild work, oxygen can be taken in at a rate sufficient to restore the phosphoric and lactic acids to the original forms as fast as they are formed. The CO_2 is promptly removed by the lungs. For this reason light work can be carried on almost indefinitely without fatigue. As activity increases, oxygen cannot be taken in rapidly enough to remove the wastes. These must then accumulate and fatigue at once sets in, in time terminating further work. The individual is really in "oxygen debt" and must keep up an increased respiratory rate to make up for the deficiency.

Another cause of fatigue must not be overlooked. Sooner or later the oxidizable materials will be exhausted. In other words, food must be furnished. Of the possible foodstuffs, there is no question that carbohydrate is the one most easily available.

(3) *Generality of Fatigue.* Fatigue products are carried away from the contracting muscle through the blood stream. Fatigue is thus spread to other parts of the body. Thus, if one has walked or run a long distance, his capacity to do work with his arms is diminished. It has been proved experimentally that this is chemical, and not just a result of work done. If blood from a thoroughly fatigued muscle, say in a dog, is injected into a fresh animal, the latter will show all evidences of fatigue—lessened activity, lack of alertness, tendency to sleep, etc. The practical significance of this spread of fatigue is that a change of work will not be adequate to bring about recovery from fatigue. If one is genuinely tired (not bored or cramped), rest is the only factor which will suffice to cause complete restoration.

(4) *Curve of Work.* Fatigue does not occur immediately, but there is a definite period of time during which maximum work goes on. We give in Figure 9 a generalized curve of work, with the significant points labeled. Time values cannot be given, since the progress of fatigue is dependent on the speed and type of work.

At the beginning there is a short "warming-up" period during which the amount of work produced increases. The exact cause of this is uncertain; it may be due to the muscle becoming more pliable, or it may be due to getting control of nervous conduction and coordination. An excised muscle shows this warming-up phenomenon, so the nervous connection is not absolutely indispensable. It may assist in the intact organism, however. Next there is the period of maximum productivity, the length of which depends on the speed and severity of the work and the opportunities for rest. After the worker has exerted effort for a length of time his output drops off, due to the accumulation of fatigue products and debt of oxygen. Steadily effort becomes less and less effective. Finally, if

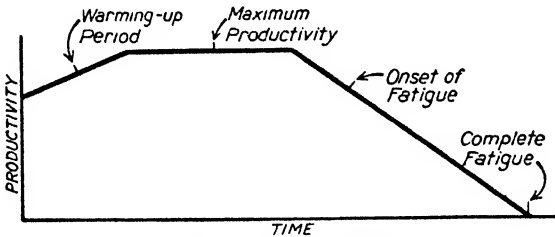


FIGURE 9. CURVE OF WORK.

the individual has not ceased work, there results a total lack of irritability in the muscle; it will contract no longer, regardless of how hard one tries. This last stage is rarely reached, especially in daily labor, although it is sometimes seen in athletic contests, mountain-climbing, and similar activities which are full of emotional excitement.

(5) *Recovery from Fatigue.* If the rate of work is slow enough, there will be no appreciable accumulation of fatigue during the working day. There is time for complete recovery between successive muscular contractions. Definite rest periods, say five minutes every half-hour, allow restoration. The longer periods of inactivity during the noon hour and overnight provide both physical and mental refreshment.

If work is prolonged well into the stage of increasing fatigue, recovery will be more than proportionately delayed. For example, if five minutes' rest will allow one to recuperate from a half-hour's

work, more than ten minutes will be necessary if one works steadily for an hour. It has been suggested that this goes up as a squared ratio; working twice as long will necessitate four times the amount of rest. With extreme fatigue recovery may not come about for hours, or possibly not until after a night's sleep. This suggests that it would be profitable to rest for short periods at rather frequent intervals, instead of having only occasional longer rests.

III. MENTAL AND NERVOUS FATIGUE

Fatigue does not result solely from gross physical activity. Prolonged mental effort, constant strain, or emotional excitement can make one just as tired as muscular exertion. Is this true fatigue, or is it something different?

Some authorities believe that there is no such thing as purely mental fatigue. Physiologically, there should be little fatigue following purely nervous output—thinking, for example. The nerve fiber itself appears to be indefatigable. Continued stimulation of an isolated nerve fails to produce any lessened conductivity, even after many hours of unremitting activity, although a muscle under the same conditions goes through the typical fatigue curve just described. Careful measurement shows that practically no heat is generated in this process. Several hypotheses relating to changes in synaptic resistance have been offered, but facts are too scanty to permit positive conclusions.

Experiments on prolonged mental work have shown some decrement, but only when the task is of very severe nature and is carried over many hours. The best known experiment is that of Arai; it consisted in mental multiplication of four place numbers by other four place numbers continuously for twelve hours. All calculations were done mentally; only the answers were written down. This type of operation is obviously of very strenuous nature; it is comparable to the severest physical exertion engaged in without rest over long periods of time. Toward the end of the twelve-hour work periods speed of mental multiplication was reduced to about half, but even this reduction seems slight compared with that which would occur in physical labor of corresponding difficulty.

Another difference between mental and physical fatigue is that

mental fatigue appears to be more specific. One may be thoroughly tired, or at least be growing inefficient, with one type of work, but still be able to turn to another and recommence activity with zest and a high degree of efficiency.

Present tendency is to describe everything in terms of physical causes and correlates. This makes a differentiation between mental and physical fatigue somewhat inconsistent. It does not seem reasonable that effort is produced without some physical action, and the fact that there is loss during prolonged mental work shows that something has happened. This has led several writers to suggest that the fatigue which follows mental work is not really a mental fatigue at all, but rather incidental physical fatigue. The muscles are often tense during intense concentration, and it is possible that this tension is what causes the fatigue. This tension is unnecessary, and one should be able to work longer if it is eliminated.

Another possible explanation of the decrement in continuous mental work lies in one's interest in the task. After a certain length of time one's attention starts to wander, and he has to force himself much harder to keep work up to a productive level. This inhibition has been described as a safety valve of the nervous system to prevent possible injury from overwork. Whether this is genuine fatigue or not, it is a fact that working capacity has become lessened. Therefore some relief should be provided; rest is as essential as in gross physical labor. The type of rest may be different from that provided for physical workers; walking about or even light muscular exercises may assist the mental worker to relieve his muscular tension. It is not quite so easy to institute regular rest periods in mental work, since the continuity of thought may be broken. One cannot break off at any designated moment, but must wait until he has completed a problem or arrived at a definite intermediate step.

IV. METHODS OF MEASURING FATIGUE

There are a number of ways in which the presence of fatigue may be detected—directly or indirectly.

(1) *Quantity Produced*, or output, is the most logical and direct means of measuring the work decrement. The daily curve of production is plotted, usually by hour or half-hour intervals. One may

study this to see when maximum productivity occurs, when a drop sets in, how much recovery takes place during the lunch period and other rest hours, and how serious a decline occurs toward the end of the working day. It may be assumed that if such other factors as rate of work, lighting, temperature, etc., are held constant, any differences from one hour to another must be direct indices of fatigue.

(2) *Quality of Work*. Where the rate of production is kept uniform by machines setting the pace, the number of items produced is held practically constant, so we measure degeneration of working ability in terms of spoiled or imperfect products. Accuracy and carefulness as well as strength may suffer through fatigue.

(3) *Lost Time*, attributed to illness or accidents, may be fundamentally because of fatigue. One who is thoroughly tired out is more likely to suffer an accident or be susceptible to a disease. These irregularities may be studied in terms of the time of day, number of hours of work, day and night shifts, rest periods, speed of work, etc.

(4) *Conditions of Work* may be studied with an effort to reduce fatigue and to raise production. Such factors as motion study, timing, proper delivery of materials, arrangement of machinery and equipment, and reduction of noise and glare will both help the worker and increase output. While these are not direct measures of fatigue, it may be assumed that work is made easier if production is raised. This is especially true if the gain comes during the later hours of the day.

(5) *Laboratory Tests*, as given by physiologists and efficiency engineers, are naturally the most accurate measures. There is some doubt as to their validity, however, since they take place in strange surroundings, have the element of novelty, and are usually conducted over comparatively short times.

V. COMPARATIVE OUTPUTS

(1) *Diurnal Curve of Work*. Production during the course of the day follows very closely the typical curve of fatigue given in Figure 9. There is an initial warming-up period, following which we have maximum production over a fair length of time, then a

drop. Usually following the noon rest hour there is a recovery to maximum efficiency, but the decline starts at an earlier time in the afternoon than in the morning, and the drop is more pronounced. In some instances there is a slight end spurt, comparable to a person sprinting at the end of a race.

This trend is shown very nicely in the figures presented in Table 29. They were gathered by Wyatt in the cotton-weaving industry, and show the percentage of production below the maximum for the period ending with each of the designated hours. This is a light and speedy task, so does not cause so much drop as

TABLE 29. HOURLY LOSS OF EFFICIENCY IN COTTON WEAVING

9	10	11	12	1	2	3	4	5
0.0	0.0	1.0	4.8	0.0	0.0	5.1	7.2	12.7

is often seen in heavy manual labor. The relationships between one part of the curve and another are the same, however.

Very pronounced loss is seen in Figure 10, which represents the output of men doing the extremely heavy operation of polishing metal by hand. The cause of the great revival over the lunch hour is rather uncertain, but it is likely that the materials and tools were left as they were when the noon whistle blew, and the non-productive preparations which have to be done early in the morning did not interfere with output at this later time. The slight irregularities in the middle of both the forenoon and the afternoon are not explained, but may be the effects of rest pauses, required or voluntary.

An example of the end spurt is seen in Figure 11, which portrays the hourly output of men engaged in the extremely arduous task of hand tapping fuse sockets in a munitions factory. There are increases of over 15 per cent between 11 and 12, and again between 5 and 6. One can afford to work unusually rapidly for a short time, knowing that a longer rest period is coming. The drops during the last half-hour of each work spell present no real contradiction to this tendency; they are probably caused by putting away tools and materials, and making other preparations for departure. It might be stated that the end spurt is not generally found; it appears chiefly where workers can set their own pace and where they are *motivated* strongly, as by a piece rate or through patriotic feelings.

It is perfectly possible that the dispute as to the presence and cause of the end spurt is due to the different conditions under which workers operate. If paid by the hour a worker will not ordinarily exert himself unduly, but if he is paid by the piece he will work

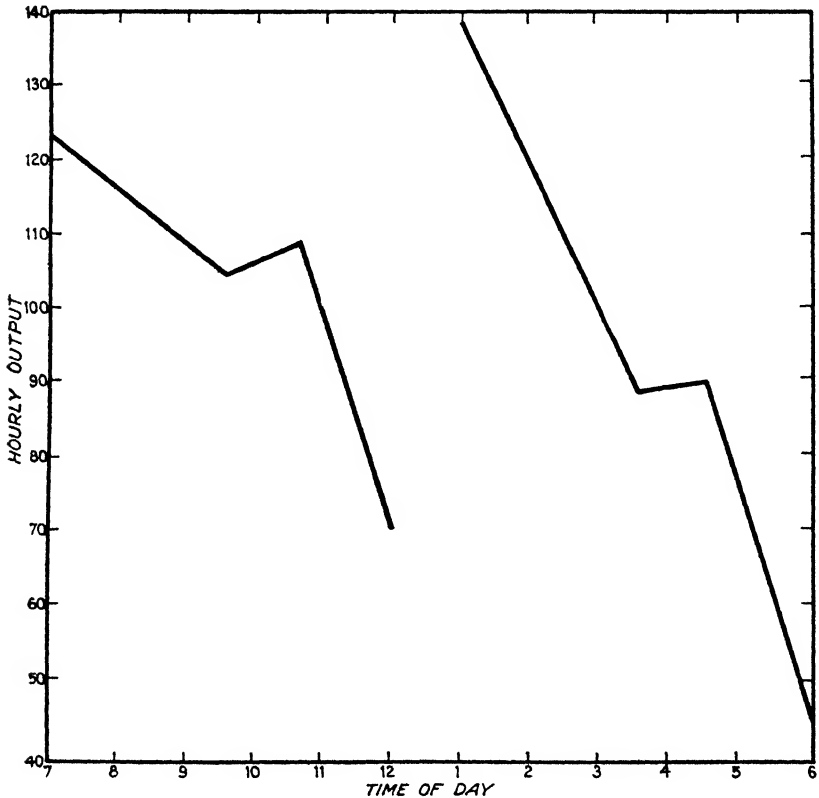


FIGURE 10. MEN POLISHING METAL BY HAND.

hard at the end of the morning or afternoon, and, since he has a rest coming, will not mind ending up somewhat fatigued.

It is of interest to compare morning with afternoon output. Vernon has done this for a large number of operations, and there is surprisingly little difference, particularly in view of the data we have just presented. This he attributes to two factors—there is more

inertia in getting under way in the morning, which would balance a slight loss in the afternoon; and after workers have been on the job for a considerable length of time they “unconsciously adopt habits of work which tend to the production of a maximum output with the minimum of effort.” When this has occurred they arrive at the late afternoon hours still comparatively fresh. This rate of production is not necessarily ideal; possibly with proper rest peri-

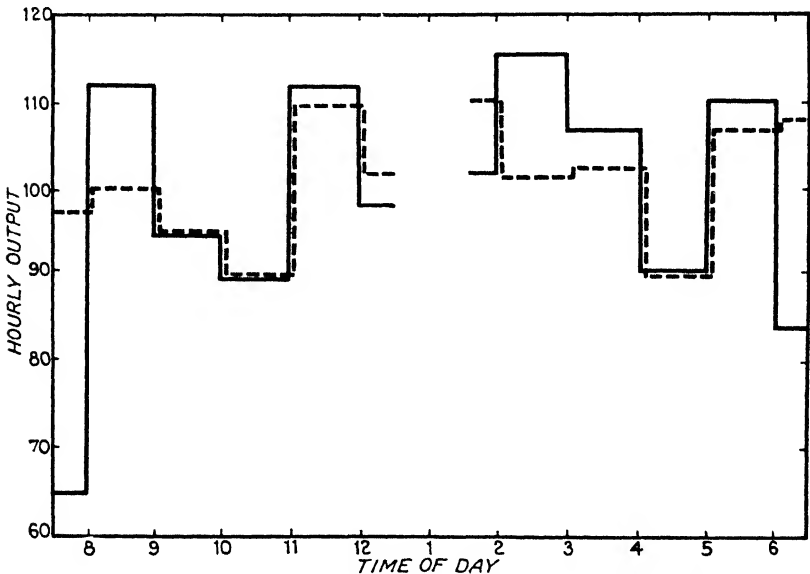


FIGURE 11. HOURLY OUTPUT OF MEN HAND-TAPPING FUSE SOCKETS.

ods frequently inserted we could bring about a higher average rate of production, yet without causing any appreciable decrement in the afternoon.

Indirect evidence of fatigue is shown by the relative frequency of accidents for different hours of the day. Data gathered for a large number of industries by Bogardus are presented in Table 30. It is seen that there are more accidents in the late morning hours and again during the latter half of the afternoon, and that the afternoon mishaps exceed the morning figures. The relations are exactly those of the typical fatigue curve. An accident may happen at any time

TABLE 30. TOTAL NUMBER OF ACCIDENTS BY HOUR

7-8	3,732	1-2	3,914
8-9	4,993	2-3	5,646
9-10	6,326	3-4	7,184
10-11	7,566	4-5	6,533
11-12	7,068	5-6	4,834
12-1	2,289		

through carelessness, but fatigue seems to be the only systematic factor that could account for more accidents at one hour than another. Change to artificial lighting or great temperature variations might have some effects, but can be ruled out in this case. Certain hours where there are very low figures are accounted for by fewer persons working, the 12-1 and 5-6 for example.

(2) *Weekly Output Curves*. Fluctuations in output from one day to the next show many of the same trends as the hours within a single day. The first day is rather poor; the second and third usually show the greatest amount of work done; from then on there is a progressive decline, with perhaps a slight end spurt on Saturday. This trend is attributed to a progressive fatigue. The worker is not quite able to recuperate all his energies overnight, and comes to work each morning a little more tired than on the preceding day.

Mental fatigue or boredom undoubtedly contributes its share. The change of surroundings and chance to be out-of-doors over the week-end are probably as important as the actual rest. The comparatively poor production on Monday is often attributed to week-end debauchery, but it seems more likely that it is due to the inertia of getting under way after a day and a half off as compared with a single night. Also new projects are frequently started on Monday.

In Table 31 we quote data on daily output from several different industries, "a" in terms of percentage of the maximum, and the rest

TABLE 31. DAILY OUTPUT VARIATIONS

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
a. Cotton-weaving	98.4	100	98.9	98.5	97.7	*	* a.m.
	94.5	93.8	93.7	93.3	92.5	*	* p.m.
b. Button-sawers	98.1	100.6	101.6	101.1	98.6	*	*
c. Blast furnace	96.0	100	105	103	101	102.1	94
d. Weavers	96.0	98.9	102.6	99.3	101.2	102.1	*
e. Bobbin-winders	94.6	96.7	97.6	105.4	96.3	109.4	*

in terms of 100 as the average. The excess production on Saturday may be end spurt, or it may be due to a higher rate of speed on a shortened working day. The single example of Sunday work shows very low production. In several cases where Sunday work was dropped, total as well as relative production increased.

(3) *Length of Working Day and Working Week.* In a sense we should pay most attention to production over a long period of time. Extraneous and systematic variables may influence shorter measures, but they should be pretty well smoothed out when we study output over periods of weeks.

During the last century there has been a progressive shortening of working hours from twelve to ten, and again to eight. Many states have labor laws which specify the maximum number of hours a week, especially for women and children. Legislation is also aimed at the seven-day week, and in many cases also provides for an extra half-day off. At the present time, with high-speed machinery and over-production, many forward-looking leaders are demanding a five- or six-hour day and a five-day week at present wages. The National Recovery Administration is working specifically along these lines. At the time of writing the exact mechanisms have not been thoroughly worked out, so we cannot quote definite work schedules. Except for the question of over-production, all of these changes have been directed against industrial fatigue and toward giving the worker a chance to enjoy life more fully than in the past. Do these trends follow known facts about production and hours of work?

The fact of decreasing efficiency in long hours was brought home very clearly in the munitions factories in Great Britain during the war. With the usual surplus of patriotic fervor it seemed almost traitorous for an individual to relax during the evening or to take a day a week off. So long hours were undertaken, but it soon became evident that production did not go up in direct ratio as expected, and that there was much lost time from illness and breakdowns. When it was realized that the war was not going to terminate for some time and that the burst of energy could not last, shorter shifts and definite rests were introduced. Production actually went up.

A striking case of the effect of decreasing hours of work is seen

in Figure 12. It is of men engaged in sizing fuse bodies, a very strenuous operation. During the first period they worked twelve or ten hours a day, with some Sunday labor; in the second the regular day was ten hours, with only occasional Sunday work; and in the third period Sunday labor was entirely omitted. After each change production increased, but it is of interest to note that the higher level was not fully attained until after about two months. This seems to be a general occurrence, although the time interval varies with the type of work and to the extent of the reduction. It was not for thirteen months that steel hearth men reached the maximum

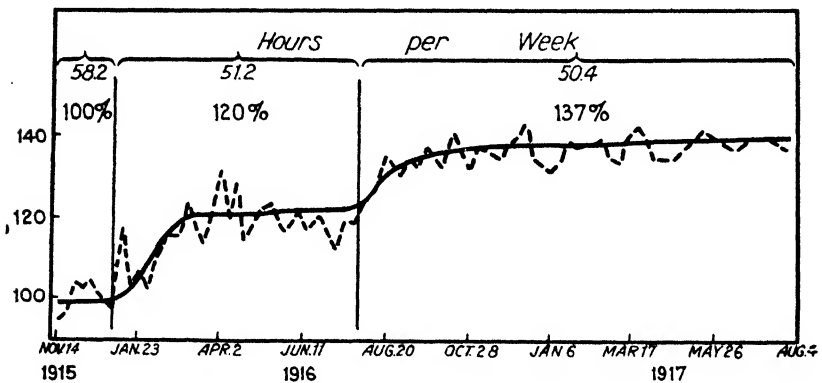


FIGURE 12. OUTPUT OF MEN SIZING FUSE BODIES.

gain of 19 per cent after being reduced from twelve to ten hours a day. These facts are in line with the quotation given on page 287 which states that the pace used by the worker was unconsciously selected, but so adapted to the work that in the long run about the same degree of fatigue is present at the end of the working day, regardless of its length.

Data gathered by Miles and Angles in a box factory show that with a single exception the hourly output increases as the length of the working week is reduced. The 36 hour week has a lower average hourly output than the others, but it seems likely that too large a proportion of the time was spent in the non-productive operations of warming up, preparing tools and materials, and in transitions between tasks. On this basis we would conclude that

TABLE 32. RELATION BETWEEN WEEKLY HOURS OF WORK
AND SPEED OF PRODUCTION

Hours Worked	Weekly Output	Hourly Output
36	29,926 \pm 51.2	834
40	34,737 \pm 42.7	868
44	36,920 \pm 89.7	839
48	38,100 \pm 16.6	793.5

hours may be too short as well as too long for the maximum degree of efficiency. Viteles recommends that when slack demand necessitates less than full production it would be more efficient to keep part of the force working full time than to have all workers put in a few hours a day. Social welfare opposes this policy, and the benefits to society of permitting all workers to earn wages, even though reduced, should more than offset the slight reduction in mechanical efficiency.

Where the work is not very strenuous and machines set the pace a reduction in hours may not effect the savings obtained in heavier types of labor. In twelve cotton factories a reduction of hours from fifty-six to fifty-four, 3.6 per cent, produced a decrease in output of 3.3 per cent, almost as great as the reduction in time. Even in this operation, however, any hours beyond a working week of sixty hours produced no additional output.

An economic advantage resulting from the maintenance or increase of production following reduction of hours of work is that certain items of overhead can be reduced. By staying open fewer hours the factory can save light, heat, power, etc.

(4) *Overtime* is generally admitted not to pay in the long run. The exact detrimental effects cannot be precisely estimated, because we never find it unmixed with other variables. Overtime is associated with a rushing business, so the rate of work during the day is likely greater than average, and it might be assumed that men would be more tired than usual at the end of the regular working day. Furthermore, overtime is only occasionally practiced, so consistent interpretation of any figures would be uncertain.

The harmful effect of overtime work is that fatigue may be so great that efficiency during the next day is enough poorer so that production suffers by more than is produced in the extra hours put in. Newman has argued that gross overtime work places such a

strain on the worker that in addition to a lower level of efficiency sleep will be lost and the individual will become more susceptible to illness. He even suggests that alcohol will be consumed in extra quantities because of the abnormal strain on the individual. This stand may be extreme, but there is, no doubt, some truth in it.

Vernon compared the hourly outputs of riveters working in a shipyard during the war during regular shifts and overtime periods. There was only a 6-per-cent drop in production from overtime work, but it must be pointed out that these men only occasionally did overtime and often failed to work the regular six full days. Strictly speaking, this is not overtime at all, but rather irregular hours of work. A group of caulkers showed a distinct deterioration of work from overtime, which is taken as evidence of cumulative fatigue.

Double shifts have been used at times, particularly when workers are changing from day to night work. On the day of change they are asked to work straight through both shifts, usually about sixteen hours. There is no direct evidence bearing on this, but authorities agree in discouraging it. Fortunately, the practice has been practically abandoned.

We should distinguish among various occupations when discussing overtime. In factory work it seems advisable to discourage it universally, allowing it only for temporary emergencies, and then never for more than a few days at a time. Stores in many communities remain open on Saturday evening, and the clerks may put in a twelve- or fourteen-hour day. This does not seem especially serious, as it occurs only once a week, and apart from remaining on one's feet the strain is not great. The day off or late hour of opening on Sunday will compensate for this extra work. Any clerks who are not particularly robust might be given Saturday morning off, and thus will work only the customary eight hours.

(5) *Night Work* is also discouraged if at all avoidable. The objections are on both physical and social grounds. Man seems to be a daytime animal and can never make a complete transition to working at night and sleeping in the day. There seems to be a definite physiological rhythm; this has been found to persist in night watchmen of several years' experience and during the several-months polar night. Of equal importance are the conditions of society

which make it difficult for one to operate on a reversed routine. One has to sleep during the daytime, when the light and outside noises are at a maximum, and when the air is less cool and refreshing. The meal after work, which should be supper, is at the usual breakfast time, and one's breakfast comes at the customary supper

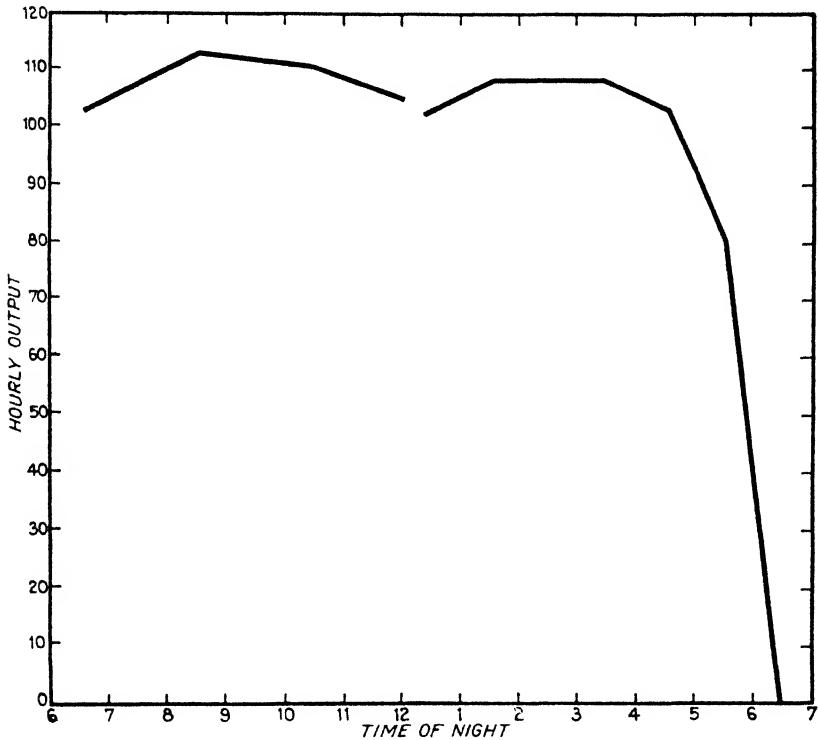


FIGURE 13. HOURLY OUTPUT DURING NIGHT WORK.

hour. Lunch is at midnight, and must be eaten from a tin pail or at a cheap all-night restaurant. Night work also deprives one of sunlight, and has been blamed for anemia in some cases. The social losses are serious. Family life is at a minimum, unless one cuts down sleep below a desirable minimum, and one is really left outside the world of daily events. One even has trouble trying to see his friends.

The industrial aspects of night work are very striking. Figure 13 shows the hourly output of men engaged in drilling and reaming fuses. Up to the early morning hours production appears to follow the usual curve of work, but during the last two hours there is a very marked decline, and the last hour is almost totally unproductive. Many of the men are asleep. The work spell is thirteen hours, which is too long; but even at that if night work were not essentially harmful there should not be the extreme drop seen here.

Sleeping is reported to be very common during night shifts. Usually fewer men are working and supervision is less strict. Certainly none of the important executives are around then, and minor foremen have charge of the work. The writer once had an amusing experience along this line. While selling in a store he was asked by a woman to help her select a chair for her husband. On asking what the requirements were, it turned out that he was a night watchman and was in the habit of snatching a little sleep now and then. A folding steamer chair seemed the best solution, since it was comfortable, yet could be folded and put away easily if the boss came around. And incidentally this showed that he could not have been getting enough sleep during the day.

We submit the following recommendations about night work.

- (1) The shifts should be no longer than daytime work periods.
- (2) The shifts should be so placed that they include as much daylight as possible, and interfere as little as possible with the usual living routine. The second shift, for example, might be from five in the afternoon to one-thirty in the morning, which gives eight hours' work with a half-hour lunch period, and yet allows men to get to bed at a fairly reasonable hour.
- (3) No single group of men are to be kept on a night shift continually. Each group of men might work one week a month at night, and the other three weeks in daytime.

VI. REST PERIODS

In discussing the physiological aspects we pointed out that fatigue progressed at an accelerating rate, and suggested that rests be taken rather frequently and for short times. A short rest during an early stage of work will enable one to recover freshness and to delay the

appearance of work decrement. One should stop work when or before he gets to the break in the line of productivity. The amount of work that can be done before the onset of fatigue will have to be determined according to the type of work and the individual working.

Before quoting several industrial examples, the writer wishes to mention an instance of the practical value of rest periods. Several years ago he and a companion were climbing a mountain which rose about thirty-five hundred feet from the base in four miles. Some parts of the trail were very steep, and it was considered a rather heavy climb. Neither of us had done any mountain-climbing lately, and very little walking, although we were both in fairly good general condition. So we decided to take it easy, and agreed to walk fifteen minutes and rest five. At the end of the first fifteen minutes of climbing we still felt fresh, but decided to rest, anyway. This program was maintained all the way up, and we were surprised to reach the summit without feeling the slightest bit fatigued. In addition we found that we had consumed only an hour and thirty minutes, much faster than the usual time, and only twenty minutes slower than the fastest ascent on record. We had rested twenty minutes in all, so our walking time equaled that of the record. Yet we were not in training, and had not tired ourselves out. What had been lost at the beginning through resting we had more than made up through maintenance of speed during the second half of the ascent. This exact ratio of work and rest is not suggested as absolute. It is possible that we could have done as well or better with some other proportions. The amount of rest necessary may vary among individuals. We quote the case merely as an illustrative example.

With almost any type of manual labor rest pauses are necessary and will be taken by the worker, so regular and approved schedules of rest should be drawn up. These will do far more good than stolen pauses, when the worker pretends to be busy and is on the alert for the boss. Mental as well as physical relaxation is important, and is not obtained unless rests are approved.

It has been found that workers naturally tend to take time off at rather regular intervals. Vernon, Bedford, and Warner timed, unknown to the worker, the work and rest periods in a number

of occupations. In a crude labor operation, for example, it was noticed that one man took off about forty-five seconds every ten minutes; this pause came so regularly that it consistently fell within the limits of nine to twelve minutes. In pitch-loading the rests amounted to 22 to 26 minutes, and in rolling tin plates from 14 to 28 minutes, an hour. This regularity might suggest that we could allow the worker to take time off whenever he felt like it and that it would be unnecessary to adopt any externally controlled program. However, the fact that cumulative fatigue appears late in the afternoon would prove that rests have been too infrequent or too short. Sanctioning rest should provide a better attitude and make it more effective.

The first and one of the best controlled studies on this problem was conducted by Taylor on pig-iron handlers in the Bethlehem Steel Company. The men had to pick up pigs weighing ninety-two pounds apiece, carry them up an inclined plank, and load them into freight cars. When the men set their own pace they averaged 12.5 tons a day. With a generous piece rate they tried harder, but became so tired early in the day that their afternoon output dropped to practically nothing. Trying various rigidly controlled schedules of work and rest, he finally found the optimum to be 42 per cent work and 58 per cent rest. Output was increased to 47.5 tons, almost four times the amount loaded under "go as you please" conditions. This huge increase is made possible by forestalling fatigue before it appears to any marked extent. With half-pigs, weighing forty-six pounds, men could work 58 per cent of the time; in this lighter work 42 per cent rest proved sufficient. Such large gains as these only appear when the work is very severe.

An excellent demonstration of the effect of different ratios of work and rest is seen in Table 33, prepared from figures in a study

TABLE 33. PRODUCTION WITH VARYING WORK AND REST PERIODS

Work	Rest	Pieces per Hour	Per Cent Rest
Setting own pace		16	Random
25 min.	5 min.	18	17
17	3	22	15
10	2	25	17

quoted by Vernon. Short alternations of work and rest produced the greatest output. There would, of course, be limits to carrying this scheme out indefinitely, as work might be too broken up and would lose continuity. This is especially true with mental work, where one cannot stop by the clock.

Some plants have maintained that no further rest pauses are necessary if the worker is forced to stop every once in a while to wait for materials or for some other reason not controlled by himself. This is not correct, since he cannot relax, and he cannot predict just how long he will have to wait. Actually, the fretting involved in waiting may be more fatiguing than the same amount of time spent in working.

The type of rest taken is also of great importance. The benefit of stopping work is both in the physical rest and relaxation and in the relief from the monotony and tension of constant work. All types of change are seen to be beneficial, but the value of the rest becomes greater as the activity and concentration demanded becomes

TABLE 34. ECONOMY OF DIFFERENT TYPES OF REST

Type	Saving
Absolute rest.....	9.3%
Uncontrolled.....	8.5
Music (listening).....	3.9
Tea.....	3.4
Walk.....	1.5

less. Lying down without even reading or talking provides the most complete relaxation. It might be thought that walking outdoors or playing a game would be extremely beneficial, since it brings about a complete change. But it does not help much in relieving physiological fatigue, and there is tension in having to watch the time of a short rest period.

The figures quoted in Table 34 apply to arithmetical work, and might be considerably different for manual laborers. With this latter group physiological fatigue is slight, but the tension accompanying mental effort necessitates rest. Strolling around and even mild setting up exercises have been found beneficial.

We would suggest that employees be discouraged from the practice of eating lunch at their work-benches. The Western Electric

Company at Hawthorne, Illinois, has observed that office workers use their cafeteria, but that the machine-operators dislike to wash up, and so remain at their benches. There is physical rest, but none of the value of a change in the surroundings.

VII. FACTORY CONDITIONS

In addition to hours of work, time of day, and control of work and rest periods, there are a number of conditions within the factory or store which influence fatigue and so affect output.

(1) *Illumination.* Insufficient illumination, shadows, poorly placed sources of light, and glaring surfaces cause unnecessary fatigue. Most of these can be eliminated with very little expense, so there is no excuse for allowing bad conditions to persist. Gloomy work-rooms have a depressant effect, which makes work more of a drudgery than it need be, and may lower production. Simply painting the walls white and keeping them clean has been known to increase materially the amount of work done. Colored lighting is not to be recommended if at all avoidable, as it causes more strain, and over a period of time may arouse a violent dislike.

Very close work produces a great deal of eye strain from the constant accommodation and convergence in keeping the material close to the eyes. Glasses may be provided with special lenses so devised that one can hold the material close and thus magnify its apparent diameter; at the same time they enable one to keep one's eyes in the position used in ordinary reading. This will relieve fatigue. Equipping girls, who sorted and mounted filaments for electric lamps, with such glasses raised production as much as 20 per cent.

(2) *Temperature.* Sixty-eight to seventy degrees is usually recommended as the optimal temperature for residences; does this apply to the working environment as well? Too high a temperature results in earlier fatigue than the work alone would produce. With lower temperatures more accidents occur because of numb fingers and the unwieldiness of the extra clothing worn.

In a large machine-shop record was kept of the temperature at the time of occurrence of accidents necessitating treatment of cuts.

TABLE 35. TEMPERATURE AND ACCIDENTS

Factory Temperature	Relative Number of Cuts Treated
59 or less	1.08
60 to 64	1.03
65 to 69	1.00
70 to 74	1.21
75 or more	1.30

It is noteworthy that more accidents occurred at temperatures above the optimal than below that point. This point, incidentally, is slightly lower than that maintained in most living-houses. Work can be done in a temperature lower than is comfortable to sit in without activity.

Vernon, Bedford, and Warner made an interesting study of the effects of temperature on fatigue in coal mines. The surface was about 60 degrees, and heat increased 13 degrees for each thousand feet of depth, producing in excess of 100 degrees at some of the lower levels. Humidity undoubtedly was an additional factor. It was found that men working near the surface rested about seven minutes each hour, while those in high-temperature levels were forced to rest as much as 22.4 minutes an hour.

(3) *Ventilation*. It is agreed that *circulation* of the air is more important than freshness. It is ideal to take in outside air, but sometimes it is impossible—in dark theaters, for example. However, the high ceilings provide plenty of unused air, if proper circulation can bring it to the audience. Furthermore, fresh air is constantly leaking in through cracks, doorways, around windows, and even through bricks and plaster. *Humidity* is in some ways more important than temperature. We all know that damp cold weather is extremely penetrating, and that excessive humidity makes a hot spell almost unbearable. On a dry desert the temperature can attain a very high point without causing undue suffering; and people do not feel 60 degrees below zero in the dry interior of Alaska as much as one might think. A fan, furnishing good circulation, does not really cool the room at all, but assists in evaporation from the body surface, which causes a feeling of coolness.

(4) *Noise* is another source of fatigue. Its effects are less well

known and studies are somewhat equivocal, probably because it is very difficult to isolate this factor. Any laboratory test will be known to the subjects, and they will probably concentrate more intensely than normally. Laird made an indirect measure of the influence of noise by comparing the expenditure of oxygen (really metabolism) under different conditions of noise and quiet. He found that typing under quiet conditions produced an increase in oxygen consumption of 51 per cent, while working in a noisy room required 71 per cent more energy than resting. Production in such a case may remain the same, but the increased output of energy necessary to maintain this level will be wasted and will mean that the worker reaches the end of the day in a more fatigued state than necessary.

In a recent study Harmon measured the effects of noise on output and on cost of the work in terms of energy consumption. For the noise distractions he used very practical devices. Phonograph records were made (a) of a busy office with its sounds of typewriters, adding machines, and other noises, and (b) one of the noisiest street corners in New York City, with elevated trains, street cars, policemen's whistles, occasional shouts, etc. The test was that of adding ten three-place numbers, the amount and accuracy over twenty-minute periods being recorded. Heart rate, respiration, and metabolism (oxygen consumption) were the physiological measures taken.

The losses in work done were not very great, although performances were always poorer. Variability was increased, showing that performances were not quite as steady and dependable as under more favorable conditions. The physiological cost of doing work under unfavorable conditions, however, was more marked, which is a general finding in investigations of this type. There was gradual adaptation, so that toward the end of a rather lengthy testing series the subjects were nearly at a normal level. A change in the type or character of noise will destroy this adaptation. Thus at the very best it would appear that the only time that noise is harmless is when it is constant in nature and when the individual is used to it.

Kendall spoke of a case where "The change in location of a machine which was operated by a girl who sat with her back to an

aisle where heavy trucking was done caused an increase of 25 per cent in her work. Every time she heard a truck approaching she involuntarily shuddered, probably wondering if the truck would strike her. Removing this operator to a quiet corner caused the increase."

In motor tasks slight amounts of noise may not be detrimental; in fact, in some cases production may actually be increased because the worker has to concentrate more intensely. The expenditure of energy, however, may be more than proportional. But mental work seems to suffer in noisy surroundings. Discontinuous and unexpected noises act as more serious distractions than constant sounds.

Certainly there is no advantage in noise. It is being eliminated in industry by using noiseless typewriters, rubber padding, special materials in ceilings and walls to absorb echoes, and similar devices.

(5) *Static Fatigue* is a special type of fatigue, caused by lack of movement rather than by muscular exertion. Examples are the fatigue from standing many hours, from not having the back supported in typing, from having to bend over a bench or drawing-table, or from remaining in a cramped or strained position in one type of work. A mild amount of exercise will prevent this type of fatigue, since contraction of the muscles massages the capillaries and assists in dispersing fatigue products.

Some types of static fatigue cannot be avoided—that resulting from standing up while waiting on customers in a store, for example. But many other types can be avoided, and industry is gradually taking care of their causes. An apparently minor change of a few inches in height of a bench or table, placing materials waist high instead of on the floor, and better arrangement of filing cases and desks to save steps will increase the amount of work done and decrease the fatigue at the end of the day. One interesting change which saved a great deal of fatigue consisted in placing on a raised platform the desk and chair of a girl who did typing and filing work. The height was carefully arranged so that her shoulder level was not changed when going from sitting to standing work, or the reverse. In the course of a day a great many foot-pounds of energy are saved by not having to raise the upper two-thirds of the body many times.

VIII. MONOTONY

(1) *Effects.* Mechanization of industry carries with it an extreme degree of specialization, which means that work becomes repetitive, without variation, and therefore monotonous. Writers have placed the blame for a large variety of evils on this. (A) It is said to take the soul out of a man and make him a slave to his machine. (B) Since he does such a small task he may not have sight of the end product and will lose pride in his work. (C) The creative impulse, strong in man, is thwarted, and the result is maladjustment, pessimistic reveries, and lack of coöperation. (D) There is no pleasure in work, and the working day seems endless. The joy is thereby taken out of life. (E) If he does not like his work he will not apply satisfactory pressure to it and an actual decline in production will ensue. The decrement of work, especially late in the day, is attributed to the effects of monotony and boredom rather than to actual physiological fatigue. Let us repeat that all these are arguments, not facts; some may be true, and others may be grossly exaggerated.

(2) *Susceptibility to Monotony.* A very important question is whether all workers are equally susceptible to boredom. It is possible that this idea exists chiefly in the minds of labor leaders and agitators, who are of high intelligence. We showed in Chapter II that persons of high intelligence who happened to get into low-grade jobs quit early, while those of lesser ability remained on the job for indefinite periods of time. In fact, one automobile plant which is noted for its extreme mechanization suggested to its workers that they might be shifted about from time to time in order to relieve the monotony, but the plan was met with more protests than expressions of approval. Apparently workers of this class prefer to remain in the same rut rather than to adjust themselves to the changed conditions of work. Or, the crux may be in the *personality* of the worker, rather than in his intelligence. It is possible that two individuals may be of the same degree of intelligence, but that one becomes tense and bored from constant routine work, while another is stolid and unimaginative and suffers no ill effects. Women seem to object somewhat less to repetitive work than men,

although individual differences are probably far greater than the separation between the sexes.

Whiting Williams points out that monotonous work may even be desirable. If it is routine enough so that it can be carried on largely unconsciously, one's attention is freed to think or talk about other things. One has only to hear the chatter of girls in a telephone exchange between calls to realize the social advantages of routine work.

(3) *Relief from Monotony.* Various writers have given quite a number of suggestions for the relief of industrial monotony and its ill effects. (A) Choose the workers for a monotonous task from a standpoint of personality and interests. Hall has suggested the use of an annoyance questionnaire, such as Cason's list, to select workers for disagreeable positions such as garbage-collector, miner, fisherman, or forest ranger. Different questions would be used for each position, and applicants who do not object to the particular type of situation encountered in their projected work would be selected. The applicability of this method depends on the validity of the method of ascertaining dislikes from abstract questions.

(B) Activities may be changed from time to time, so that the worker does not have to spend the whole day on a single task. This is not always feasible, since an operation may be monotonous and at the same time demand long training and a high degree of skill. Transferring about assumes equal skill at all tasks. Too rapid change will also break up the continuity of work. To take care of this it has been suggested that where workers are capable of shifting about, or if their regular duties call for the performance of two types of duties, these changes should come after about two hours. This time has been found to be about as long as most people can do routine work without becoming extremely bored. (C) Rest pauses every hour or two allow the workers a break from the deadly routine and relieve nervous tension.

(D) The worker may be shifted about, but over longer periods, say every three months. The Western Electric Company practices this with their office workers. Such shifting not only relieves the worker, but makes him more versatile and therefore more valuable to the firm. And it occasionally uncovers unexpected talent for a new type of work.

(E) Vacations furnish the most complete break not only from work, but also from the daily routine outside of work. One can build himself up physically, and return to work with renewed vigor and a better outlook on life.

(F) It has been suggested that pay on the piece-rate basis would cause less feeling of monotony than an hourly, daily, or weekly wage, since the worker has an incentive to keep going and his interest in his task will be greater. (G) If the proper rhythm is maintained, continuous work will cause less dissatisfaction. A pace slightly faster than one's natural gait will create tension and far more than proportional fatigue; while one that is slower causes as much tension because one has short pauses, which are too short to allow any real rest. Just the right rhythm will make possible the maximum work with the least fatigue. The rate will probably have to be determined for the individual worker as well as for the process. (H) If not too much work is presented at a time, the worker will feel that he can make some progress toward finishing it. Having materials brought on an endless belt gives the feeling of an irresistible force against which it is futile to strive. But if one draws from a pile which can be used up in about an hour he can see definite progress, even though he knows that he will have to get a fresh pile.

(I) An indirect method of reducing monotony is to improve the general industrial and cultural atmosphere surrounding the plant. Employees' clubs, athletic teams, night classes, etc., will make life outside of work more pleasant and complete, even though the work itself is not changed.

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¹ The books by Vernon and Viteles contain a wealth of experimental data, and many studies reported by them have been quoted here without referring back to the original source.

Chapter XIV

SCIENTIFIC MANAGEMENT

I. AIMS

THE general aim of scientific management is to reduce the great waste of time, effort, materials, and overhead expense which occur under traditional systems of industrial organization and conduct. We saw in the last chapter that proper rest periods and control of certain environmental factors could so alleviate fatigue that more work could be turned out with less effort than under uncontrolled conditions. Similar programs of scientific investigation and practice are carried out on other phases of production.

We might mention a number of specific fields in which study and improvement are taking place. (1) The needs and requirements of each position are studied so that the appropriate man may be selected for each type of work. Only in this way will we get the man who can do the work properly and be satisfied in it. (2) The worker should be trained in the proper methods of going about the task. (3) Work and rest periods should be so planned that he is capable of maximum production without over-fatigue. (4) Work should be planned ahead, routed, and timed so that no unnecessary pauses occur. There should be no waiting around for new supplies of materials, for products on which the previous step has not yet been completed, nor should skilled workmen in charge of high-priced machines be compelled to spend any appreciable time away from their main operation. The sequence of work should be so laid out that the worker's time is spent most effectively. (5) Tools, machinery, equipment, and materials should be appropriately designed and placed so that the worker has every facility for doing his best. (6) The management should so treat the workers and so

provide them with incentive that interest and coöperation are secured.¹

This program has been the object of severe criticism on the grounds that it seeks to get all possible out of the workers, that it stifles initiative, and that all the benefits go to the owners and none to the workers who are making the goods with their hands. These criticisms are groundless and can be answered by a study of actual conditions surrounding work in any organization where scientific management is *properly* utilized. Taylor mentions one instance where the method was introduced, with the following results: 35 girls did the work formerly done by 120; there was two-thirds less spoiled material; the cost of inspection of the finished product was reduced; wages increased by 80 to 100 per cent; hours of work were reduced from 10.5 to 8.5, with Saturday afternoon and two whole days a month off with pay; and finally, much more friendly relations between management and employees existed.

Scientific management should be for the good of all concerned—labor, management, and the public. For the worker—his wages are increased as his production goes up, and his work is more suited to him. For the management—greater production means higher profits and lower unit costs, and, if the system is properly applied, better coöperation with the workers should be secured. For the public—any marked increase in productivity means lowered prices; and since the public is largely made up of workers, more efficiency on their part means that they will have to pay less for goods and will be able to buy more goods. Those displaced from the labor force can be absorbed in other new enterprises if social planning is wisely done. Since social planning is usually *not* well done, there is usually some degree of unemployment, and resulting distress, even in “boom” times. We shall attempt to give a more comprehensive evaluation of the system in the final section of this chapter.

Let us state one more general point about the necessity of scientific management before taking it up in detailed fashion. Taylor continually emphasizes the necessity of having all phases of work planned in advance in the greatest detail, so that the worker will know just exactly what he is to do and how he is to do it. He says,

¹ Many of these points belong properly in the fields of engineering and economics, so we shall only consider those aspects of them which pertain to human behavior.

“. . . the reader will be thoroughly convinced that this science amounts to so much that the man who is suited to handle pig iron cannot possibly understand it, nor even work in accordance with the laws of this science, without the help of those who are over him.” More generally interpreted, we might state the principle in this way: Let the management do the planning, and let labor do the hand work.

II. PLANNING THE WORK

The first task of scientific management is to plan all work in advance. In this way there are eliminated the lost time and confusion which occur before all men are assigned to their work, machines are kept busy a greater share of the time, work is done in the proper order, and everything is conducted efficiently. Each man is kept busy all the time and the group as a whole is more favorably placed. There will be less waiting between jobs, and less waste in having too few men in one place and too many in another.

Each task is planned in detail as to time of starting and completion; tools and materials necessary are prescribed, and blue prints and instructions as to how to do certain things are furnished. In the morning each man is given his instructions for the day, telling him the what, where, and how of his work. With this may be placed a summary of yesterday's work, telling him whether or not he came up to expectation. This acts as an incentive for today, especially if he is paid by the piece rate and since he knows that under the system of scientific management he will have to maintain a certain level of efficiency to hold his present job.

The worker should understand the purpose of his task, through blue prints, photographs, description, or inspection of the finished product. This does not contradict the quotation given above that he is not supposed to plan out his work and that he may be incapable of devising scientific principles. Unless he has a clear conception of the finished product he will not be able to do the best possible job, as situations are always arising which demand a certain amount of judgment, and these can be better discharged if the worker understands the ultimate goal.

The work of each man can be checked more accurately if plan-

ning is properly carried out. With a gang method inefficiency cannot be exactly traced. Paying by a gang piece rate will work little better unless all men are willing to cooperate equally. If there is one loafer the rest will hate to let him profit by their efforts, but will prefer to work less hard and lose some of the bonus. If each man has his own task and supply of materials, the exact amount of work he does is easily recorded. His efforts will all return to him in the form of wages. If he falls down in certain phases of the work, specialists will instruct him in better and more speedy procedures. Thus he will try harder, will give better cooperation, will earn more, and will be of greater value to the company.

All this is founded, as is a good share of scientific management, on the theory that specialization will permit each man to do better than if he tries to do several types of task. This applies not only to the distinction between mental and manual labor, but within each field. The worker will do only one type of work; the supervisor or planner will take care of only his function. Under this system the worker does not have a single boss, but he has a number of functional supervisors, one for each type of activity. One does the planning, one has charge of the tools, another is the direct supervisor of work, etc.

It may sound as if to plan out each man's work in such detail and to have such a complex system of supervision would add tremendous difficulties to the management of an industry. It undoubtedly does involve a certain expense and trouble, but the saving effected should be several times its cost, since efficiency is so much increased. Each bit of work is not entirely unique; routine must predominate in a plant before scientific management can be applied. Materials, machines, and instructions can be largely standardized; and to lay out the work for a man for the day could conceivably involve little more than placing together in proper sequence a number of printed slips, with perhaps a word or number written in blank spaces here and there. If the tasks to be done are so highly individual that planning ahead cannot be done, many phases of scientific management will be inapplicable and a much higher type of worker will have to be chosen. As to the supervision, the cost should be little greater. Each man may have several in authority over him, but each supervisor has charge of a specialty, and will be able to direct more men

in this one field than if he had general charge of all supervisory functions.

III. TOOLS AND MACHINERY

Proper design, upkeep, and placement of tools and machinery are necessary for the highest type of efficiency. Let us devote our attention briefly to those aspects of the problem which pertain to the human side rather than being strictly engineering matters.

It is of particular significance that a number of plants have been fitting the tools to the worker rather than making the worker conform to standardized tools. People have long selected baseball bats or golf clubs by size, weight, length, and balance, so that they suited the physique, strength, and preferences of the user. One never feels perfectly at ease when using another's equipment. Why expect a new worker to use the same shovel, machine, or desk as his predecessor? Taylor raises the question of whether a man can do more work per day with a shovel load of 5, 10, 15, 20, 25, 30, or 40 pounds. The larger shovel will convey more at each lift, but may tire the worker proportionately more than would a lighter load. He found, with a certain type of work, that a load of 21 pounds was best; if the worker used a 24- or an 18-pound shovel he accomplished less in the course of the day. This means that shovels of varying sizes should be provided for different types of materials—ashes, coke, coal, iron, etc. Further, slight variations may be worked out to take care of individual workers, in terms of adaptation to strength, size, and length of handle, etc.

In a number of other ways machinery and equipment can be adapted to the worker so that they are far more convenient and satisfactory to work with. The height of the desk or work-bench is easily controlled, and may make a great deal of difference in fatigue. In the first place, a height which will cause the worker's back to be in an uncomfortable position should be avoided. Likewise it is recommended that the height of tables be so adjusted that the elbows are at a comfortable and non-fatiguing angle for handling materials such as papers, small objects being inspected, or laundry. Gilbreth says, "We have also found that the bricklayer picks up his stock with the least fatigue from a platform two feet

above the level on which he stands." Materials should be so located in relation to the plane of work that one lifts the shortest possible distance. A man who is shoveling should stand with his feet on a level with the dirt; never should he stand so that he has to shovel out of a depression or have to lift the dirt farther than necessary.

A few suggestions for improving the design of machines have also been given. They pertain in general to proper direction of effort, economy of effort, and prevention of accidents. The placement of pedals which apply power to machinery is important, since poorly designed ones often compel the worker to stand on one foot or to adopt an awkward position. A pedal should be placed in such a way and with such a tension that the normal standing position can be maintained while the pedal is depressed. If it goes to the floor it should have a spring or rubber padding to absorb the shock, which may amount to a good deal in the course of a day. Controls should be kept away from moving parts or should be provided with guards to prevent accidents.

The arrangement of controls and machines can be so designed that much energy and time are saved. A number of investigators have analyzed the movements used in typing, and have uniformly condemned the keyboard now in standard usage. Some of the most frequently used letters are struck with the last two fingers, which are less skillful than the first or second, and some fingers have to do several times the work that others do. It is rather doubtful, however, whether much can be done about changing the keyboard, because of the immense material investment and the necessity of re-training all stenographers. At the same time all will admit that a revised keyboard would be desirable. If a worker has to take care of more than one machine it will save steps if the machines face each other, or if they are in a compact row, rather than back to back or in some other arrangement which is wasteful of human energy.

Gilbreth gives some very interesting suggestions about caring for bricklaying materials in cold weather. The bricks, and water and sand going to make up the mortar, are heated. The warm bricks keep the worker's hands warm, so he does not have to wear any gloves which would make his movements clumsy. Previously work

had to be discontinued or go along somewhat inefficiently during the winter.

Finally, as a matter of mechanical efficiency, the machines should be kept in the best running order all the time. Constant inspection, lubrication, adjustment, and replacement of parts will prevent breakdown and will make the machines last longer. And more important still, this will prevent the waste of time while the workers are idle as repairs go on.

IV. ROUTING

With the great specialization of modern industry each worker is much more dependent on others than under a craft system, where one man carries the task through from beginning to end. Because of this it is necessary that men and materials be carefully coordinated. If one man is not able to do his part of the work because of lack of materials or because the previous step is done slowly, not only does he suffer, but everyone along the line following him is delayed.

Henry Ford has stated the essence of routing materials: "The thing is to keep everything in motion and take the work to the man and not the man to the work." With this we usually associate the belt conveyor or moving platform. These devices are very useful for many purposes, particularly in assembling large standardized products like automobiles or radio sets, or in inspecting smaller objects. But the method is not always applicable. In an operation like making shoes, in most processes the worker must turn the shoe around several times to perform his function, so it would appear better to transport a number of the partially finished objects in a roller and allow the worker to pick up each item as he needs it. The conveyor or other automatically timed device for bringing the work to the man has the advantage in that it sets the pace which must be followed, and thus practically guarantees that proper coordination of successive processes will have to be maintained.

The planning department can make a study of the whole task, to see just how long each operation will take and how much time should be allowed for transitions between steps. This accurate timing helps in a number of ways. Each worker can know just

when he can start his particular task in each project which is under way. If a certain special project is to be done, he can be profitably employed at something else until the work is ready for him. If the work is of routine and repetitive nature an even distribution of work among various men and machines can be planned. The management should provide just the requisite number of workers and machines for each process, since some processes require more time than others, and if only one machine is provided for each the work will pile up around some and other workers will have too little to do.

It is essential that the routing scheme should provide for delivery of materials at just the right place and at just the right time. This is especially important with a conveyor system, since it cannot be stopped or delayed. Having an over-supply of raw or half-finished materials on hand will not delay production directly, but it will clutter up the shop, and it represents so much inefficiency, capital tied up uselessly. A minor detail of routing is to bring the materials to a position which is close and convenient to the worker.

An authority on industrial efficiency once told the writer during an informal conversation an interesting and rather amusing instance of apparent contradiction of some of the principles suggested above. He was asked to make a survey of an automobile-tire factory and on preliminary inspection noticed what appeared to be a flagrant case of wasted energy. A worker whose duties were to cement on successive layers of rubber and fabric was seen to walk approximately a hundred feet for each sheet. On suggesting that it would be an obvious saving if this worker were given a stock of materials in a handy place, the efficiency expert was greeted with a good-natured laugh and the comment that "all is not gold that glitters." In this case the worker was made to walk that distance for additional materials because the cement on each layer must dry a certain length of time before the next can be put on; if layers are placed on too rapidly the tire does not stand up as well. As the workers were paid by the piece-rate system, they tended to go a little too fast and to produce an inferior product. A more efficient and logical procedure might be to have each man work on several tires simultaneously, putting layers on each alternately. By the time he got

back to the first it would be sufficiently dry for him to put on the next layer.

V. MOTION STUDY

We have discussed many externally controlled features of work: prevention of fatigue, work and rest periods, sequence of tasks, selection of tools, and design and arrangement of machinery. There remains a very important problem, that of going about the task in the most efficient way. This consists in teaching the worker to use the easiest, most direct, and most rapid motions.

Frank Gilbreth has been identified with work along this line more than anyone else, since he started the work in this field and carried on the largest body of experiments. A trained bricklayer himself, he noticed that bricklayers were far from alike in their methods of going about their task. Each had his own individual methods, and furthermore varied himself from time to time. Most of the men used one series of motions while they were in a hurry, a second when there was no particular rush, and possibly still a third method when instructing novices. One important observation, however, was that the fastest men used the fewest number of movements.

In attempting to improve the methods of going about the task Gilbreth made two fundamental assumptions: (1) that there is just *one best way* of performing a skilled muscular task, and that as a general rule any other procedure is inferior; and (2) that all workers are capable of learning this one best way.

His procedures in improving working motions consisted essentially in these three important steps. (1) Superfluous movements are eliminated, since they are not only unnecessary, but time-consuming. Familiar examples are the barber snipping his shears while planning the next point of attack, the soda-fountain clerk making elaborate motions, and the bootblack snapping the polishing rag. If work is leisurely these wasted motions may not be serious and may add variety to an otherwise monotonous task, but when it is steady, repetitive, and under some pressure the resultant inefficiency will be obvious. (2) Time is saved by training the worker to combine two movements or to perform the two simultaneously,

one with each hand. For example, he picks up the brick and the mortar at the same time, instead of bending twice. (3) The high-class worker is saved the trouble of performing routine tasks. The skilled bricklayer should not consume the time necessary to get a new pile of bricks, or to mix and lug mortar. One helper may keep a number of bricklayers supplied with materials, and more than earn his wages. Mechanical assistance, in the form of benches holding bricks and mortar waist high, and properly designed tools, also help to speed up work and to reduce fatigue.

In order to effect these and other improvements in the methods of performing manual tasks these functions must be studied carefully to see which are necessary, which may be eliminated, which may be combined together, and which one of several ways of doing a necessary act is the most efficient. A number of methods of observation and study have been used. (1) The most elementary consists in direct observation and stop-watch timing of motions actually employed. This procedure has limitations when the activity is of high speed or when refined measurement is desired. (2) A record may be taken on a photographic plate of the movements of the subject's hand. A flashlight bulb may be placed on the back of the hand to facilitate the recording. This method will record all movements, even the slightest, and will show their exact pathways. If there are flourishes or extraneous movements, these will be obvious and can be pointed out and eliminated. (3) The most complete means of analysis is by means of motion pictures. These show not only all the movements, but the time relationships as well. If the activity is especially rapid, as in typewriting where there are quite a number of separate movements a second, high-speed pictures may be taken. But for most operations the usual rate of sixteen frames per second is sufficiently rapid. Time may be interpreted from the number of frames displaying each motion, or may be recorded directly on the film by having a split-second clock in the background.

From the records, observations, and times obtained in these ways we may effect the various types of improvements suggested above. We may find out the most efficient way of going about each part of the task, the proper combinations of movements, the time necessary to devote to each, and then build all together to make the

TABLE 36. PICK AND DIP METHOD, LAYING TO THE LINE

Operation No.	The Wrong Way	The Right Way	Pick and Dip Method. The Exterior 4 Inches (Laying to the line)
	Motions per brick	Motions per brick	
1	Step for mortar	Omit	On the scaffold the inside edge of mortar-box should be plumb with inside edge of stock platform. On floor the inside edge of mortar-box should be twenty-one inches from wall. Mortar-boxes never over four feet apart.
2	Reaching for mortar	4/4	Do not bend any more than absolutely necessary to reach mortar with a straight arm.
3	Working up mortar	Omit	Provide mortar of right consistency. Examine sand screen and keep in repair so that no pebbles can get through. Keep tender on scaffold to temper up and keep mortar worked up right.
4	Step for brick	Omit	If tubs are kept four feet apart, no stepping for brick will be necessary on scaffold. On floor keep brick in a pile not nearer than one foot nor more than four feet six inches from wall.
5	Reach for brick	Included in 2	Brick must be reached for at same time that the mortar is reached for, and picked up at exactly the same time the mortar is picked up. If it is not picked up at the same time, allowance must be made for operation.
6	Pick up right brick	Omit	Train the leader of the tenders to vary the kind of brick used as much as possible to suit the conditions; that is, to bring the best brick when the men are working on the line.
7	Mortar, box to wall	4/4	Carry stock from the staging to the wall in the straightest possible line and with an even speed, without pause or hitch. It is important to move the stock with an even speed and not by quick jerks.
8	Brick, pile to wall	Included in 7	Brick must be carried from pile to wall at exactly same time as the mortar is carried to the wall, without pause or jerk.
9	Deposit mortar on wall	Included in 7	If a pause is made, this space must be filled out. If no pause is made it is included in No. 7.

TABLE 36. PICK AND DIP METHOD, LAYING TO THE LINE (*continued*)

Operation No.	The Wrong Way	The Right Way	Pick and Dip Method. The Exterior 4 Inches (Laying to the line)
	Motions per brick	Motions per brick	
10	Spreading mortar	Omit	The mortar must be thrown so as to require no additional spreading and so that the mortar runs up on the end of the previous brick laid, or else the next two spaces must be filled out.
11	Cutting off mortar	Omit	If the mortar is thrown from the trowel properly, no spreading and no cutting is necessary.
12	Disposing of mortar	Omit	If mortar is not cut off, this space is not filled out. If mortar is cut off, keep it on trowel and carry back on trowel to box, or else butter on end of brick. Do not throw it in mortar-box.
13	Laying brick on mortar	4/4	Fill out this space if brick is held still while mortar is thrown on wall. When brick is laid on mortar it presses mortar out of joints; cut this off only at every second brick. It takes no longer to cut mortar off two bricks than one.
14	Cutting off mortar	1/2	Every second brick.
15	Disposing	4/4 Butter end joint	When this mortar is cut off it can be used to butter that end of the last previous brick laid or it can be carried on the trowel back to the box.
16	Tapping down brick	Omit	If the mortar is the right consistency, with no lumps in it, and the right amount is used, the bricks are wet as possible without having them run, no tapping with the trowel is necessary.
17	Cutting off mortar	Omit	If the brick must be tapped, hit it once hard enough to hammer it down where it belongs. Do not hit the brick several light taps when one hard tap will do.
18	Disposing of mortar	Omit	Do not cut off the mortar oftener than every second brick, and when you do cut it off do not let it fall to the ground; save it, keep it on the trowel, and do not make another motion by throwing it at the box. Carrying it to the box does not count another motion.
	18	4 1/2	Total number of motions per brick.

whole operation a composite. The best way to illustrate the exact way in which Gilbreth carried on his motion study technique is to quote his analysis of bricklaying. This appears in Table 36.

We also present in Table 37 a summarized classification of the ways in which the various improvements were made. For purposes of ready reference we quote the numbers of the steps to which these apply.

TABLE 37. CLASSIFICATION OF IMPROVEMENTS IN BRICKLAYING TECHNIQUE

1. Omission.
 - A. By providing proper materials, in proper condition. Steps 3, 6, 16.
 - B. Appropriate placement of materials. Steps 1 and 4.
 - C. More accurate working methods. Steps 10, 11, 12, 17, 18.
2. Combination of several motions. Steps 2 and 5; 7, 8, and 9.
3. Shortening movements. Steps 2, 7, 14, and 15.

We call particular attention to the fact that under the third classification we have listed steps which are retained in the improved system. Each of these steps is necessary, but there are recommendations as to the most efficient procedures with which they may be carried out. Step 2, for example, reaching for the mortar, is a necessary act, but it is urged that the worker "not bend any more than absolutely necessary to reach mortar with a straight arm." This demands that the mortar-box be placed close to the worker and waist high. Step 7 specifies the way the movement must be made, "Carry stock . . . in the straightest possible line and with an even speed, without pause or hitch." Step 14 is allowed to remain, as it is a necessary function, but instructions tell the worker to cut off the mortar only every second brick. While one is handling the mortar he might as well spread enough for two bricks, and take care of the residue after both have been laid.

The training of apprentices in proper methods is an important and interesting matter. We list here several of the points which are most significant in the training of bricklayers. In doing so we omit points which are purely technical and so applicable only to that vocation.

- (1) He is expected to do a full day's work from the outset.

“An apprentice is supposed to do a man’s amount of work on filling in the middle of the wall after the first month. He is supposed to do a man’s amount of work on all common brickwork after six months.”

(2) The apprentice should work with the standard tools and materials from the time he begins. The trowel may be of small size, but one in regular use. When he has progressed sufficiently he may be given a large-sized trowel.

(3) Gilbreth is very insistent that an apprentice use the correct motions and go at full speed right from the start. Let us quote three rules which he lays down:

One of the worst mistakes that can be made in the training of an apprentice is to expect him to do perfect work first, and fast work later. A boy taught after this scheme is sure to get into bad habits of laying brick with too many unnecessary motions that will prevent him from ever laying brick fast. This is very important.

The right way is to put the apprentice at work where the appearance of the work is not of importance. Insist that he lay as many brick as a journeyman, even if they are not laid quite so well. Teach him to lay a brick with the least possible number of motions, and, instead of correcting all of the little faults on one brick, to try to lay the next brick without the same faults as attended the laying of the preceding brick. This last method will teach speed, and skill will surely soon follow, with sufficient practice.

An apprentice must be made to lay brick with quick motions, even on his first day. Speed and the least number of motions must be uppermost in his mind at all times. The apprentice must be made to lay brick with the method outlined in this system even if it is necessary to have a bricklayer go over his work as fast as he lays the brick, to make his work right.

There has been a great deal of dispute on these points, particularly on the relative merits of emphasizing speed and accuracy in the beginner. Some writers agree with Gilbreth, while other authorities recommend the opposite procedure—starting with quality, emphasizing perfect work, and gradually acquiring speed, but never at the sacrifice of quality. Gilbreth feels that slow motion activity will allow superfluous or unnecessarily complicated movements to

be used. The more these are practiced the harder it will be to get rid of them when speed increases.

There should be little doubt as to the validity of Gilbreth's arguments as applied to bricklaying, since he understands thoroughly both the practical and the theoretical aspects of it. Whether the principle of learning speed first and quality second will apply to all vocations is uncertain. In some activities any slowing down will break up the continuity of movement. Golf is an example; if one tries to swing at one-half or one-third speed his movements immediately become jerky. In typewriting, however, accuracy must come first, and speed can only be acquired as is compatible with accuracy. Of two groups of girls who had practiced typing for equal lengths of time the group which had aimed for accuracy proved to be both faster and more accurate than the one which was trained particularly for speed. This may not be so contradictory to Gilbreth's teaching as it sounds at first, however, since he does not suggest that a person work at random, seeking speed alone. He urges that speed with proper motions be maintained, since only in this way does he feel that the most efficient habits will become integrated. The use of correct motions necessitates reasonably accurate work. When he suggests that if work is not up to standard an expert may follow and polish up the job, he seems to be speaking more of the technical and æsthetic aspects of finished brickwork than of its fundamental accuracy.

(4) The beginner should be taught to use both hands, where called for, absolutely simultaneously. Mortar and the brick, for example, should be picked up at the same time (Step 5). Since a person can only direct his attention to one thing at a given instant he will have to watch one object and pick up the other automatically. The mortar may be picked up without looking, since it is homogeneous and spread around, while the brick must be selected and lifted accurately. Since the mortar must be spread carefully, it is better to pick it up with the right (skilled) hand; the brick may be picked up and laid with the left.

(5) At the beginning the apprentice should pick up just enough mortar to lay one brick, but after he has acquired skill he should be taught to spread enough mortar for two, or even three bricks

at once. This is perfectly possible and practical, and will obviously save time while laying the next brick or two.

To these we may add a number of principles suggested by Myers for setting up and teaching motion systems.

(6) The successive movements in an operation should be so related to each other that the worker may pass from one to the next in a smooth, graceful, and rhythmical manner.

(7) This leads to the suggestion that continuous movements—circular, curved, etc.—should be used as far as possible in place of jerky, straight, and angular motions. Coal miners, for example, increased output 16 per cent when they were taught to swing the pick rhythmically and in a curved path instead of with the usual forward and backward motion.

(8) When a stroke is to be delivered, it should be so directed and the material should be so placed that contact is made when the muscular movement has reached its greatest momentum.

A criticism of motion study is that it describes in detail just how an operation should be carried on and how a novice should be taught, but it does not tell what is the best type of individual to select to teach this procedure. Gilbreth assumes that all individuals can acquire his recommended techniques, but there is no experimental verification of this assumption. It is possible that certain qualities might be necessary to learn the rapid, efficient, and specified movements of an occupational system. We might select workers who have the necessary motor abilities and adaptability for the type of work demanded, just as we lay down other requirements for a position.

VI. EFFICIENCY OF WORK

In this section we wish to present the results of several experiments which have studied the physiological output involved in performing the same task in a number of different ways. This differs from the discussion of the last chapter, since that pertained rather to when work was done rather than to the methods employed in going about it.

A very interesting and instructive study was conducted by Bedale

on the relation between the way in which a load was carried and the amount of energy expended. He had weights from twenty to sixty pounds carried in each of eight positions. Various physiological tests were administered during work, but the one which gives the chief measure of energy expenditure was that of oxygen consumption. Table 38 shows the amount of oxygen used per minute for the eight different ways of carrying loads of varying weights.

TABLE 38. COMPARATIVE OXYGEN EXPENDITURE OF VARIOUS METHODS OF CARRYING LOADS

Method	Weight in Pounds					
	20	30	40	50	60	
1. Tray carried in front of body	464	522	613	675	*	
2. Tray carried in front, strap around shoulders.	473	522	604	656	*	
3. Weight carried in equal bundles in each hand.	455	492	534	667	*	
4. Distributed on board on left shoulder.	428	547	609	608	778	
5. Tray on left hip.	574	657	694	725	*	
6. Rucksack on back.	561	573	608	700	*	
7. Weight in two pails, supported by shoulder yoke.	400	440	486	516	531	
8. Tray on head.	527	575	626	692	*	

One notices that the rank order of efficiency of the various methods differs for different loads. Method 3 demands less energy than Method 2 for the lighter weights, but is inferior when one has to carry fifty pounds. With Method 3 there is not a great deal of increase in oxygen consumption as the weight goes up from twenty to forty pounds, but fifty seems to demand far more than proportional increase in exertion. This suggests that poorer methods might be perfectly suitable for easy work, but when the task becomes more severe a more efficient procedure must be used.

Method 7, using the shoulder yoke, is by far the most saving method with all loads. This position distributes the weight best, placing it at the center of the body and placing the maximum burden on the rigid skeleton instead of on the musculature, cramps the muscles least, and allows one the greatest freedom in breathing. In fact, the differences are so pronounced that less energy is ex-

pended in carrying sixty pounds by this method than in carrying twenty pounds by the two least-efficient procedures.

A study of the consumption of oxygen while wheeling a barrow at different speeds has been reported by Crowden. It is interesting to note that the normal brisk walk causes the least consumption of energy for the work done. The slower walk is slightly uneconomi-

TABLE 39. OXYGEN EXPENDITURE IN WHEELING A BARROW AT VARIOUS RATES

	Slow Walk	Normal Brisk Walk	Very Quick Walk	Gentle Run
Excess O ₂	2,520 cc	2,480 cc	4,040 cc	3,660 cc
Relative values	1.01	1.00	1.63	1.47
Excess O ₂	2,515 cc	2,280 cc	4,405 cc	3,887 cc
Relative values	1.10	1.00	1.77	1.70
Excess O ₂	1,560 cc	1,240 cc	2,040 cc	1,960 cc
Relative values	1.26	1.00	1.64	1.58
Mean relative val- ues	1.12	1.00	1.68	1.58

cal, probably because it sets up muscular antagonisms which use up energy uselessly. The gentle run is easier than a very quick walk, as the motions are smoother and the stride is longer. Not only can the speed of work be controlled, but one can design the wheelbarrow itself according to the work to be done, as to size, length of handles, etc., to cause the smallest expenditure of energy for the work done.

Hartson advocates a study of skilled activities of various sorts with the purpose of making muscular movements in accordance with available knowledge of efficiency of muscular action and dynamics in general. In particular he emphasizes the "ballistic" movement, in which the member is literally thrown, with the muscles relaxed. It is the least fatiguing type of movement, as muscular contraction occurs only during the initial phase and since the pace set is pendulum-like and natural. Forced fast movements must be made with tense muscles and are correspondingly more fatiguing. Familiar examples of ballistic movements are those used by a baseball pitcher in throwing a fast ball and the swings used by a golf expert. When we understand this we see why experts are able to

get such speed and distances with an apparently easy and effortless motion. These principles may be applied to occupations involving heavy lifting, moving, carrying, pushing, handling levers, etc.

VII. SOCIAL IMPLICATIONS OF SCIENTIFIC MANAGEMENT

While scientific management is obviously sound from a standpoint of pure science, there have been a number of criticisms directed against it on social or human grounds. Let us examine and attempt to evaluate these.

(1) *Men Are Thrown Out of Work*. Ever since the advent of the machine age it has been the fear of labor that each man will produce so much that there will be more manufactured than can be purchased or consumed, and that before long a large proportion of men will be thrown out of work. This is called the "Work Fund" theory, which assumes that there is just so much work to be done, and the question is whether there will be enough for every wage-earner to work full time. Economists and industrial engineers have attempted to combat this argument, but their reasonings apply to world markets, average tendencies, and long-time trends, and consequently are more academic than practical. They point out that increased production means higher wages, which brings about more buying power. This in turn enables more goods to be manufactured and sold. There is one fundamental necessity for this train of circumstances to take place; the standard of living of the majority must be constantly rising. If it is stationary, buying power will remain the same, and increased production will be accompanied by fewer persons producing. The fear of labor seems more justified at the present time (1932) than during a period of prosperity and expansion. The worst feature of a depression is that manufacturers are confronted with increasing taxes and lowered profits, so are seeking more efficient methods, which work still further hardship on labor.

The Socialist Party has suggested a remedy for this situation, urging a five-day week and a six-hour day. If this were put into practice men would work about two-thirds the present amount, but would produce as much as formerly, since machines and methods of work are that much improved. This would allow more leisure

time and give each man a greater opportunity to enjoy life and to acquire culture than he can at present. Such a system would call for careful regulation, however, or companies demanding the present eight hours' work for a living wage would drive the others out of business.

(2) *Wages Are Not Increased in Proportion to Increased Output.* It is charged that labor is being exploited in being made to produce more and more without sharing in the benefits, and that all the additional income goes into the pockets of the owners. This may be true of a few unscrupulous companies, but is thoroughly discouraged by the better type of industrial engineer. Taylor constantly urges in his writings that the worker should receive dividends from the increased production, and he quotes actual cases of higher wages. For example, the hypothetical Schmidt who participated in the experiment wherein pig-iron loadings were increased from 12.5 to 47.5 tons a day raised his earnings from about \$1.15 to over \$1.85 a day. His wages did not increase in ratio to the increase in output, but there are several reasons why they could not. Increased production means reduced selling price, so there is a lowered unit profit. The management has a right to a certain share, since it developed the plans, spent money in the research, and otherwise made the improvement possible. Finally, the increase of 62 per cent is a sizable benefit to the worker, and if always granted should help to keep labor relations on a pleasant level.

(3) *Standardization and Speeding Up Increase Fatigue.* It is said that the worker is rendered more tired at the end of the day by having to go through standardized motions and by having to do them faster than previously. As to the first assertion, this can be directly disproved. The more repetitive work is, the less fatigue it produces, particularly after one has become adapted. Fewer muscles are used and these get more practice, so become stronger and get into better condition than would each of a larger variety of muscles which might be used in haphazard movements. It is recognized by expert swimmers that it is much more tiring to swim a medley race, calling for three different strokes, than it would be to use the same stroke all the way.

Although the productive work done during the day is increased, in many cases to a considerable extent, it is not necessarily at cost

of increased energy and speed. By reducing the movements made in laying a brick from 18 to 4.5, Gilbreth increased output from 120 to 350 bricks an hour. In the first case we find that 2,160 movements are made, but only 1,575 with the more efficient set of motions. Might not this even reduce fatigue? Perhaps we may not legitimately make such a direct quantitative comparison, because the motions which are retained under the efficiency program are the more important ones, and possibly might be longer and more strenuous than are some of the wasteful movements which were eliminated.

The actual fact is that industrial efficiency attempts to increase production only through making the individual workers more efficient and therefore capable of doing more work with the same or less output of energy. If the purpose is only to raise production and does not take into consideration the physical and emotional welfare of the worker, it is not worthy of being adopted and probably will not survive.

(4) *Man Is Made a Machine*. A frequent complaint against any form of industrial efficiency is that it makes the worker into a machine by prescribing just what he shall do at any given instant and just how he shall do it. Let us examine various important phases of management to see if there is any validity in this argument. No one can have the slightest possible objection to adapting tools and materials to the worker. Having the shovel the proper size or having the desk the right height cannot by any conceivable stretch of the imagination be thought of as anything else but beneficial. As to work and rest periods, little more legitimate protest can be raised. Invariably the program tells the worker to rest more minutes during the day than he would if left to his own devices, and encourages him to do so rather than forcing him to sneak away for his rests. Schedules cannot be adhered to blindly; if a worker needs to go to the toilet or is not up to par physically, no human supervisor would refuse him permission to take extra time off. As to motion study, Viteles points out that workers develop standard motions of their own—possibly two or three sets of them—and all that scientific management does is exchange these for a more efficient set. Workers are allowed to substitute their own procedures

for the standard method when they seem better suited to them and are productively as efficient.

Rationally, just why should a man rebel against doing things in a regular way, especially when he saves energy and produces more thereby? If one wishes to become a good runner he learns to move his arms and legs properly and to eliminate extraneous motions. In golf one soon learns that he cannot make consistent and dependable shots unless he uses the recommended form and goes through the same series of motions, in the same groove, every time.

(5) *The Cost of Management Is Raised.* To do all the research necessary to discover efficient procedures of various types, and to lay out and direct work as carefully as we have outlined must cost a lot. Will the increased efficiency compensate for this additional expense? Research does cost a good deal, especially since one has to try various techniques and experiment with all sorts of variations before he is sure he can make general application of his findings. Taylor speaks of an extensive series of experiments in which the Midvale Steel Company spent about \$150,000 to \$200,000 to determine what angles and shapes of tools were best for cutting steel. The annual budget of many companies runs into millions, and a certain percentage may be spent on research for improvements which will pay for themselves ultimately. As this is being written Walter P. Chrysler has just announced the Plymouth Six, and states that more than \$9,000,000 was spent on engineering, testing, and new equipment. Obviously, if he did not think that the increased sales would return the investment he would not have spent this huge amount. Many new devices or highly efficient machines will pay for themselves within a year, and still remain to do more service.

A few additional managers and clerks will be needed to take care of planning, routing, instructing, and supervising. But these also will far more than pay for themselves through the increased production made possible.

In addition to meeting the objections we may say that *society is benefited*. With increased production wages go up and prices are reduced. Therefore buying power is doubly advanced. Man will then have to spend a much smaller fraction of his income on the practically stable essentials—shelter, food, every-day clothing, taxes. He can spend more on luxuries—automobile, travel, entertainment,

fine clothes, education for his family, etc. But all this is undoubtedly due more to mechanical than to human efficiency. We shall discuss this latter aspect in the next chapter.

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the last group received no reward until the eighth trial. We see from Figure 14 that practically no reduction of errors took place

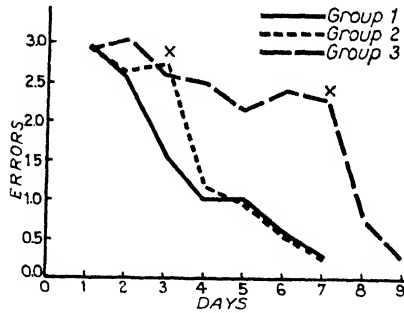


FIGURE 14. THE EFFECT OF INTRODUCTION OF REWARD UPON MAZE PERFORMANCE OF RATS.

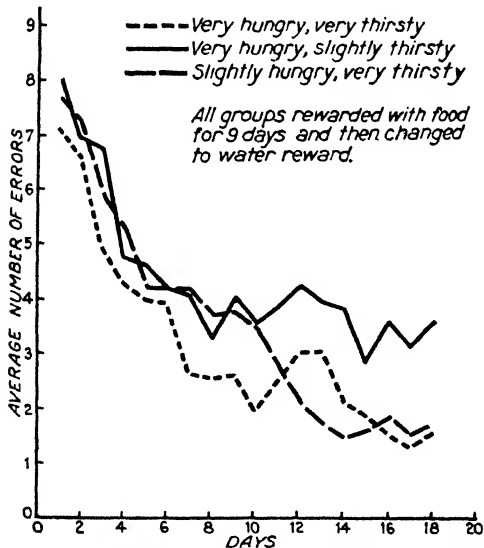


FIGURE 15. THE EFFECT OF APPROPRIATENESS OF REWARD ON MAZE PERFORMANCE OF RATS.

until after the animals obtained a reward for doing their task. The group which was rewarded from the outset showed an immediate and constant improvement. A second experiment, by Elliott, was

on the effect of appropriateness of reward on maze performance. Figure 15 shows the effect of changing from a food to a water reward after the ninth day. The group which had been thirsty improved very little, while their reward was food, but speeded up very rapidly when the more appropriate water incentive was substituted. In still another experiment Bruce removed the food reward after the animals were well along in their learning. This caused, as shown in Figure 16, a rapid and serious deterioration of performance. Finally, we present in Figure 17 results from an experi-

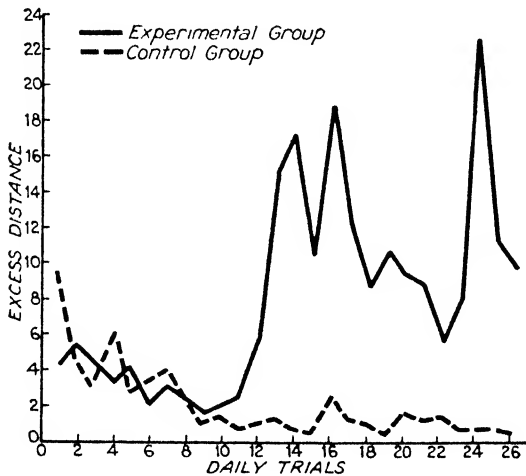


FIGURE 16. THE EFFECT OF REMOVAL OF REWARD IN THE MAZE PERFORMANCE OF RATS.

ment by Tolman and Honzik in which the degrees of hunger and reward were varied. It will be seen that the groups which were rewarded improved more rapidly than those which had no such motivation, and further that those animals which were very hungry learned faster than others which had less strong an incentive.

How does this apply to human behavior? If we may be permitted for the moment to apply to human behavior these results which were obtained from rats—and I think we may—we can deduce several important principles of motivation. (1) Better work is done if there is a definite goal or reward to be attained. (2) The performance is enhanced if the reward is appropriate to the needs

and desires of the individual. (3) The greater the desire the more persistent and powerful will be the effort put forth. (4) If the goal is lost or is inappropriate, the work will be done indifferently.

Human behavior, we shall admit, is far more subtle and complex than this. But there is motivation behind every act. Why do we go to a movie or a dance when we should be studying? Why do we sleep an extra hour in the morning, although we know we should be working? Why do we remain late at a party, even though we know that the loss of sleep will impair our efficiency the next day? The same explanation covers all these situations—the emotions are

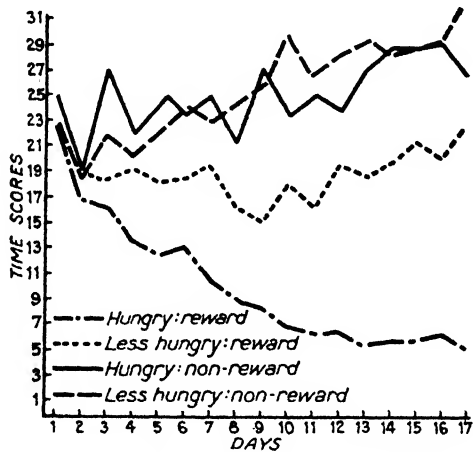


FIGURE 17. TIME CURVES FOR FOUR GROUPS.

stronger than strictly rational and voluntary behavior. If one seems to be suppressing pleasure in order to do less interesting routine work, this can be explained through the fact that the ultimate satisfaction of the work provides a greater incentive than the distraction of the immediate but more temporary pleasure.

Now we wish to apply these facts and arguments to the fields of industrial efficiency and personnel. A number of times we have spoken of the human side of the worker. He is not a machine. He is subject to pleasures, discomforts, likes, and dislikes. While speaking of vocational guidance we stressed the importance of engaging in pleasurable work. Now let us make the duties within

a vocation as pleasant as possible, so that the individual will find the greatest incentive in his work to do a good job.

To do this we must ascertain very carefully the exact motives which appeal to different individuals and to different classes of workers. Let us find out by first-hand investigation the relative merits of various methods of pay, what type of supervision brings the best results, what types of positions are most desired apart from the financial return involved, what incentives will bring out the best production, and what treatment best keeps up the morale of the organization.

II. WHAT'S ON THE WORKER'S MIND?¹

Realizing the hollowness and artificiality of the usual theorizing about the feelings and motives of the worker, several investigators have studied industrial conditions at first hand. This contrasts with the familiar tour of inspection undertaken by a President, general, or admiral, where advance notice is given, everything is straightened out and polished up, things are running smoothly, etc. Such procedure misses by a long way obtaining knowledge of conditions as they really exist.

Whiting Williams is perhaps better known than anyone else for his first-hand study of industrial conditions, both in this country and abroad. While engaged in his studies he has worked and lived as a common laborer, unknown to anyone save possibly the owner or manager. He got himself a cheap suit, a laborer's haircut, a room in a cheap boarding-house, and applied for his job at the factory gate. He acted in every respect like a *bona fide* laborer, and was thus able to collect information without arousing any suspicion or unnatural behavior. From his writings it seems that he learned as much outside of work—in the boarding-house or saloon—as within the factory.

The following five points from Williams's *Mainsprings of Men* sum up years of observation of industrial conditions:

First. The astonishing consequences which follow in the lives of millions from the restrictions of their material and their

¹ We can give no better title to this section than to take that of Whiting Williams's first book.

dollars-and-cents conditions—consequences physiological, intellectual, emotional, and spiritual.

Second. The surprising vastness of the gap which everywhere among the workers separates the holder of a “swell” job from the holder of a “bum” one, and most of all divided the possessor of ANY job at all from the luckless vagrant who possesses none and knows not where to find one.

Third. The amazing ignorance, on the part of employer and employee, of each other's deeper purposes and desires—the incredible ease and certainty with which each of these groups proceeds to justify to itself its own viewpoint regarding the other. So far from caring to indulge in mutual study, each appears so often to feel that it already knows too much about the other!

Fourth. The unbelievable importance of the worker's feelings and experiences rather than his logic or reason as a factor in all his viewpoints and attitudes.

Fifth. The unity of life and labor—the complete impossibility of walling off the factory from the home, the worker from the citizen, of dividing the hankerings of a man's working hours off from those of his hours of leisure.

The reader is advised to read the above quotation several times to get its full significance. These fundamental observations and their ramifications will be the center of discussion of most of the rest of this chapter.

One constantly runs across the fact of the lack of understanding between labor and capital. The worker feels that the management is out to exploit him without giving proportional return, that he will be fired the minute work runs short without consideration for his needs or feelings, that piece rates will be reduced if production goes up because of increased efficiency, and that promotion is only given those who have a special drag. The employers feel, or seem to assume at times, that the workers are people of an entirely different class and that their hopes and desires are small and not much worth considering, and that unions exist only for the purpose of gaining ends which the workers do not deserve.

Just what does the worker want? The most dominant motives seem to be: to preserve his self-respect; to be able to express himself

with a high degree of accomplishment; and to be assured of the opportunity to work a full week.

Pay has a surprisingly low rank in the scale of values. Williams soon found out the fallacy of the commonly accepted assumption that all the worker is interested in is money, and that he would put up with any sort of treatment or conditions if paid enough. Money, of course, is very essential and important, but other things are far more important than slight differences in wages alone.

"Charley, how'd you like to join the millwright gang?" the foreman called to me. He appeared to think he was offering a distinguished honor—in spite of his explanation that it paid only two cents an hour more. The change was accepted with indifference; surely so slight an increase in pay could not mean much of a promotion. Half an hour sufficed to prove my error. As I came by my former companions, carrying oil-can and wrench, I made a veritable sensation! Every one of these old friends leaned upon his shovel and wiped the sweat and dirt out of his eyes while he exclaimed:

"Hey, Boodie! W'ere you catch-em job?—Meelwright gang? Oil-can and wrench! No more . . . shovel! My Ga-wd!"

From that moment it was possible to talk familiarly with the first and second helpers, those experts who peer through their colored spectacles into the changing conditions of the furnace's "bath" of "hot metal" up to the instant of the "tapping." For three weeks I had puzzled why these men would have nothing to do with me. Now we were suddenly become pals! But this was not all. My elevation brought honor not only inside but outside the plant. Without doubt, if my wife had lived near by, she would have received the congratulations of the wives of the unskilled laborers, "Your man he catch-em fine job!" And not one of them but would have observed closely, the next day, to see whether she continued to speak to them!

All this amazing change of status, both as a worker and as a citizen, on a difference of only two cents an hour!

And again, while describing work in a roundhouse:

Then would come along the tracks a well-dressed man in a pressed suit and a new straw hat, carrying a suitcase, looking like—well, like a member of the town school board.

"Where's 7978?"

"Right there, sir, second ahead."

He was the engineer. Up he'd mount and pretty soon be down in his newly washed and ironed overalls and jumper, cap with goggles, handkerchief over his white collar, and oil-can in hand, going over it all again as though we had never been born!

He's the king of the roundhouse—the prince of the yard. . . .

In back of all this we see natural human pride and self-respect assert themselves. As Williams says:

. . . Away out beyond these (the duties of the work) extends the thought of the doer of the task. Constantly he pictures the reward which is to follow. Of that reward only a part is put into the pay envelope. The rest of it spills over into satisfactions astonishingly intricate and imponderable—and indispensable. Among these, however, the assignment of a gratifying social status is only the capstone set upon a whole series of lesser but ascending rewards.

A person likes to feel that he is indispensable, that he has a lot of power, that he does big things. This is why men are eager to work in dramatic types of activity like manipulating a steam shovel, steering an ocean liner, firing off a charge of dynamite, working on girders at the top of skyscraper construction, building a large dam, etc. A man will put much more energy and care into work if he feels his own importance and responsibility: the engineer in charge of an extra-fare train loaded with important business men, the trackwalker on whose inspection the safety of the train depends, the elevator inspector. Each individual may feel that things cannot go on without him, that his part is essential to the smooth and safe working of the whole. In some respects this is true, and in some not. At any rate, like a machine, all parts of a labor organization must be running in smooth coördination to achieve maximum efficiency. If each worker can be made to feel the importance of his contribution, so much the better; work with pride is better work.

III. WHAT DOES THE WORKER PARTICULARLY DISLIKE OR FEAR?

Just as there are certain ends toward which the worker strives, there are certain situations which are particularly annoying and

distasteful to him. We list below a number of grievances which have been reported by workers and by industrial analysts.

(1) *Fear of Losing the Job.* This is preëminent as a constant worry of labor. Fundamentally the worker is not lazy. When he seems to be producing below maximum capacity or when he asks for shorter hours of work he is not trying to shirk his responsibility; he is usually endeavoring not to run out of work, but to keep the job going for as long a time and open for as many of his fellows as possible. This fear may be dispelled by the example set by the company. If it retains the majority of employees in slack times and gives preference to the older workers when some must be let go, it will become known in the community for square treatment. The worker will be given a little more peace of mind if the company has a policy of giving at least two weeks notice before laying off, so that he may look for a new job and readjust himself.

(2) *Certainty of Regular Work* is closely related to the last point. Several studies have reported statements by workers that it is extremely annoying and discouraging to report for work and be sent home, or to find that they have run out of materials after a part of the day. Not only is there the dissatisfaction in not being able to work, but they lose respect for the company if it does not plan work and order supplies enough ahead so that there will be no interruption of production.

(3) *Lack of Personal Recognition.* Each person has pride in himself, his work, and his ideas, and there is no quicker way to discourage coöperation and initiative than to refuse to recognize his rights as an individual. Examples of situations under this class are: a foreman who always passes the buck or laughs off suggestions or complaints; too slow and grudging adjustment of pay shortages; undue delays in repairing machinery; dirty toilets; broken windows or draughts. A couple of quotations from workers illustrate the feeling engendered by such treatment.

“Well, that’s the last time I ever suggest anything around here. I told the boss I thought the machine would run better if we did (such and so). All he did was holler at me and tell me to get back to work, that I was paid for tending the machine, not thinking.”

The boss asked a worker who was leaving, “What are you

quitting for? Can you get more somewhere else?" "No," was the reply, "but at the place I'm going to they pay attention to a fellow once in a while."

It is a severe insult to a worker's self-respect to have new or green employees placed beside him on equal terms. As one worker said: "A year ago I started here at thirty-five cents an hour. Now I get forty—after two raises. But today they give me a green beginner to train—and what d'ya think? They're starting him at forty cents!" Similarly, Negro laborers who had begun to consider themselves fairly skilled objected to having new recruits fresh from the cotton-fields placed beside them on an equal basis.

(4) *Too Strict and Unvarying Regulations* make the difference between a place from which one draws his means of sustenance until he can find a better source and one in which he really likes to work. Let us quote an example showing how considerable dissatisfaction occurred because of rather poor handling of a holiday situation. The 4th of July came on Friday, which meant that only the Saturday half-day of work stood in the way of a three day week-end. The men asked for Saturday off, presumably without pay, but were not notified until late Thursday that they would have to work on Saturday. This upset many partially made plans and created a great deal of hard feeling. We hazard the guess that the work on that Saturday morning was far below usual efficiency.

Technicalities which seem pointless except for the sake of enforcing discipline antagonize simply because of their imperialistic air. These are such as: many threatening and warning notices; refusal to let a man take a day off because of death, illness, or marriage of a friend or relative, or to see the dentist or transact some private business; having to line up in particular order to receive pay or to punch the time clock; frequent physical examination; etc. Regulations are frequently necessary, but they may be handled better if their purposes are explained rationally, so that employees may see their necessity.

(5) *Unduly Strict Supervision and Inspection*. A ruthless bawling out in the presence of others so upsets a person's pride that it can easily spoil his whole working attitude. There is no need for it; one feels embarrassed enough if he has made a mistake, and it does no good to rub it in. The value of any comment is to be

sympathetic enough so that the worker is in a receptive frame of mind, and can see clearly what he did wrong and how he may avoid it in the future. Inspection is often necessary, but it must be done without an air of distrust and fault-finding if the worker is to do his best and remain happy at his work.

(6) *Sarcastic or Mean Foreman* is another frequent source of complaint. The boss can be properly sympathetic and suggest a helpful way out when the worker gets into difficulty. In this way he will win the lasting friendship for the management, on the basis of the old saying, "A friend in need is a friend indeed." "All blame and no praise" is another cause of dissatisfaction. Praise and blame should be used in about equal proportions, and neither used very frequently, so that they mean something when they do come. A little praise now and then will encourage a man and show him that his work is being noticed and appreciated.

(7) *Suspicion* of the worker, by searching the pockets or lunch-pails, creates ill-feeling and widens the gap between labor and the management. What small amount of thievery might occur without rigid inspection is rarely enough to warrant subjecting the great majority of honest men to such treatment. Where searching is necessary, as in a diamond mine, the situation can be clearly and rationally explained to the worker when he is first employed, and he will understand the exigencies of the situation.

(8) *Unnecessarily Bad Working Conditions* have caused the loss of good workers, who go over to competing concerns where conditions are better. Gardiner mentions the case of an experienced workman who asked the foreman to have a slight change made in the ventilating system, as there was a draught on his neck. This was promised vaguely several times, but nothing was done about it, so finally he quit.

IV. SOCIAL RECOGNITION

The social correlates of a position seem to be more important than the actual nature of the work itself. We see from the quotation on page 327 the effects on one's working and general social status of what appeared to be a slight increase in pay.

In general there is a rough correspondence between pay and the

social desirability of a job, but there are exceptions. White-collar positions are more in demand than laboring jobs which pay more. A man will sometimes pass up an opportunity to become a bricklayer or a plasterer to take a minor clerk's position at half the wages. He keeps clean and works in an office with or near important officials. From his appearance when he goes out on the street he might be the president of the company, but if he wears dirty overalls it is obvious that he is a laboring-man. In fact, so many wish to take white-collar positions that they have underbid one another and wages are far below what they should be.

A policeman observed that the addition of traffic regulation to his duties made the difference between being a little ashamed over his job and being proud to be known as a member of his profession. Nursing was regarded as rather a low class of work fifty years ago, when women who were convicted of minor crimes in New York were given a choice of ten days in jail or an equal time helping in a hospital—"ten-day women." When this practice was abolished the social desirability of becoming a nurse rose rapidly. A laborer said he was perfectly satisfied with his job, except that on being asked what he was doing got as reply the single word "Oh" with a slight upward movement of the eyebrows. A salesman is said to have remarked, when offered a position paying a hundred dollars a week on condition that he kept his salary secret, "What's the use of having a swell job if I can't talk about it?" Do you see the motive going through all these?

Uniforms seem to exert a particular appeal to certain classes of people, especially in times of war. During the last war many otherwise normal girls lost their heads—or their hearts—and married almost anyone who had proved himself a hero by enlisting, or by being drafted. Army and naval officers are able to mingle in society with people far beyond their financial status, because of the prestige connected with their work. In cities where there is a naval or military base civilians are at a distinct disadvantage in the competition for the attentions of the young lady residents.

Tippling has lately come in for much discussion and suggestions for revision. It is felt that accepting a gratuity places the recipient in a position inferior to the donor. Certain occupations have such systems of pay that tips constitute a large share of the earnings:

bellboy, waiter, barber, porter. Some of these have tried to devise methods of earning living wages with a straight business arrangement. In many private clubs direct tipping is not allowed, but a collection box is left near the door, or subscriptions are taken up around Christmas or Easter and the receipts divided equally among all employees. This is a compromise, but has the advantage of being anonymous. It would seem better to abolish the practice entirely, and raise prices slightly if necessary to maintain a decent wage scale. A dollar dinner would amount to the same thing as a ninety-cent dinner plus a ten cent tip. It would cost the customer the same, and would set the waiter's occupation higher in the eyes of the public.

V. METHODS OF PAY

Any employer who is determining wage scales is confronted with this question: What system of compensation will furnish the greatest incentive and the most satisfaction in work? We shall concern ourselves with only the psychological aspects, leaving out those which are pure economics.

We have already shown that pay is not sufficient as a sole incentive for working. In general, pay does bring other desirable features: higher standard of living, working in better surroundings, being clean, fewer and more desirable hours of work, greater social recognition, less danger of lay-offs, etc. But men will take jobs for less money in order to keep clean, to work under better conditions, or to enjoy a higher social status.

The chief choice in methods of payment lies between straight wage methods (by the hour, day, or week) and piece-rate or commission methods. There may be combinations of the two. We list below some of the advantages of each method.

(A) The *Straight Wage* system has these advantages:

(1) There will be less fluctuation due to conditions out of the worker's control, such as:

- (a) General industrial depressions;
- (b) Seasonal fluctuations;
- (c) Factory breakdowns or material shortages.

- (2) The worker can budget his income with more certainty.
- (3) There is less danger of over-fatigue.
- (4) The pace is not so hurried as if income increased with production, so quality of work is not so likely to suffer.
- (5) There is less fear of reduction of rates in case of increased efficiency than where piece-rate pay is used.

(6) Less complex bookkeeping is necessary.

(B) A *Commission System* has these advantages:

(1) Each man will receive just what he earns. A conscientious worker will not be sharing with loafers, nor will a loafer profit from the ambition of others. Workers will be less inclined to loaf, since any time lost is income directly out of their pockets.

(2) Workers will share fairly in the larger profits of good times, and can be kept at work in slack times, even though with reduced earnings.

(3) It rewards increasing skill, and takes care of wage promotion.

(C) *Combinations of Salary and Commission* methods can be made. We shall describe briefly several types.

(1) *Salary and Commission*. A number of the advantages of both systems are combined by giving a basic salary, with commission for all production over a certain amount. The worker has some assurance of steady income, and at the same time incentive to put forth his best efforts.

(2) *Group Commission*. In work where all employees must depend on one another it is essential to have coöperation and teamwork. This is achieved by having the whole department receive the same commission. It will help especially in a store, since there will be less fighting to sell the higher-priced merchandise, and less grabbing for customers.

(3) *Scaled Piece Rate*. Progressively higher percentages may be paid for greater production or sales. For example, a salesman may be given 1 per cent on all sales up to \$1,000 a week, and 3 per cent of all over that figure.

(4) *Bonuses* of various sorts may be given, for perfect attendance, for increases over last year's production, for lack of accidents, for high quality of product, etc.

(D) *Profit-sharing* schemes warrant some comment. They are

supposed to give the worker even more incentive than would a piece rate. Under wage systems too little work may be done; under piece-rate systems the rate of work may be so high that quality suffers. But with profit-sharing we need both quantity and quality to obtain the greatest return.

This system of pay is supplementary to wage, piece, or a combination of the two; it is not a substitute for them. The worker cannot keep going several months between dividends.

The actual value of profit-sharing is uncertain. In some shops it has been reported that men took a greater interest in their own and one another's work, chiding others for wasting materials, and being more careful of the machines. Yet take this quotation from Williams:

"The boss he wants a muchness of *his* money, 'cause *he* can wait," so George put in one day. "But me, Ah *can't* wait! What Ah wants—and *what* Ah gotta have—is not a muchness of money, but a *quickness!*"

A man who is working near the line of bare subsistence prefers an immediate fair return over the possibility of a somewhat larger one in the more distant future. He cannot take the risk involved in gambling for profits. The intelligence factor also operates; the man of higher rank and income is presumably of greater intelligence and hence will derive more motivation from a distant return than one who has less foresight and is also more likely to change jobs. Just where the line of demarcation comes is somewhat uncertain.

VI. EMPLOYEES' ORGANIZATIONS

Many companies have organizations within themselves which attempt to improve relations and to make them more satisfactory places to work.

(1) *Mutual Benefit Associations* may be formed to take care of illness, accidents, life insurance, and old-age pensions. A percentage of each week's wages may be deducted and placed in a fund to which the management also contributes a certain amount. Definite percentages of regular wages are returned to those who are retired or laid up because of illness or accident—usually half or two-thirds.

This takes care of one of the most serious worries:—that of stoppage of the source of income because of inability to work.

(2) *Unemployment Insurance* has made little progress as yet, but with the present unsettled condition of business one hears increasingly frequent demands for it. The average worker is not able to save up enough to keep going for more than a short time if out of work. The means of building up funds for this insurance is uncertain. A certain percentage may be deducted from wages, but this cuts into the already small earnings. If the plant is compelled to put in a certain amount this would be equivalent to a raise in wages, which would necessitate prices going up. Whether industry could afford this without causing as much harm as good is doubtful. Certainly one concern could not without its rivals doing the same; legal compulsion would be necessary to place all on the same level.

(3) *Savings Plans* may be arranged by taking a certain amount from the weekly pay envelope or by letting him put in whatever he feels able at any time. The organization may run a sort of bank, or a teller from some near-by bank may come in during the noon hour to do business with anyone who wishes to see him.

(4) *Stock Dividends* are given in some cases, semiannually or around Christmas-time. This supposedly gives the worker a greater interest in the business and inclines him to stay with the company longer. One company has the practice of paying 8 per cent interest while the individual remains in the employ of the company, and 6 per cent, the usual dividend rate, afterward. This should hold him unless there is a greater amount to be gained by leaving.

(5) *Model Villages*, involving homes, stores, and recreational facilities, have been used in some cases to help the worker along. The house may be rented at a nominal figure or bought on easy installments and at a lower figure than current retail prices. Living necessities—groceries, drugs, meat, etc.—are bought in coöperative stores. The company must be careful about its attitude in handling these things. If it seems to be patronizing, the workers will resent it and the purpose will be defeated. The writer has seen two companies which established what appeared to be practically identical programs. In one case it was enthusiastically accepted; in the other the workers preferred to live in poorer surroundings in a near-by

city. Why? In the first the owner, a former worker himself, dedicated his plant to the workers and was constantly genuinely looking out for their interests. In the second case the company set itself up as being magnanimous and expected constant thanks and gratitude.

(6) *Athletic and Social Clubs.* Baseball, basketball, soccer, bowling, and swimming teams may be formed from among the employees. These can meet outside organizations, or each department may get up a team which competes with other departments. This stirs up a good-natured rivalry and helps along the morale of each department. The company usually supplies the gymnasium facilities and may also furnish the equipment. It may also give time off and pay traveling expenses when a team goes to play an outside team.

Other types of organizations which may be formed are orchestras, bands, glee clubs, acting societies, reading clubs, plant newspapers and magazines, evening classes, etc.

The chief value of these is that the place of work is made one where friendships may be formed and good times had. Our life is so tied up with our work, and our friends are so likely to be people in the same work, that additional interest in the work can be readily stimulated. If a man is having a good time playing on a factory team or has formed a number of friendships through some social activity, he will be less disposed to leave the employ of the company. In fact, a man who is a good baseball-player may go out of his way to obtain employment in a factory which supports a team. Owners of plants who are interested in turning out a good team have been known to recruit known athletes as employees. An owner of a paint company has hired college basketball stars as research chemists—and without too detailed inquiry as to their technical knowledge.

(7) *Library Facilities.* A library may be built up with books and magazines for both amusement and improvement purposes. The latter may include books on salesmanship, supervision, technical skills, and similar topics which will aid the employee to improve himself in his present position and to earn promotion. Coöperation with the city library system will enable borrowing books without the trouble of going around after work hours.

VII. LABOR MANAGEMENT

Management and supervision are coming to be recognized as an art. Just as other phases of work, it should be done by a specialist, and not incidentally along with other duties. This is especially true considering the democratizing and enlightening forces at work all over the world. As long as slavery or a feudal system existed, management was simple; authority was maintained by force, fear, superstition, and awe. Now the worker is free to move about and to compare the relative merits of different places to work, as long as he is not left without a job entirely.

(A) *Treatment of the Individual.*

(1) "*Do unto Others as You Would Have Them Do unto You.*" This familiar quotation, the Golden Rule, sums up very concisely a motto which all of us could profitably put into practice in our daily dealings with others. Before you berate or poke fun at a person, consider how you would like it if the positions were reversed.

(2) *Treat Squarely and Impartially.* Give each person absolutely the same treatment accorded all others. Favoritism will destroy morale and willingness more quickly than anything else.

(3) *Treat as an Equal.* When giving a worker instructions one can flatter him by asking his opinion and consulting with him, not just ordering him about. Webb says on this point: "A command loses none of its force by being conveyed with courtesy. To treat a man with respect is the only way to secure his self-respect." He mentions several industries in which it is the custom to address a man as "Mr. —" with courtesy and respect. Let the reader, the next time he has occasion to do business with a garage mechanic or a painter, ask for his opinion and ask him to explain the situation, and see if he is not so flattered that he does the work a lot better and more eagerly.

(4) *Take Interest in Each Worker as a Separate Individual.* We may take a hint from the emphasis laid by Whiting Williams on the motives of pride and self-respect, and appeal to each man indi-

vidually. An instance has been mentioned of a manager who secured excellent coöperation from his men chiefly because he studied them as individuals, not just as so many "hands." He made a point to learn each new worker's name and hobbies. On Monday morning he would stop by one man's bench and ask, "Good morning, Jack. How did you go in the ball game yesterday?" To another, "Get a good string of fish, Charley?" And so on around the room.

(5) *Be Willing to Listen and See the Other Man's Point of View.* A person likes to talk about himself, his hopes and worries. Listen to these sympathetically and give them the importance an individual and a friend deserves. As an instance of this take this statement from a salesman in a store, and notice particularly the final sentence.

Last month a lady bought a . . . for \$5.50, gave me a ten-dollar bill and said she would be back for the change in a few minutes. She never returned, and at the end of the day I asked Mac (our section manager) what I should do about it. He said the regulations called for turning it in, but that I could use my judgment and do whatever I thought best. I thought that I might get into trouble if I didn't, but that I would lose the money if I did. Finally I decided to place the exact money in a sealed envelope and carry it in my coat pocket. I did that for several weeks, but nothing happened. So one night I tore open the envelope, and Mac and I had a couple of beers after work. Mac sure is a square shooter, and all of us would do anything he asked us to.

(6) *Be Willing to Compromise.* In any relationship between two individuals there must be frequent compromise. Among friends each person gives in roughly half the time. Ordinarily the worker is supposed to give in and to receive orders, but there is no reason why a supervisor should be considered omniscient merely because of his rank. In many technical matters the worker's opinion is valuable and worth consulting. And he will work more eagerly if weight has been given his opinion.

(B). *Supervision.*

(1) *Qualities of a Leader.* Tead defines "Leadership is the name for that combination of qualities by the possession of which one is

able to get something done by others chiefly because through his influence they become willing to do it." Some of the important capacities of a leader are: to get along with all types of people; to motivate them to work; to handle situations rapidly, tactfully, and to the satisfaction of all concerned; and to plan ahead.

(2) *Get Results Through Coöperation, Not Fear or Nagging.* The traditional foreman held authority by having a voice like a bull and a physique which enabled him to whip anyone who failed to do exactly as he was told. This system makes for a rapid turnover and a lack of whole-hearted coöperation. The best type of management is that which makes each worker feel pride and responsibility in his product. Little is accomplished with fear as motivation.

(3) *Get Respect, Through Ability, Knowledge, Treatment.* Workers will respect performance; if their boss can do all they can and more, and at the same time treat them decently, he can get a lot farther with them than if he covers up ignorance by blustering.

(4) *In Case of Accident or Mishap Instruct, Do Not Berate.* If a man happens to break something, he will feel badly enough because of his clumsiness, and a rough bawling out will only stir up resentment. A far better result will be achieved if the boss comes over and says: "Too bad, Mike, too bad. Here, I think this is the trouble. You should have watched this, and done thus and so." The worker will be encouraged, will feel that the boss is sympathetic toward him while he is in trouble, and will realize that the past is dropped and the comments were directed toward future improvement.

(5) *Inspire Feeling of Progress.* Give the worker recognition and encouragement once in a while. It is very discouraging to work day after day without one's efforts being appreciated. Praise must not be overdone, as the worker may think he is about to get a raise or promotion, and this cannot always come immediately.

(C) *On Instituting Plans.*

(1) *Show that Interests Are Common.* Van Loon's *Geography*, written from a social rather than physical standpoint, contains this very thought-provoking sentence: "We are all of us fellow-pas-

sengers on the same planet and we are all of us equally responsible for the happiness and well-being of the world in which we happen to live." He was particularly decrying international warfare, but the thought is equally applicable to capital-labor relations. Discuss with the workers or with their leaders any new plans, and show them that the interests of labor and capital can really be the same. Both will advance together, and both will fall if understanding and coöperation are not achieved.

(2) *Educate Slowly before Putting Plans into Operation.* There is a good deal of inertia and suspicion attached to changes, and one can not proceed too rapidly without stirring up antagonism. Several companies have had success in initiating plans by leading up to them gradually and talking them over for several months before putting them into effect. After the resistance has been overcome and the workers are receptive, the plan has a much better chance of being accepted and of working well.

(3) *Explain Clearly and Lay All the Cards on the Table.* Tell the worker clearly and fully all plans and regulations which affect him. He may be given booklets at time of employment, notices may be posted on bulletin boards, or he may be told in person. In particular he should be shown that any changes will not exploit him, will not affect him unfairly in any way, and especially that his wages will not be cut if his efficiency goes up.

(4) *Listen to Objections.* There is often more than one side to a question, and the management should be willing to talk over any rule now in force or being considered, and weigh any suggestions or criticisms the workers might make. If a rule is put into force against the group's wishes, we know that it will not result in coöperation. In many cases the misunderstanding can be resolved by explanation alone, but the fact that consideration was given the protest will help relations since it demonstrates a willingness to coöperate.

(5) *Employee Representation* is used by many organizations to bring about better understanding among all groups. To work, it must be actual, not merely nominal. Meetings should be friendly, the worker's representatives must be given full recognition, and their opinion must count as much as that of representatives of the man-

agement. The body of workers will be more prone to accept a system which has been approved by its delegated representatives.

(D) *Motivation.*

(1) *Motivation Must Come from Within.* No one will do a really good job at anything unless he is interested in so doing. This interest may arise spontaneously within the individual, or it may be aroused *indirectly* through outside influence. But in either case the individual must develop a genuine interest in the task. If he does it grudgingly, only to put in the hours necessary to draw the pay check, the work will be perfunctorily discharged. The problem, then, becomes that of finding the types of motivation which will most inspire the worker.

(2) *The Instinct Hypothesis.* It is frequently suggested in both industry and education that we should appeal to some instinct in order to motivate an individual. Long lists of instincts have been given, and it has been left up to the manager or teacher to tie these up to the situation at hand. Instincts of acquisition and ownership were linked with pay, that of construction with manual work, that of self-assertion with pride in one's work, and so on *ad infinitum*. There have been a number of objections raised against this type of reasoning. Terms have been too loosely used; instincts are usually too specific and invariable to be practically applicable; and we have so much learning built over the innate equipment that most of our behavior is a response to social and environmental pressures. It appears somewhat more satisfactory to use the term "motive" to designate a force which drives one to action, whether it is learned or innate.

Some of the motives which have been most frequently used in industrial situations are: self-assertion, pride in work, pride in family, constructiveness, and competition. A man likes to produce something of which he is proud, likes to be thought of as better than other workers, and wants to have his family respect his accomplishments. An instance shows the use of family pride in straightening out a careless employee. The foreman noticed that this worker was constantly borrowing wages ahead, and also that his production record was one of the poorest in the group. One day when he requested some more advance wages the foreman took him aside

and said: "Now, Joe, you ought to be doing better than you are. You are always behind in your money, and your work record is one of the poorest in the room. Do you think that's fair to yourself and your family?" The worker took this to heart, planned out his budget better, and put a savings plan into operation. And best of all, having a more definite goal to aim at, his work improved. Another motive is illustrated by the behavior of an expert carpenter who was set at building target floats for battleship marksmanship practice. After seeing a number of his pieces of work blown to bits he quit his job for one paying only half as much, but where his products had a chance to last.

(3) *Is a Single Incentive Sufficient?* One gets tired of engaging in the same activity or working for the same goal constantly, and seeks some novelty. So it has been suggested that incentives be changed from time to time, or that several incentives be provided simultaneously. Pay must always remain, but it may be supplemented in other ways, and may be somewhat varied by the incentives of the piece-rate system. Very successful appeals to pride have been made by posting, with no further comment, production records. The poorer men will try to improve, and those near the top will try to maintain their superiority. In discussing promotion (Chapter X) we listed various ways in which it may be given. A rank promotion is often as much valued as one involving salary increase, because of its significance in the eyes of other workers.

(4) *Punishment.* This is a negative incentive, and its deterrent effect is of very doubtful value. Encouragement and good-will seem to be of greater value than threats or fear. Fines are sometimes imposed for lateness, breakage, or infractions of certain regulations. It is difficult to determine the exact penalty, and harsh treatment will do more harm than good, through stirring up resentment. It is very important to place the money received from such fines in a worker's benefit fund, sick fund, or fund for charity; never should it revert to the management. Discipline can be handled far more constructively through an interview at the superintendent's or personnel office. A short talk will show the interest of the company, will often lead to constructive suggestions, and may furnish the person incentive to drop his bad habits.

VIII. ACCIDENT PREVENTION

(1) *Waste Involved in Accidents.* To say that no one wishes to have an accident is only a superficial beginning of the whole story of accidents and their effects. Concerning the individual, we think of the pain involved, time lost from work, lost earnings, doctor and hospital bills, and strain and privation on the family. Also, if the worker is killed or rendered unable to return to his work, industry has the double expense of compensation and of breaking in a new worker.

During the year 1930 in this country there were 99,000 people killed in accidents, industrial and otherwise, and an estimated total of two and a half million accidents serious enough to cause a loss of working-time. Therefore it is obvious that we should reduce accidents to the lowest possible number by designing machinery, by installing safeguards, by selecting workers who seem less likely to become involved in mishaps, and by careful instruction and training.

(2) *Individual Differences in Accident Susceptibility.* Experts who have analyzed accidents insist that there is no such thing as "tough luck" which causes a person to suffer a mishap. There are three possible sources of responsibility for any accident: (a) The machine, as being fundamentally unsafe or not provided with proper safeguards; (b) The management, because it makes the workers follow too fast a pace or forces them to work so long that fatigue spoils motor coördination; (c) The worker, because he is careless, inattentive, in poor physical condition, or natively incompetent. Present tendency is to lay chief responsibility upon conditions within the worker. Mechanical safeguards on dangerous and moving machinery have been developed to what is considered a satisfactory extent, and yet accidents still do occur even on these machines.

A fundamental observation on the occurrence of accidents is that they are not distributed evenly among all workers. Many employees work for years without any, while others suffer several major or minor mishaps in the course of a single year. The majority of accidents are caused by a very small percentage of employees, even when the whole group has exactly the same duties with identical

machines. That the working situation alone is not responsible for accidents has been demonstrated by Newbold when he found that there is a correlation between accidents suffered at work and away from work.

Analysis of taxicab accidents showed that 10 per cent of drivers caused 32 per cent, one-third of the group were responsible for 69 per cent, and 50 per cent were involved in 83 per cent of mishaps. Twenty-five per cent of employees were entirely free from trouble in the same period. A similar study by Slocombe and Bingham on the Boston Elevated Railroad showed that half the accidents were experienced by less than a third of the motormen, and that in one group half the mishaps fell to a fifth of the motormen. The best four-fifths had an average of only 2.1 accidents, while the poorest fifth averaged 7 collisions per man.

Further evidence that accidents are produced by individual susceptibility rather than chance is given by studying previous records of private automobile drivers who were involved in accidents having fatal consequences. Seven times as many of these had bad histories as had an equal number of drivers chosen at random from the files of the State Motor Vehicle Bureaus. Chance alone would have shown equal proportions. For example, suppose one driver in ten experienced an accident. By the theory of probability alone, we would expect that one driver in a hundred would be in two accidents, and one in a thousand would become involved in three mishaps. But since the latter group was three times the expected size, we look for some causative factor.

It has been suggested that the first accident might come about through chance, but that its effects reduced one's ability to such an extent that he became more easy prey to subsequent mishaps. It may be partially true in connection with some industrial mishaps, which leave a worker partially crippled. Before he is allowed to return to work he should be studied carefully to make sure that he can undertake his job with safety. But where the trouble does not affect the individual physically, say a taxi-driver killing a pedestrian or damaging property, there is no resulting effect of the first collision which would cause a second. In general it seems more likely that factors already present in the individual are responsible for the condition which causes several accidents.

(3) *Causes of Accidents.* Since it is evident that accidents do not occur in chance frequency, and that some persons tend to have many more difficulties than others, any hope of lowering the rate must lie in discovering underlying causes of the trouble.

(a) *Temperature.* We pointed out on page 291 the relation between temperature and occurrence of minor accidents. It was found that the smallest number occurred when the temperature was between sixty-five and sixty-nine, and also that higher underground temperatures in mines brought out more mishaps. We suggest that the management try to maintain working-places at moderate temperatures, and if this is impossible to make special provisions, such as shorter hours or opportunity to change environment frequently.

(b) *Illumination.* It has been found by Stephenson that twice as many accidents occurred during the winter quarters of the year, when artificial lighting was needed, as during the summer months. It is possible, of course, that lighting is not the sole difference. This cause is probably vanishing with improvements in the quantity and quality of artificial lighting.

(c) *Speed of Work.* Laboratory tests have shown that accuracy of motor coördination decreases as the speed of work goes up. This means that one's handling of materials and machines will become poorer, and that the likelihood of an accident will be increased by that much. Too high a rate of work will also tend to produce earlier fatigue, and thus indirectly cause accidents. Of course, if production goes up solely because of mechanical improvements, this would not affect the worker and the argument would not apply.

(d) *Fatigue.* We have already quoted data from Bogardus which shows that the frequency of accidents follows very closely the general curve of fatigue. (See page 280.)

(e) *Mental Attitude,* rather than physical fatigue, has been said to be responsible for the occurrence of accidents at one hour rather than at another. As evidence, Vernon has pointed out that day-shift accidents occur toward the end of the day, when the worker is about to be released into society; and that the majority of those at night come early, just after one has left his family or friends. Inattention and excitement temporarily take the mind off the work and an accident occurs. This argument is too hypothetical as yet for us to pass judgment on its validity.

(f) *Physical Condition.* Where high-speed machinery is concerned any slight lack of alertness, visual deficiency, awkwardness, or physical condition which keeps the individual below par increases by that much the chance for a mishap. Viteles reports a study of substation operators in which men who had some physical defect were found to have experienced three times as many accidents causing loss of time as did those who had no physical defects. Probably not a great number of accidents are caused by direct physical deficiencies, but since each mishap has very important consequences, it is important that each position be surveyed to see what sources of danger there are in it, and what types of deficiency are prohibitive.

(g) *Motor Coördination.* Are accidents caused by inherent clumsiness in the worker? Farmer and Chambers report a general relationship between scores on tests of motor and nervous ability and frequency of accidents. The poor groups averaged nearly twice as many accidents as those with better coördination. Correspondence was so rough, however, that prediction in an individual case seems extremely doubtful. It is probable that separate motor tests will have to be devised to measure accident susceptibility for each occupation, just as for predicting productive efficiency.

(h) *Age and Experience.* We may quote two apparent general trends: More accidents occur to very young and to much older workers; and more mishaps occur to inexperienced employees. Inexperience is probably responsible for the higher accident rate among younger persons. On the other hand, it may be that the lower rate on the part of middle-aged individuals is due to previous weeding out of poorer workers. It might be advisable to transfer older persons from positions demanding unusual strength, endurance, and accuracy.

(i) *Sex Differences.* Whenever men and women work together there is always argument as to their relative efficiencies. Most of it is so biased that little weight can be given the discussion. Viteles has made the only available survey, studying women taxicab-drivers. They were involved in three times as many accidents as men per thousand miles driven, and three and a half times as many per thousand dollars revenue. One point in favor of the women, however, was the fact that their accidents cost less damages per accident.

The women, although by the other indices poorer drivers, apparently proceeded cautiously enough so that most of their collisions were less serious.

(4) *Suggestions for Elimination of Accidents.* On the basis of analysis of causes of accidents we may give some suggestions for preventing their occurrence.

(a) *Mechanical Improvements.* Revolving and fast-moving parts and heavy machinery should be guarded or placed out of reach. This method is limited, since use of any moving machinery necessitates a certain amount of danger at best. The problem of mechanical improvements is to eliminate all needless sources of danger; other causes must be removed by other means.

(b) *Public Education* will direct the people's attention to sources of danger and means of avoiding trouble. We are all familiar with signs near elevators or dangerous machinery, on bridges, near mines, on buildings under construction, and warnings to motorists to watch for school children. We must remember one thing: while it may be true that accidents are caused by carelessness, one cannot concentrate on all phases of danger constantly. So signs should be left permanently near very dangerous places. The "Avoid this or that week" crusades call attention to danger at the time, but the habit of being careful must be thoroughly ingrained before complete safety is assured.

(c) *Selection of Workers.* If we can find out what factors in an individual make him particularly susceptible to accidents we should be able to reduce the frequency of mishaps by appropriate selection of workers. Since our knowledge is as yet limited, we have to work for probabilities; we can only select workers who are less likely to have an accident, not those whom we are certain will never suffer one. This group procedure will help industry and society in general, although we cannot be sure of any single individual.

An interesting and valuable finding is that those candidates who earn the highest scores on employment tests also suffer fewer mishaps. We have given figures (Chapter IX) which showed that the use of strict tests for selecting street-car motormen reduced the percentage who had to be discharged because of accidents from fourteen to less than one. Slocombe and Bingham report that accident-free motormen consumed less power than others—*i.e.*, they

shut off the power while coasting downhill or proceeding slowly, and consequently were considered more efficient in that respect. So in using tests for employment we are really killing two birds with one stone: employees thus selected are more efficient, and they are less likely to create accidents.

(d) *Instruction.* Two things may be done in the course of training a new worker; if he is taught proper methods of work (motion study) he will be less likely to make any misstep or awkward movement, and he can be told possible sources of danger which he should avoid. If he has a minor physical or motor deficiency he can be taught any special precautions that may be necessary in his case. Similarly, follow-up training may be given a worker who is experienced but is found to have a fault or two which can be corrected easily.

(e) *Clinical Analysis.* The case method can be applied, and the individual and the situation may be analyzed to find the cause and possible remedy. In the case of street-car motormen who had gotten into several mishaps, special instructors rode with them and observed their actions. It was found that one failed to have the car entirely stopped before opening the door, another did not give the signal in time to warn other vehicles, etc. Constructive suggestions can be given to improve the individual's safety.

A drawback to the clinical method is that it can only be applied after one or more accidents have taken place. But it is a useful supplement to selection and training programs, and will probably always be necessary.

(f) *Transfer or Discharge.* Occasionally a man's sensory processes or motor coordination may be so poor that he will always remain a poor risk in certain positions. For the sake of the individual it is recommended that he be transferred to a position for which he is better fitted if at all possible. Discharge should rarely be resorted to except in cases of unwillingness to learn, willfulness, or persistent carelessness.

(g) *Improvements.* A number of companies have reported fewer accidents following scientific handling of this problem. The Boston Elevated, for example, as a result of the work by Bingham and Slocombe, reduced damage losses in 1929 by more than \$300,000 over the 1928 figures, which represented nearly one-third. Other

companies report similar reductions in personal and property losses per unit of production. The gain in social happiness goes without saying.

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contradict this statement, but this is dependent on electrical devices, not one's natural physical equipment. On the other hand, a sign in front of one's shop or a billboard is working every minute of the day for the benefit of whoever goes by, regardless of whether the advertiser is busy at something else, eating lunch, or even sleeping. Newspaper and magazine advertising is carried to an audience as large and widespread as the circulation of the medium.

II. LOCAL AND NATIONAL ADVERTISING

The market stimulated by word of mouth or by a signboard is limited to residents of the immediate vicinity and to casual visitors. Our buying possibilities would be similarly limited if we had to depend on our own communities for everything we eat, wear, or use. No one could have coffee and tea, sea foods, silk and cotton, mahogany and cypress, and gold and diamonds, all at the same time.

Yet we think of advertising as being nation-wide. This is especially true of magazine advertising. In a single issue of the *Saturday Evening Post*, which the writer happens to have on his desk at the present moment, there appear one or more advertisements from concerns in the following fifteen states: Massachusetts, Vermont, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Ohio, Kentucky, Michigan, Indiana, Illinois, Wisconsin, Minnesota, and California, as well as one from the Province of Quebec. There are also a number of products advertised which cannot be assigned to any single state, since they may be purchased in any community; gasoline and foods, for example.

Modern High-speed Transportation is back of this national advertising, selling, distributing, and manufacturing. Without the railroad we could not get goods so quickly and so cheaply as at the present time. One can have fresh fish and oysters far inland, can have oranges within a few days of the time they are ripened, and can purchase Paris gowns in this country not many days after they are designed.

Transportation has another great influence. It permits specialization of production. Each community can produce that for which it is best equipped in terms of raw materials, power, and labor, and does not have to worry about proximity to market. And in return

it is able to buy without excessive price goods that other communities, far or near, are able to manufacture cheaply and well.

Increasing specialization necessitates large-scale advertising. Customers must find out where articles they wish are manufactured and distributed. There is no more helpless a feeling than to want something and not to know where it can be purchased. In this respect advertising is valuable to the customer as an informative agency as well as a means of selling. National advertising is also necessary to secure a large enough and widely scattered enough clientèle to dispose of the immense production which specialization and industrialization make possible.

III. ADVERTISING AS SELLING

Advertising is part of a sales procedure. There is some disagreement of opinion as to just how large a part it should be. Some advertisers think that its function is only to give publicity, stir up good will, and give the potential customer an initial predisposition to inquire for a certain product or buy in a certain store. Others try to make the advertisement so convincing that the reader will walk in, lay his money on the counter, and buy the goods without further sales effort. We can make no conclusive decision regarding the argument. No one will deny that the first group is correct, but would it not be desirable to have the advertisement stir up more than publicity? Finishing the sale is not possible in all cases. We should not expect a man to buy an automobile on the strength of an advertisement alone; he will wish to see it and drive it before making such a large investment. But the "clip-the-coupon" types of advertisement for many articles of small price and less deliberate purchase count on finishing the selling job then and there.

We might point out a few differences between advertising and personal selling. (1) The advertiser must attract the attention and stir up the interest of readers who are indifferent, since they are looking through the magazine or newspaper for the sake of the narrative materials. The salesman, on the other hand, knows that any person coming into his store already has a certain interest in at least one item of merchandise. There are exceptions to each statement, however. The salesman who tries to sell additional goods

has the same problems of arousing interest as the advertiser. And often a reader will deliberately search through the advertising section for a certain item, such as the theater offerings or an announcement of new automobile models.

(2) The advertiser must make up one appeal or combination of appeals by which he hopes to interest all readers who are potential customers. The salesman can vary his appeals more freely according to the personality and class of the customer. He handles in entirely different ways a college man, a young wife, a middle-aged business man, and an elderly spinster. The advertiser who wishes to aim this accurately must do so by varying appeals from week to week, and by using different magazines or newspapers.

(3) In general the advertiser is calling attention to products made by one company, while the retail salesman handles a variety of similar products. As a concrete example, we find an advertisement describing Bostonian Shoes, while a store may handle these and half a dozen other leading brands of men's and women's shoes. This gives the salesman opportunity to show other products if the first fail to satisfy.

IV. TYPES OF ADVERTISING

TABLE 40. TYPES OF ADVERTISING

1. Magazine, general
2. Magazine, technical
3. Newspaper
4. Street-car cards
5. Billboards, signs, and posters
6. Electric signs
7. Theater advertising—programs, films
8. Radio
9. Mail—letters, circulars, catalogues
10. Free samples, souvenirs
11. Standard packages and wrappers
12. Voice—newsboy, loud speaker, auctioneer, etc.

Advertising may be carried on in a large number of ways. Our discussion will deal largely with the types seen in magazines and

newspapers, but there are many other kinds. We shall discuss the less frequently used forms of advertising in Chapter XIX.

V. MAJOR STEPS IN THE DEVELOPMENT OF ADVERTISING

Advertising, considered generally as calling attention to commodities or services for sale or exchange, must be almost as old as speech itself. But the type we usually think of, as composed of illustrations, headline, text, color, etc., and incidental to magazine or newspaper literature, is only about seventy-five years old.

There have been a number of major steps in the development of advertising. We shall attempt to list these briefly, approximately in their order of origin. We can give only approximations, since we are considering the date of common use, rather than of isolated use of a device by a single individual.

Before advertising could attain its present widespread extent, three developments outside the field of advertising had to take place. (1) Literacy had to become common. This sounds strange at the present time, but it must be remembered that it is only within three centuries that more than a small fraction of the people have been able to read and write, and only within the last century that the great majority have been able to read. (2) Printing had to develop and become fairly rapid before any message could reach a large audience. The growth of literacy and of printing has been largely parallel. (3) Transportation had to develop so that printed material and goods could be distributed rapidly all over the country.

We shall trace eleven major steps in the development of advertising up to the present time.

(1) *Telling Friends* was undoubtedly the earliest form of advertising. This is purely personal and so is limited to a narrow scope. It is still characteristic of personal salesmanship and is recognized as very desirable to supplement the more impersonal printed advertising.

(2) *Public Announcements* constitute the next stage. One calls out his wares in front of his shop or hires a person to cry out announcements around town. It is said that in the Middle Ages the town crier who acted as watchman, time-keeper, and public an-

nouncer, could be bribed to interpolate among his official bulletins remarks about the excellence of wine or goods to be obtained at a certain shop. At the present time we see use of this method in newsboys barking out extras, automobiles with loud speakers ruining the peace of residential districts, and sometimes "sandwich men," although these are usually silent.

(3) *Billboards* were an early development, necessarily, because printing was not developed and any written announcement could not be duplicated many times. Excavations of the ruins of ancient Pompeii (79 B.C.) have disclosed painted signs on the sides of buildings advertising baths and theatrical entertainments. Posters on walls figured very prominently in early advertising in England.

(4) *Newspaper Announcements*. The earliest papers were for the spread of news only, but it is easy to see how slight is the transition to commercial announcements. The visit of a wholesale buyer to an agricultural center or the once-a-month visit of an optician to a small town is of considerable personal as well as business interest. At the present time laws require such items in the personal news column to be marked "Adv."

At an early date it was considered sufficient to let the reader know that one had goods or services to sell. For example, the captain of a ship would simply insert a two- or three-line notice to the effect that the S. S. *Albatross* was sailing for America on the next Tuesday and would carry passengers for a certain price. There would be no glorifying description or efforts to demonstrate that this ship was better than others.

Many of the advertisements at this time were personal in nature. Reproductions of some which appeared two or three centuries ago dealt with runaway slaves, search for lost relatives, matrimony, and lost articles. The following is a typical and amusing example of such a notice from the *Daily Advertiser* (London) in 1777.

MATRIMONY

Wanted, by a young Gentleman just beginning Housekeeping, a Lady, between 18 and 25 years of Age, with a good education, and a Fortune not less than 5,000 pounds, sound Wind and Limb, Five Feet Four Inches without her Shoes;

not fat nor yet too lean; a clear Skin; sweet Breath, with a good Set of Teeth; no Pride, nor Affectation; not very talkative, nor one that is deemed no Scold; but of a Spirit to resent an Affront; of a charitable Disposition; not over fond of Dress, though always decent and clean; that will entertain her Husband's Friends with Affability and Cheerfulness, and prefer his Company to public Diversions and gadding about; one who can keep his Secrets, that he may open his Heart to her without reserve on all Occasions; that can extend domestic Expenses with Economy, as Prosperity advances without Ostentation; and retrench them with Cheerfulness, if Occasion should require.

Any Lady disposed to Matrimony, answering this Description, is desired to direct for Y.Z. at the Baptist's Head Coffee-House, Aldermanbury.

N.B. None but Principals will be treated with, nor need any apply that are deficient in any one Particular; the Gentleman can make adequate return, and is, in every respect, deserving a Lady with the above Qualifications.

We trust that this paragon of excellence, who seemed to be selecting a wife with the same air that one would have in buying a racing-horse, was requited with a mate who matched his demands.

(5) *Use of Evaluative Adjectives.* With increase in the frequency of advertising it became evident that each advertisement competed against the others for attention and interest. People got to pass over the advertising section, unless an advertisement was particularly alluring or they had definite intention to look for something.

As judged by present-day standards the first descriptions were very conservative and mild. Around 1800 we find such terms as rare, new, elegant, striking, favorite, satisfactory. It is easy to see how these soon became rather flat themselves, and something more alluring was necessary. Thus starts the era of superlatives. Presbrey gives the famous P. T. Barnum the chief credit for this phase of development, during 1840-50. Undoubtedly others had used flowing language, but not so extravagantly. Barnum's circus included, by his own statements, "the most refined, elegant, greatest, grandest, and most magnificent circus ever organized."

Present advertising still uses actual or implied superlatives, al-

though the claims have been somewhat toned down and refined. Here is the description of the beauty of a 1933 automobile:

Every line of the new Dodge Six with Floating Power—from the gracefully slanting radiator shell to the alluringly stream-line windshield and arched roof, past strikingly moulded fenders, on to the soft unbroken roundness of rear quarters and backs—is eloquent of power, speed, elegance, quality.

(6) *Use of Several Columns.* About this same time (1850) we find that advertisements began to spread out over the page. Up to that time they were given the same treatment as news items, being confined to single columns and small type. Advertisers who wished to use double columns were met with refusal on the part of the editors, probably both because of tradition and because it might give undue prominence to the commercial side of the paper. Several clever advertisers resorted to the "iteration" method, which consisted in repeating the same statement over and over again down a whole column. Finally columns were broken up, and we can trace steady growth in the size of advertisements up to the full-page and even the double-page spread.

(7) *Illustrations.* The use of pictures is another important forward step in the development of advertising. Special devices are necessary to attract the reader's attention. Around the middle of the eighteenth century we see the use of certain pictorial representations, but not what we would term illustrations in the strict sense. They were more in the nature of trade-marks or identifying symbols. Inns and stores at the time had signs, such as a rampant lion or a bull with sword, probably both to assist identification from a distance and to aid illiterates. Advertisements showed these same symbols. Also we see generalized pictures showing the type of commodity offered. For example, we see in a whole column of advertisements of ships the same cut of a sailing-vessel. This is more for reference purposes than to make one stand out over another.

It was not until after 1850 that there was much use of realistic depiction, and even then the number so illustrated was only a small fraction of those seen in 1900 and thereafter.

(8) *Color* came in about 1890. Again it was a response to the

need for making one advertisement attract the reader's attention more than others. Also color assists in depicting more realistically the goods displayed.

(9) *Personal Appeals* also began to be used about 1890. Previously it had been considered a bit presumptive and indelicate to word other than impersonally. But the advertisement is more effective if it succeeds in the directing of the reader's attention to the use of the product by himself, and not just in a general way. So we see the headlines of the imperative, suggestive, and "you" types. Insurance and health advertisements are outstanding examples of use of the personal appeal.

(10) *Argumentative Advertising* came in just before 1900. The first advertisements, we have seen, were straight statements of fact. Next we had an era of extravagant and superlative claims. One can see how the public would become suspicious when they saw that articles did not come up to claims or when two or more items were asserted to be supreme. Then advertisers began to show "reasons why" their article was to be preferred over others, by quoting figures, specifications, comparisons, testimonials, and other objective facts.

(11) *Honesty*. This is not exactly a step in development of the make-up of the advertisement, but nevertheless is extremely important. Since about 1865 forces have been at work which have attempted to make advertising honest and truthful. Editors realized that unscrupulous advertising would harm the reputation of their papers, so they exercised censorship and refused to accept advertisements from certain concerns. Merchants also found out that while they might temporarily boost sales by falsification, they would never build up a sound and permanent business in this manner. Laws have guarded the public against some types of dishonesty, particularly in respect to foods and drugs. Perfect honesty, however, has not yet been attained, and possibly never will. Some of the worst sins are committed in testimonials. Athletes have been built up by the use of patent medicines, actresses ascribe their beauty to certain lotions, society women prefer certain cigarettes—none of which they have actually used, let alone compared sufficiently to be convinced of the real superiority of the product they so heartily recommend.

VI. ARGUMENTS AGAINST ADVERTISING

Advertising is omnipresent. When one does certain things for enjoyment, like reading a newspaper or magazine, driving along the highway, or listening to the radio, he is constantly bombarded with publicity for this or that article. Because of this and because of the huge amount of money spent on advertising, there is bound to be a lot of controversy as to its desirability. So let us examine arguments pro and con.

(1) *Excessive Expense.* Opponents of advertising contend that the millions spent every year for advertising represent so much waste. In 1931, for example, ten companies reported expenditures for magazine advertising of upward of \$2,000,000; twenty-three spent over \$1,000,000; and fifty-five spent over \$500,000. These figures do not include newspaper, billboard, radio, and other forms of publicity. Critics point out that while advertising might help certain companies if they alone advertised, the fact that all have access to equally effective publicity methods puts all concerns in the same position as if there were no advertising at all. Hence it might as well be abolished. This argument is answered in the next paragraph.

(2) *Advertising beyond Means.* Smaller companies have to spend too great a percentage of their annual budgets for advertising, and are likely to fail as a consequence. Undoubtedly there is a certain amount of "keeping up with the Joneses" in advertising, and perhaps if all were required to cut appropriations by a constant ratio (like political-campaign expenditures and national armaments) they would be in the same position as before and would have saved that much money. Just enough could be allowed so that customers could obtain information they desire. In general, however, this argument is based on sentiment rather than on business, and is a defense of the weak. The same reasoning could be applied against larger stores having more display window space and hiring more salesmen.

The percentage of the annual budgets spent for advertising is much less than most people believe. The general range seems to be from about 2 to 10 per cent. If a company has a budget of a hundred million dollars or more, two million devoted to advertising is

not so great. Those concerns which devote the highest percentage to advertising are in general those manufacturing luxuries—toilet articles, jewelry, cameras, etc. Automobile advertising has mounted greatly in recent years.

(3) *Prices Are Raised.* It is argued that the consumer has to pay the unit cost of publicity every time he purchases an article, and that he would get it that much cheaper if the company did not advertise. However, publicity is necessary. Several companies have tried to get along without it and have failed. This demonstrates that under present business practices advertising is necessary. If all companies agreed to eliminate or reduce publicity efforts, the situation might be very different. Advertising increases the volume of business and prices can be correspondingly reduced. Any other form of publicity costs far more to reach the same number of people. Before one exclaims with horror when he learns that one page in black and white in the *Saturday Evening Post* costs \$8,000 (May, 1931, figures), he should consider that its circulation is nearly three million. This makes the cost about a quarter of a cent per subscriber. Compare this with what it might cost to print, fold, address, and mail letters (even if form) to that many people; or how much it would cost to have all of them interviewed by a salesman. We admit that these last two methods should produce a greater return, since advertising is passed over by many readers, but it is extremely doubtful if the added return would be at all commensurate with the increased expenditure.

(4) *Standard Packages and Trade-marked Goods Have Raised Prices.* Instead of paying for goods by weight alone, as from the old cracker or sugar barrel in the country store, it is claimed that one has to pay extra for the fancy wrappings and labels which identify the goods as those advertised. Manufacturers claim that this cost is very slight, and that often the quantity production made possible by their reputation may, through increasing sales, actually permit a lowering of prices. Another feature is that standard packages enable us to depend on the product to have constant quality and to be perfectly sanitary, neither of which features is possible with bulk goods. These latter arguments are probably true in the main, although we have no guarantees to that effect. As to the price, serious indictments can be raised. (See page 503 for more detailed

discussion.) Branded goods may cost several times the amount of the same quality of unbranded merchandise, and investigations have shown that people will buy trade-marked products at the same or even slightly higher prices than unknown goods.

(5) *Advertising Creates Too Great a Demand for Luxuries.* It is argued that advertising is made so alluring that people buy items which they cannot afford and without which they could get along as well. This is another argument emphasizing the consumer's incompetence. We cannot legislate advertising out of existence just because some individuals have no power of resistance. We might as well make it an offense for a salesman to suggest additional purchases after the customer has bought what he came in for.

(6) *Creates Monopolies.* The larger companies can afford so much more advertising that they drive smaller organizations out of business. This may or may not be harmful. It is certainly harmful to the small manufacturer. The Eastman Kodak Company claims that, although it has held many patents and through extensive advertising has maintained a practical monopoly, it has constantly improved quality and has reduced prices very materially. Yet we can find many examples on the other side. One instance relates to the price of radio tubes. With the expiration of certain basic patents and freer competition springing up, one now can buy more efficient tubes for approximately one-eighth the price one paid ten years ago.

(7) *Advertising Is Untruthful.* It is true that a certain amount of advertising uses deliberate misrepresentation. But the situation is becoming better, both through ethics and through realization of economic necessity. We cannot prohibit a thing just because dishonesty is used now and then, or we should have to outlaw our whole economic structure.

(8) *Used for Dishonest Business.* In advertising the goods are out of sight of the customer and may be sold under false pretenses more easily than in retail selling. An example of a hoax was "A beautiful steel engraving of George Washington for only 25¢," which on receipt turned out to be a one-cent stamp. A "sure potato-bug killer for only one dollar" was two blocks of wood, with instructions to place the bug between the blocks and press

firmly. These practices are dying out, although new and less obvious forms of defrauding are seen every now and then.

(9) *Poor Advertising Causes a Large Waste.* Inferior advertising which is not seen or is so poor that it fails to convince wastes a large sum of money each year. This may be true, but most advertising is pretty effective. The poorer companies have to improve or they go bankrupt, just as in any other aspect of business.

VII. ARGUMENTS FOR ADVERTISING

(1) *It Must Pay.* This is the empirical argument. In general those companies which do the largest business and which we generally consider are the most progressive are also found to be the ones which do the greatest amount of advertising. Then the fact that those companies which advertise heavily prosper and those which do not fail to get ahead shows the value of advertising campaigns.

(2) *Failure to Advertise Ruins Business.* In several cases where companies have thought advertising to be unnecessary, assuming that their publicity campaigns had so established the product that no further advertising was necessary, the results have been disastrous. People forget very quickly, and without advertising to keep their memory alive their purchases drop off. Even old and faithful customers gradually turn to other products.

(3) *Some Form of Publicity Is Necessary.* Goods will not sell themselves, and advertising is a cheaper form of publicity than personal selling or personal letters. The Oliver Typewriter Company has stated that it was able to cut in half the price of its machine simply by substituting advertising for salesmen.

(4) *Prices Are Actually Lowered through Advertising.* As we pointed out in the last section, advertising permits companies to expand, produce, and sell at a lower unit cost. *Printers' Ink*, a journal circulated among advertisers, conducted a survey of the effects of advertising on the costs of articles. No company had raised prices because of advertising expense, and only a few stated that the price and quality had remained the same. The great majority had either lowered prices or improved quality, or both.

(5) *Goods Can Be Depended upon to Be Constant in Quality.* Because of nation-wide advertising and distribution, companies have

a reputation to uphold, and the customer can purchase goods of the same quality and price at any time and at almost any store in the country. This is valuable for the peace of mind of buyers if for nothing else.

(6) *Publicity Gives Information and Enables Comparison.* Since various manufacturing and selling organizations advertise simultaneously, the customer can compare brands, specifications, and prices. If he is careful he can make better use of his dollar. This close comparison also forces the manufacturer to keep his goods up to standard and the prices at as low a level as compatible with business finance. Advertising is also a large source of information for the reader. How many horsepower has this automobile? Have these shoes built-in arch supports? What are the specifications of the various makes of washing-machines or oil-burners?

(7) *Standard of Living Is Improved.* Because advertising has helped to make large-scale business and lowered prices possible, each person can get more for his money and hence live better than under a system of small factories and higher unit costs.

(8) *Seasonal Fluctuations Are Reduced.* By advertising over a wide locality a company can spread its business over more weeks than if it is dependent on trade from a limited region. Winter goods, for example, can be sold earlier in the north and gradually work south; and *vice versa* for summer goods like straw hats, golf and tennis supplies. Advertising can anticipate wants, get people to thinking about needs they will have in a few weeks, and thus smooth down peak demands.

(9) *Newspapers and Magazines Are Made Cheaper.* The more popular circulating media derive the greater proportion of their revenue from advertising. Were it not for this income one would have to pay at least three times as much for his newspaper or magazine. This should comfort even the most vehement opponents of advertising; they can read cheaply and can deliberately ignore all aspects of publicity.

VIII. FUNCTIONS OF AN ADVERTISEMENT

Since an advertisement costs a good deal of money, it must justify itself in the additional sales produced. It must be seen, be

read, be convincing, and lead to action. There are five important functions which these duties include.

(1) *Attract Attention*. It must be so designed that it catches the reader's eye. Attention is chiefly gained through the illustration, color, and headline.

(2) *Arouse Interest*. Not only must the advertisement catch one's eye, but it must have sufficient stimulating value so that one will read the printed matter. Attention may be gathered by a brilliant flash of color, but if there is nothing more interesting the reader will pass on after one glance. Interest is aroused chiefly by the wording of the headline, and in some cases by the illustration.

(3) *Produce Conviction*. The reader must next be convinced that the article described is the most suitable for his needs and ability to pay. This is achieved chiefly by the text, although an exact illustration or an informatory headline may serve to convince the more hasty reader.

(4) *Impress the Memory*. Since one does not buy until after a lapse of more or less time, the advertisement must be such that the reader remembers the product described and tends to ask for it the next time he needs an article of that type. Many advertisements may be amusing or appeal through novelty, but one soon forgets just which product was advertised, so the instrument fails in its purpose. Because of this, because memory fades with time, and because enthusiasm dies out even more rapidly, advertisers are more and more designing their copy to bring immediate results.

(5) *Produce Action, or Sales*. This is the final test of an advertisement. No matter how alluring, how interesting, or how convincing it may be, it will fail of its purpose if it does not increase sales.

Just which of these points is the most important? This question comes up naturally, but it cannot be given a final answer. One can see that all five functions are necessary for the advertisement to succeed in its purpose. The order in which they are listed here is chronological, in the order which the customer follows in his process of reading the advertisement and purchasing the article (if he gets that far). If the advertisement does not attract his attention the rest will do no good, no matter how potent the appeals and arguments may be. If it does not interest him enough so that he goes through it, the article will remain unsold. We can go through

the rest of the points in this way. All five functions must be fulfilled. The advertisement may not be perfect technically, but somehow or other it must satisfy these five demands.

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5. Starch, D., *Principles of Advertising*. Shaw, 1923, 998 pp.
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The list of appeals given in Table 41 is self-explanatory, and needs no further comment. The actual ways in which these and their derivatives are used will be discussed in Section III of this chapter.

TABLE 41. SUBJECTS FOR PERSONAL APPEALS

A. Individual.

1. Appetite, Taste.
2. Success, Power.
3. Possession.
4. Wealth, Independence.
5. Beauty, Appearance.
6. Cleanliness.
7. Health.
8. Comfort, Security.
9. Play, Travel.
10. Fear, Avoidance.
11. Curiosity.

B. Social.

1. Popularity, Fear of Not Being Popular.
2. Sex, Mating, Parental.
3. Rivalry.
4. Domination, Submission.
5. Conformity, Distinction.
6. Sociability, Hospitality.
7. Coöperation, Altruism.

II. ANALYSIS OF PRODUCT

A general plan for analyzing almost any manufactured product for the purpose of ascertaining practically all its possible selling-points has been drawn up by Starch. His outline appears in Table 42. The wording of this list is somewhat generalized to cover products of all types, classes, and prices.

TABLE 42. POSSIBLE SELLING POINTS FOR A COMMODITY

- I. The raw material from which it is made.
 1. Source of the raw material.
 2. History; origin.
 3. Selection.
 4. Quality.

TABLE 42. POSSIBLE SELLING POINTS FOR A COMMODITY (*continued*)

- II. The process of manufacture.
 1. How the commodity is produced.
 2. Special process.
 3. Special equipment; machinery.
 4. Skilled workmanship.
 5. Research in manufacture of article.
 6. Sanitary conditions of manufacture.
 7. Size of factory or business.
 8. Age, experience, and reputation of firm as a sign of skill and reliability.
 9. History of process.
 10. Guaranteed quality and construction.

- III. The finished product; qualities and uses.
 1. Special mechanical features of the finished product.
 2. Its possible impression through the various senses.
 - The eye: appearance, shape, color, etc.
 - The ear: sound.
 - Touch, taste, smell, motion, etc.
 3. Varieties of uses and specifications for uses.
 4. Efficiency and thoroughness in accomplishing its uses.
 5. Wide usage.
 6. Frequency of use.
 7. Class of people using the product.
 8. Testimonials of users.
 9. Testimonials of authorities.
 10. Convenience in use.
 11. Ease of operation.
 12. Effects of using the article.
 13. Pleasure in using the article.
 14. Guarantee of satisfactory use.
 15. The package, its convenience and appearance.
 16. Repair service.

- IV. Price and value of the finished product.
 1. Price compared with competing articles.
 2. Price in relation to quantity and quality of article.
 3. Economy in time, labor, and convenience.
 4. Cheapness of operating the article.
 5. Durability.

To illustrate the way in which search is conducted for specific appeals that are applicable to particular products we quote two more lists from Starch, showing selling-points that might be used for a tooth paste and for a vacuum cleaner.

TABLE 43. POSSIBLE APPEALS FOR TOOTH PASTE

Health	Size of tube
White, clean teeth	Convenience of tube
Taste	Leaves pleasant feeling in the mouth
Counteracts film on teeth	Contributes to beauty or good appearance
Prevents acid in mouth	Urge frequent use
Dentists approve it	Contains no gritty substance
Has a wholesome effect on the gums	Urge habit of brushing teeth regularly
Prevents pyorrhea	Purifies the breath
Is safe and harmless	Ingredients
Price	Method of manufacture
Paste is in concentrated form	Is widely used
Large amount of research in the preparation of the paste	Large manufacturing plant
Reputation of the firm	Used by well-known persons

One may study these possible appeals with reference to their type, the percentage of logical customers who would be interested in and would understand them, the strength of the appeal, the power to convince, etc.

III. USE OF APPEALS

Let us now examine in some detail the way a number of the more prominent appeals are actually used. We shall discuss different methods of presenting these, and shall demonstrate some of them by reproducing actual advertisements which are aimed at certain motives. Others we shall discuss by quoting headlines or by description.

(1) *Price*. This represents an appeal to economy, either through actual saving or through getting more for the same amount of money. Several ways in which this appeal has been used are: reduction of price; lower price than competitors'; more value for same

TABLE 44. POSSIBLE APPEALS FOR VACUUM CLEANER

Simplicity of operation	Freshens colors of rugs
Its mechanical construction	Dealer's service
Contains a revolving brush	Guarantee
Has strong suction power	Prolongs life of rugs
Economy in use both as to time and labor	Removes grit and litter
Uses little electrical current	Size of factory
Ease in using	Is used in beautiful homes
Sanitary in use	Straightens the nap of rugs
Keeps dust from spreading	Is recommended by rug im- porters
Health of family	Satisfied users
Does not injure rugs	Reputation of manufacturer
Has variety of uses	Age and experience of the firm
Is thorough in cleaning	Where it may be bought
Is relatively noiseless and quiet	Appearance
Is durable	Takes up little room
Is light in weight and portable	Service and repairs
Price	Easy to clean
Method of payment	Free trial
	No furniture to move

expenditure; savings in other directions: less upkeep; bankrupt, fire, and other special sales; and free samples, to introduce a product.

Goods which are high priced and which are designed to replace those now in use present problems in selling. The customer must be convinced that the initial cost will be more than repaid in terms of longer, more dependable, and more satisfactory service. An advertisement by the General Tire and Rubber Company presents this headline: "Blind bargains, that exact their final payments on the highways," with a picture of a wrecked car. Obviously life and property are worth more than a few dollars. A similar appeal is given by the Arrow Shirt Company, in a conversation between two men. "You pay \$1.95 for shirts? Not me—I got this at a bargain." The reply, "You didn't have to tell me that, George." The latter speaker was shown wearing a very neat and well-fitting shirt, while the other had a messy one with a poor fitting collar. The text followed with a discussion of poor bargains.

An effective appeal to the careful motorist appears in a series of

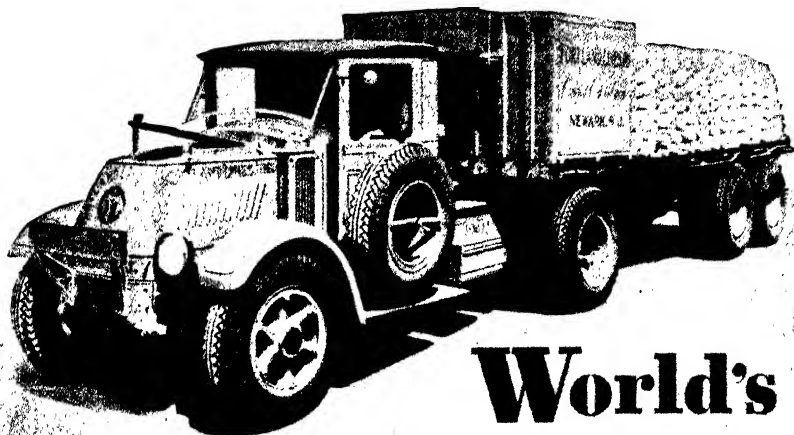
advertisements by the A. C. Spark Plug Company, which states that "worn spark plugs waste 1 gallon of gasoline in 10." One will figure that a saving of one-tenth of the gasoline bill will soon pay for the cost of a new set of plugs.

(2) *Time and Energy Saving*. With busy people time is really money, and several companies play up this fact in their advertising. Airplane lines often use it as their leading appeal, one having this slogan: "27 hours, coast to coast." A prophylactic advertisement features "Double-Quick." Wallhide Paint is advertised as "One-Day Painting. . . . You need never again endure tiresome days of painting disorder. . . . Means walls painted—room settled, between 8 A.M. and 6 P.M."—obviously a great saving of time and nuisance.

Energy-saving is closely related to time-saving. "No rubbing, No polishing, with Johnson's Glo-Coat" (floor wax) is an example of such an appeal. To anyone who has laboriously polished floors the assertion that all one has to do is to apply the liquid and wait twenty minutes, with no burnishing, is a very potent argument. Vacuum-cleaner companies often present appeals to husbands to save their wives' energy. Frequently the negative appeal of keeping her from becoming a household drudge is used. Or that of fairness—to make the household as up to date and efficient as the office.

(3) *Dependability* is an appeal often used for certain mechanical devices. For years the Dodge automobile used this as its chief feature in advertising. It got this reputation firmly established, both through advertising and by the fact that the product came up to its claims. Lately this appeal has not been stressed so much, since demand in automobiles seems to be more for speed, beauty, and smoothness of operation. The development of the automobile industry has reached such a point that dependability is assumed; one just never gives a thought to the fact that a breakdown might occur. Unusual life is predicted for an automobile: "Every bit as staunch and rugged as it looks. It's not at all uncommon for a Chevrolet car to run up a mileage of 80,000 or more—and give satisfaction every mile of the way."

This appeal is frequently used in connection with certain parts of the automobile. An advertisement for the Exide storage battery reads: "Look ahead! Will the battery you buy today start your



World's toughest tire jobs *choose* Kelly-Springfields

A FLEET OF GIANT TRUCKS—the largest cement carriers in the East—earn profits only by speed and steady going. An hour's delay costs \$50. Tire punishment under 30 tons of gross weight is terrific. The owner uses Kelly-Springfield tires exclusively.

A trucking concern pushes 200 big trucks over three mountainous states on time schedules as exacting as those of express trains. This company keeps accurate records of tire mile costs. After trying numerous makes of tires, they are now standardizing on Kelly-Springfields.

A great milk company operates under all weathers and conditions from coast to coast, rushing the fresh milk to their plants in giant glass-lined tank-trucks. Speed and economy are all-important. Tire punishment is severe. After trying numerous makes of tires, this company now buys Kelly-Springfields exclusively.

IN THESE DAYS when every dollar saved in tire mile costs means something, we wish that you could know how concerns all over the country—with the toughest tire jobs—are changing to Kelly-Springfields. And you may be surprised to know that these superior tires are priced no higher than ordinary makes. By refusing to compromise with cheapness throughout our 38 years, by concentrating our entire resources and all our activities on

quality, we are able to price Kelly-Springfields the same as other tires.

Let the Kelly-Springfield dealer show you what records Kelly-Springfield tires are making—on trucks and on cars—nationally and right in your community. At no extra price, why buy any but the best? For such safety and such mileage as you have never known, buy Kelly-Springfields. *Kelly-Springfield Tire Company, 1775 Broadway, New York*

Why buy any but the best?

Kelly-Springfields now priced the same as ordinary tires

Let the Kelly-Springfield dealer give you our low prices on your size tires in any of the quality lines listed below—now priced the same as ordinary tires.

Kelly-Springfield Truck and Bus Ballrooms—Built and tested to outwear and outlast other truck and bus tires.

Kelly-Springfield Solid Casings and Pneumatic tires of all types—In a quality class by themselves, priced comparatively at every point.

Kelly-Springfield Low-Air Ballrooms—the new motoring sensation. You glide on 12 to 15 pounds of air.

Kelly-Springfield Regular and Heavy Duty Ballrooms—Tires of supreme ruggedness and quality.

Kelly-Springfield Lanes Miles Ballrooms—Our answer to a quality Standard tire sold at the price of just tires. Dealer service for the life of the tires.

Kelly-Springfield Registered Ballrooms and White Side-wall Ballrooms—Incomparable de luxe tires, truly the aristocrats of all tires made.

KELLY - SPRINGFIELD

FIGURE 18. APPEAL TO DEPENDABILITY AND DURABILITY. (Courtesy of the Kelly-Springfield Tire Co.)

car this winter?" The Willard battery is likewise advertised: "Quick starts, and many of them."

Unusual endurance and wearing qualities are claimed in the Kelly-Springfield advertisement reproduced in Figure 18. We see testimonials from three unnamed companies which have severe demands on tires and have found this make to stand up better than others tried.

We may quote two examples of endurance claimed by oil companies. The Kendall Company has advertised for several years a 2,000-mile oil; an obvious saving, if the claims are justified, when most motorists are told, by manufacturers as well as oil-producers, to change every 500 or 1,000 miles. This brings up an interesting point in practical advertising and salesmanship. Companies advertise their products give longer service than those of rivals, but they must at the same time work for replacement sales. Hence we see advertisements telling us to change spark plugs every ten thousand miles, tires before they are worn dangerously thin, and radio tubes at least once a year to avoid distortion. Replacement sales are important to business; an automobile tire manufacturer remarked that the chief trouble with that industry was that tires were being made too good—they did not wear out fast enough. The Pennzoil implies endurance and quality in an advertisement showing pictures of two identical automobiles, the owner of one saying to a garage mechanic, "Just one repair bill after another," and the other driving happily along the road commenting, "Never cost me a dime for repairs."

(4) *Health* is another of the most frequently used appeals. It is often combined with other motives: economic advancement, social participation, parental and marital affection, as well as a general heightened enjoyment of life.

Both cereal and yeast companies have conducted campaigns to sell their products, using the negative appeal of constipation as a cause of loss of energy, and showing various unfavorable business and social results. A direct appeal to health is seen in Figure 19, while Figure 27 shows negative appeal to the same desire.

Much tooth-paste advertising centers around health appeals. The company manufacturing Ipana has run lately a series of advertisements of which this is a sample: "What a FOOL he is; a crank about his budget . . . careless of his gums and he has 'pink tooth brush.'"



This coffee lets every guest say "yes"

WHY, oh why won't hostesses face the fact that coffee at night keeps many people awake?

Why won't they spare them the embarrassing choice between coffee or sleep? Sanka Coffee makes it so easy to do!

Sanka Coffee is real coffee, as fine a blend, as full of fragrance as any other fine blend that ever brought cheer into an evening gathering.

BUT—Sanka Coffee won't keep

anyone awake because 97% of the caffeine is removed. *All* your guests can drink it... *all* your guests will like it... *all* your guests will thank you.

Get a pound of Sanka Coffee from your grocer today. It is packed in vacuum-sealed cans and sold with the guarantee of your money back if not satisfied. Sanka's *all-purpose* grind makes excellent coffee by any method, including drip. It is a product of General Foods.

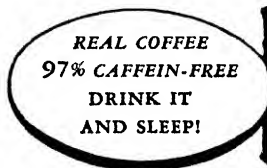


FIGURE 19. APPEAL TO HEALTH. (Courtesy of the General Foods Corporation.)

Others by the same company feature this same theme: a person who is very particular about some things, budget, hair, clothes, but neglects the gums.

(5) *Comfort*. There are a number of ways in which the desire for comfort is played up. Figure 26 shows an appeal to physical comfort as used by a shoe company. New-style beds and mattresses are advertised on the same principle. The headline of the shoe advertisement suggests a problem in appealing to comfort. One cannot show it directly, as one can food or travel, but must label it clearly or demonstrate it in some indirect fashion.

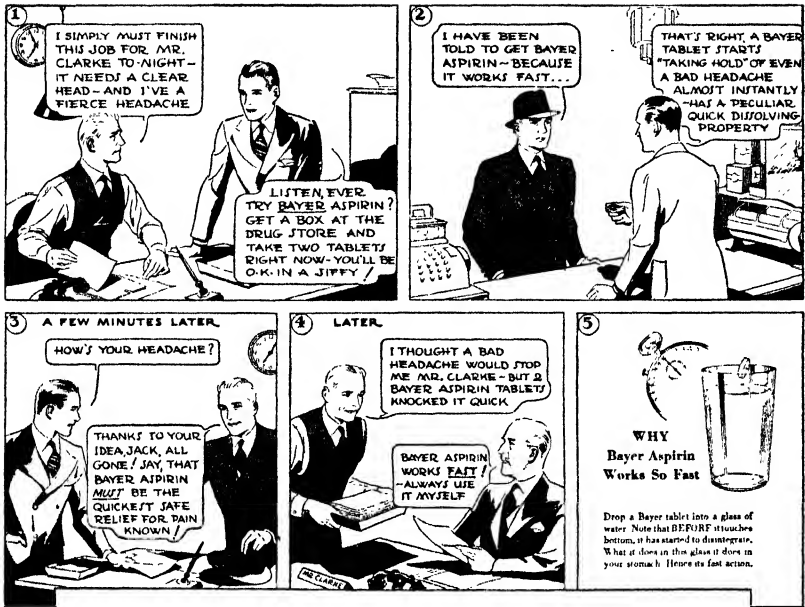
Foods and drinks are also advertised through reference to comfort. "Be mouth happy" says an advertisement for Spuds cigarettes. This appeal is directed to the taste in the mouth as an after-effect of smoking. Companies selling modified and substitute coffees play up another type of comfort, using the negative appeal of banishing fear of not being able to sleep at night.

(6) *Food* is the object of one of the strongest of human motives. In Table 45, of the next section, we see that it occurred in slightly less than 5 per cent of all advertisements classified, but this was primarily because of the method of rating. Food is a comparatively indefinite motive, so classification was generally made in terms of the more specific appeal—price, health, parental affection, comfort, etc.

An appeal to food for its own sake is seen in almost any Campbell's Soup advertisement, which is well known for having appeared in the *Saturday Evening Post* on the first page following the solid block of narrative material for a number of years. There are variations from week to week, however, so that the interest of the reader is kept alive by means of announcements of new soups, suggestions for new uses of the soup, hot weather recipes, and menus.

The taste qualities of the food are often used as a more specific argument than the general hunger appeal. Both headline and illustration assist in conveying this impression. The use of realistic coloring enhances this appeal greatly over a mere black and white illustration or purely verbal description.

(7) *Safety*. This is another fairly frequently used appeal. It is



Faster Relief Now From Headaches and Pain

There is now a quicker way to ease pain. A way that often brings relief from even a severe headache or neuritis in a few minutes. Millions are now employing it. . . And doctors recommending it—the fastest, safe relief, it is said, ever known for pain.

Those results are due to a scientific discovery by which a Bayer Aspirin Tablet begins to dissolve, or disintegrate, in the amazing space of two seconds after touching moisture. And hence to start "taking hold" of pain a few minutes after taking.

The illustration of the glass, above, tells the story. Note that a Bayer Aspirin Tablet, dropped in a glass of water, starts disintegrating before it touches the bottom of the glass. And what happens in that glass happens in your stomach. A Bayer Tablet starts to disintegrate almost instantly you swallow it. And thus is ready to go to work almost instantly.

This unique Bayer discovery means quick relief from pain for you and yours. Fewer days of

pain, fewer lost hours from headaches, neuralgia or the pains of rheumatism. And safe relief. For genuine Bayer Aspirin does not harm the heart.

When you buy, though, see that you get the GENUINE BAYER ASPIRIN. Not a preparation claimed to be "like it." The best way is never ask for aspirin by the name "aspirin" alone. But if you want Bayer Aspirin's quick relief always say "BAYER ASPIRIN."



DOES NOT HARM THE HEART

FIGURE 20. ILLUSTRATES SEVERAL POINTS: APPEAL TO COMFORT, CARTOON TYPE OF ILLUSTRATIONS TO ATTRACT AND HOLD ATTENTION, IMPLIED DRUGGIST'S TESTIMONIAL, AND USE OF A SITUATION COMMON TO ANYONE AT ONE TIME OR ANOTHER. (Courtesy of the Bayer Company.)

Can you  always stop in time?



You can't argue with a train STOP...SAFELY AND SURELY...WITH BRAKEBLOK

TAKE no chances with a train—or with your brakes. Stop when the whistle warns and the signal flashes—and be sure you can stop.

With American Brakeblok you not only stop safely, but you spare yourself any agonizing uncertainty. You know you can stop—that "Brakeblok" will do the job.

American Brakeblok is the new-type safety brake lining—a dense, non-metallic, homogeneous compound which contains no rubber and is unaffected by braking heats and pressures. It is a revolutionary material in that it provides a surplus of stopping power—gives a reserve to meet any emergency of stopping. It lasts longer, too, an economy particularly notable on free-wheeling cars. When the engineers of the American Brake

Shoe and Foundry Company originally developed American Brakeblok they were thinking of heavy-duty buses and trucks where brake lining has the hardest job. But as automobile speeds and traffic increased and made a better passenger-car lining imperative, American Brakeblok with its surplus, heavy-duty stopping power, was adapted for pas-

senger car use. Today, you can have it installed on your car as a replacement for ordinary lining.

Formula for Good Brakes: 1. Regular inspection. 2. Periodical adjustment; 3. "Brakeblok" when you need new lining. . . . Any good brake service station, repair shop or car dealer will install Brakeblok. Insist on American Brakeblok.



AMERICAN BRAKE MATERIALS CORPORATION • 4660 MERRITT AVE • DETROIT

Sales Offices: New York, Cleveland, Chicago, St. Louis, Los Angeles, San Francisco

★

A Division of AMERICAN BRAKE SHOE AND FOUNDRY COMPANY

★

FIGURE 21. VERY DRAMATIC APPEAL TO SAFETY. (Courtesy of the American Brake Materials Corporation.)

WE INVITED
Lefty Gomez
TO



PROVE

THAT LIBBEY · OWENS · FORD SAFETY GLASS WILL PROTECT YOU



From untouched photographs taken by Underwood & Underwood at Comiskey Park, Chicago, Illinois

- "Lefty" Gomez of the New York Yankees, pitching sensation of 1932, threw a baseball at this L-O-F Safety Glass windshield with all the steam of his powerful arm behind it. It actually bounced back, leaving nothing but that cobweb of fine lines to show where it struck. It does not take much imagination to picture that same baseball hitting a regular plate glass windshield... to see, in your mind's eye, jagged, razor-edged chunks of broken glass flying through the air in all directions.

It is unfortunately true that 45% of all motorists hurt in automobile accidents are cut by broken, flying glass. However, the striking demonstration shown above proves that such a terrific blow is

needless and avoidable. You can see for yourself that Libbey-Owens-Ford Safety Glass did not shatter and fly; that it did not set free those danger-dealing pieces that cause ugly cuts... and worse.

Naturally, you want the car you drive to be as safe as it is humanly possible to make it. That means it *must* have Safety Glass. Many manufacturers are now co-operating with you to the fullest extent by making L-O-F Safety Glass standard equipment at no extra charge. Others offer it, optionally, at nominal cost. If there is anything further you would like to know about Safety Glass, write us. We shall be glad to answer all inquiries.



WARNING Don't gamble when the cards are stacked against you. Don't expose yourself to danger when it is so easy to have L-O-F Safety Glass in your new car. It is used by Packard, Graham, Studebaker, Franklin, Reo, Willys, Willys-Knight, Ford, Cadillac, La Salle, Lincoln and Nash.

LIBBEY · OWENS · FORD GLASS COMPANY, TULIDO, OHIO,
Manufacturers of Highest Quality Flat Glass, Window Glass, Polished
Plate Glass and Safety Glass, also distributors of Approved and Fire Glass
manufactured by the Blue Ridge Glass Corporation of Kingsport, Tenn.

LIBBEY · OWENS · FORD
 **SAFETY GLASS**

FIGURE 22. APPEAL TO SAFETY. USE OF WELL-KNOWN INDIVIDUAL TO DEMONSTRATE PRODUCT. (Courtesy of Libbey-Owens-Ford Glass Company.)

brought out in several forms. Physical safety, safety against lawsuit or unfavorable publicity, and protection of property are the types most commonly seen.

It is used very often in connection with automobile equipment. With more cars on the road and constantly higher speeds slight failures in equipment can cause far more serious mishaps than a decade ago. Brakes, tires, and safety glass are among the most prominently featured products. A very graphic appeal to safety is presented in Figure 21. The same motive is featured in Figure 22, and this has the added feature of including a pictorial testimonial by a person well known in the field of sports.

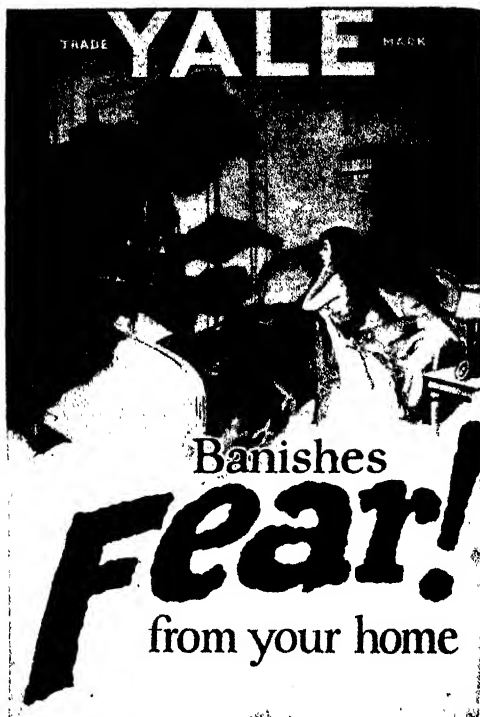
(8) *Assurance*. This is closely related to safety, but applies to advertisements which aim at peace of mind rather than physical safety. Insurance companies frequently appeal to this desire through featuring independence in old age, and through both this and family motives for carrying life insurance and for creating trust and educational funds. One by the Metropolitan Life Insurance Company has these headlines, "It is a great comfort to know that one spot on earth will surely be yours—your home."

(9) *Fear* is recognized by psychology students as one of the three traditional native emotions. Rage and love are two others often mentioned in conjunction with fear. Fear probably occurs most frequently and is the most powerful of the three. It is largely a negative incentive. In advertising it is used by suggesting an unpleasant or painful situation which we will wish to avoid, and can be avoided by taking certain precautions. The last two points we discussed, safety and assurance, are in a sense positive opposites of fear.

In Figure 23 we present an example of how this strong tendency is worked into an advertisement for a lock. Attention is called to the fact that the situation portrayed is that of the average person; the incident might happen in any home. It also features a woman, and may be designed particularly to appeal to them, inasmuch as this sex is supposed to be more susceptible to worry on such grounds.

(10) *Appearance*. Most of the appeals discussed so far have related to the individual. Appearance is a social matter and arguments are directed on that ground. Clothing, shoes, cosmetics, and similar

TRADE **YALE** MARK



Banishes
Fear!
from your home

Night loneliness . . . the sound of stealthy tampering at the door . . . a moment of helpless terror . . . *Has she forgotten to lock it?*

But the Yale 44 Automatic Deadlatch needs no remembering. When you shut your door the heavy square latch bolt is *automatically* thrown nearly twice the usual distance into the strike and deadlocked!

Thus it is proof against forgetfulness from within and violence from without. It cannot be left unlocked. It does automatically what you might forget to do manually.

Be sure you have the right locks on all your entrance doors. Look for the Yale trade-mark. If it's *marked* Yale it's *made* by Yale. No other locks *are* Yale.

Send for booklet,
"Let the Yale 44 Automatic Protect You"



YALE 44
AUTOMATIC
DEADLATCH



The Yale & Towne Manufacturing Co.

Stamford, Conn., U. S. A. Canadian Branch at St. Catharines, Ont.

YALE MARKED IS YALE MADE

FIGURE 23. APPEAL TO FEAR. (Courtesy of The Yale & Towne Manufacturing Co.)

toilet articles used this appeal extensively. Sex is brought in as the *pièce de résistance* in many advertisements. Men or women are shown being admired by persons of the other sex because of their suit or dress, tie or scarf, hat, shoes, stockings, or because of the use of certain soaps or perfumes. A negative incentive may be used; the person is scorned because he or she has not made use of the product. Appearance is occasionally combined with an economic appeal in some such fashion as this, "You cannot afford not to be well dressed," going on to the point that in a time when positions are insecure the men who are let go are those who do not make a good appearance. A negative, or modified fear, appeal is shown in Figure 24.

Many articles of an impersonal nature are advertised through the appearance appeal. Household appliances, silver, furniture and automobile polish, paint, rugs, and even oil furnaces are sold by these means.

(11) *Social Approval*. The natural desire for social approval is featured in advertisements which show goods purporting to improve the appearance of one's house or person. Many of this class are directed toward hostesses, who naturally wish to make the best impression on guests.

(12) *Family*. This also is one of the most frequently used appeals. The majority of life insurance companies use it to inspire the wage-earner to leave his family protected in case of unexpected demise or invalidism. Here is an example of such an appeal put in a very personal way:

YOU and YOUR HUSBAND might have this little talk—
Just supposing you asked some day:

"John, what would happen to me and the children if anything happened to you?"

To which optimistic John replies:

"We have something saved, and there's the life insurance."

And doubtful you:

"But that wouldn't go very far, would it?"

At which point John thinks he can end the subject, thus:

"Well, I don't know, but I guess things would work out somehow."



In love affairs always second best

She had been explaining palmistry to both of them; but when it came to a demonstration she held his rival's hand, not his. "Nothing to worry about," he thought bitterly to himself, "except that I can't understand why it is *always* like this." Always in love affairs, he came off second best.

A great many young men are inclined to have a grimy-looking skin, spotted with blackheads and dull in appearance. Few realize that this hinders their success in life. Pompeian Massage Cream helps you overcome this handicap by giving you a clear, ruddy complexion.

Clears the Skin. Pompeian Massage Cream thoroughly cleanses the pores. It helps clear up blackheads and pimples by stimulating healthy circulation, and by keeping the skin clean and the pores open.

Easy to Use. After shaving or washing, rub it in gently. Continue rubbing and it rolls out, bringing with it all the dirt and skin impurities. Result — a clean, healthy skin with clear, glowing color.



Use Pompeian Massage Cream regularly at home — then you'll get the full benefit. At all druggists.

SPECIAL INTRODUCTORY OFFER

$\frac{1}{3}$ of 60c jar for 10c



For 10c we send a special Trial Jar containing one-third of regular 60c contents. Contains sufficient Pompeian Massage Cream to test thoroughly its wonderful benefits. Positively only one jar to a family on this exceptional offer.

THE POMPEIAN CO., Cleveland, O., Dept. 90

Gentlemen, I enclose a dime (10c) for $\frac{1}{3}$ of a 60c jar of Pompeian Massage Cream.

Name

Street Address

City..... State

FIGURE 24. COMPLEX APPEAL TO APPEARANCE, RIVALRY AND SEX. (Courtesy of The Pompeian Co.)

But you stick to your point with:

"When I think of what it costs just to live and the plans we have for Junior's education, it does kind of frighten me. Are you really sure, John, that we've given this matter of insurance enough thought and have as much as we need?"

And that's all for that little talk if John says:

"Oh well, if you're really worried, I'll look into my life insurance soon, but let's not bother about it now."

While this dialogue is ostensibly directed toward wives for the purpose of spurring their husbands to take out more insurance, we do not have to possess much imagination to see that it is also planned to motivate the husband before his wife starts after him. We might remark, incidentally, that this advertisement is weak on two fundamental points. It is too general; while it may inspire one to buy insurance in general, one has to read two-thirds of the way through the whole advertisement (not all of it is quoted here) before he meets any mention of the specific company. This could have been worked into the dialogue very logically. The last sentence also violates the principle of motivation to action; it suggests no great hurry. A postponed sale is more likely lost than gained.

In Figure 25 we reproduce a very striking appeal presented by the Union Central Life Insurance Company. The headline "Against what odds will you ask your boy to fight?" has a great deal of human interest, which is heightened by the text appeal of how the boy trusts you and what the odds are against his succeeding without adequate education.

Let us quote briefly a few other examples of appeal to family regard. Welch's Grape Juice has a picture of a little girl drinking, with this headline: "She's worth the best; buy the grape juice doctors recommend." General Tires show a picture of a man, wife, and two children setting off for a picnic, with this heading: "To him, it's the greatest foursome in the world . . . that's why he will trust their safety to no other tire." Buick emphasizes the suitability of their car for every member of the family, not just one age or sex, through a picture of a smiling family group and "We're certainly proud of our Buick." The A. T. and T. shows a mother holding a small boy to the phone, saying "Say Hello to Daddy," with the text, in part, "He may be downtown at the office or a



AGAINST WHAT ODDS will you ask your boy to fight?

WHERE will he be at 17 . . . at 18 . . . the fun-loving little fellow who today calls you "Pop"? If you could only be sure . . .

Even now you can see what he'll be up against when he leaves school. All around us the competition is sharper, more aggressive than anything you or I ever had to face.

Your boy may win through, even if he doesn't finish his education. But . . . he'll fight against tough odds.

Year by year The Union Central Life has watched the struggle grow more difficult for non-college men.

And today this old, conservative company offers you an easy, proven

plan that makes it absolutely certain your boy will get the chance he deserves. That he'll *not* even

The Union Central Education Plan provides . . . without danger of mishap . . . that when your boy is ready to go to school, the money will be available. Whatever turn conditions take . . . whatever happens to you . . . your boy will have his opportunity to go to high school and on through college.

It is surprising how little this plan costs if you start it now, while your boy is young.

Perhaps you carry some insurance with a reliable company. The Union Central Education Plan can build on that. So keep this protection in force.

Then the next step is to find out what it will really cost to send your boy to college. The Union Central Life has made an unusual study along these lines. The results are printed in handy booklet form under the title, "A Place in the Sun".

Here are cost figures for each of 300 leading colleges . . . figures obtained direct and covering tuition, clothes, board and room, incidentals.

This manual is offered to you free. Check and mail in the coupon today . . . in the interest of your boy's future. And if you would like an analysis of your present insurance needs, ask for that also. There is, of course, not the slightest obligation on your part.

THE BOY WHO GRADUATES FROM COLLEGE EARN \$100,000 MORE LIFE INCOME



The Union Central Life Insurance Company
Dept. 5-A Cincinnati, Ohio
E. Please send me free the new manual on college costs - "A Place in the Sun".
F. Please arrange to quote me my present insurance needs.

Name _____
Address _____
City _____ State _____
County _____
Copyright 1934 by The Union Central Life Insurance Company

THE UNION CENTRAL LIFE INSURANCE COMPANY

ORGANIZED IN 1867 . . . MORE THAN \$300,000,000 IN ASSETS

FIGURE 25. APPEAL TO PARENTHOOD. (Courtesy of The Union Central Life Insurance Company.)

hundred miles away . . . yet that happy eager voice wings across the wires, straight into his heart. It summons up a sudden tender warmth. It sweeps away cares and worries. It brings sure comforting knowledge that all is well at home."

(13) *Sex* as an instinct is founded on a desire for mating. Our civilization, however, has so influenced and changed our instincts that their expression is greatly altered. Most individuals are interested in persons of the opposite sex, have a desire to be popular with them, and expect to get married sooner or later. Figures 23 and 24 illustrate use of this motive in actual advertisements. We have already used Figure 23 as an example of social approval, but either interpretation is satisfactory. It is interesting to note that Lucas and Benson called it rivalry.

Sex and fear have been combined, as positive and negative incentives, to advertise toilet articles which are supposed to remove certain objectionable physiological conditions. They run a series of pictures, on the comic-strip idea, showing a man or a woman offending the other, suddenly suspecting what might have been the cause for the cool behavior, remedying it—and finally the romance is complete, all because of the product. We shall speak again of this type of advertising at the end of Section VI of this chapter.

(14) *Recreation*. This appeal is used so directly for travel, movies, and sports that little need be said about it. It is sometimes combined with an appeal to health, suggesting that a vacation trip will make a person feel better and be more effective in his work because of it. This is particularly emphasized for midwinter vacations, since a person has to find some logical reason for taking time off at an unusual season, and the advertiser tries to furnish that reason.

(15) *Self-improvement* appeals occur in a number of advertisements, largely to attract applicants into correspondence courses in public speaking, business leadership, personality improvement, and technical fields.

(16) *Genuineness* is one of the less frequently used appeals. It assumes that the reputation of the company is already established or tries to imply that one exists by warning people to "Accept no substitutes," or "None genuine without this signature."

"New Fall Shoes!..

and aren't they good-looking!

*-fit you
perfectly
too!"*



"Then we're both pleased, for I've never had shoes fit so perfectly, feel so comfortable, or last so long as Bostonians. And you're right about their style. Better looking shoes simply aren't made. Just think—Bostonians are now only \$5.50 to \$8."

Bostonian
SHOES FOR MEN

FIGURE 26. COMBINATION OF SEX, USED RELEVANTLY IN THIS CASE, AND APPEARANCE MOTIVES. (Courtesy of the Bostonian Shoe Company.)

IV. COMPARATIVE FREQUENCY OF APPEALS

It is of interest and practical importance to know just how often the appeals we have been discussing are actually used. To show this we present in Table 45 a summary of 406 advertisements which appeared in ten consecutive issues of the *Saturday Evening Post* during the summer and fall of the year 1932.

This classification is not necessarily final. Other raters might arrive at slightly different totals. In many cases compromises had to be struck. Suppose a girl is shown admiring a man's tie; is this an appeal to sex or to appearance? Since the girl is admiring it, we should tend to classify it as sex; yet if a man were in the picture and all other features were left the same, we should say the motive is appearance. Suppose a food is advertised as healthful for children; is this an appeal to appetite or to parental affection? In general, where conflict appeared, classification was made in terms of the dominant appeal. In some cases the score was split between two appeals.

Preëminence, or quality, which heads the list, is perhaps given more emphasis than it deserves. Many advertisements were of the suggestive type, and featured no special definite appeal, so we placed them in this category.

Three of the strongest human motives: sex, hunger (food), and social, appear rather poorly on this list. This also is due more to the method of classification than to neglect of such primary drives by the advertisers. These motives are rather indefinite, so the advertisements using these were in general grouped with the more definite appeals, where such a one appeared coördinately. Food, for example, is advertised on the basis of price or health, rather than simply as a satisfier of hunger.

The price appeal stands out among the definite arguments. It is possibly somewhat intensified at the present time, owing to economic instability and lowered incomes. Many advertisements have as their main appeal reduced prices or slightly less high-class goods for lower prices, in ways that would not be seen in times of prosperity.

TABLE 45. COMPARATIVE FREQUENCY OF OCCURRENCE OF 406 APPEALS IN TEN CONSECUTIVE ISSUES OF THE "SATURDAY EVENING POST"

Appeal	Frequency	Percentage
1. Preëminence or quality	56	13.8
2. Cheapness (bargain, saving, value for money)	45	11.1
3. Health	31	7.6
4. Appearance (of person, home, or car)	31	7.6
5. Testimonial	30	7.4
6. Time or energy saving	25	6.1
7. Comfort (drugs, taste of cigarettes)	25	6.1
8. Durability or dependability	24	5.9
9. Family (parental, marital, children, pets)	21	5.2
10. Improvement of product	20	4.9
11. Food	18	4.4
12. Safety (protection, assurance in old age)	17	4.2
13. Recreation (travel, sports, movies) .	15	3.7
14. Social (entertaining, pride)	11	2.7
15. Earning schemes	8	2.0
16. Freshness (foods)	5	1.2
17. Novelty	5	1.2
18. Adaptability or convenience	4	1.0
19. Prize contest	4	1.0
20. Community advertisements	3	.7
21. Fashion	2	.5
22. Sex	2	.5
23. Genuine (all others fake or inferior)	2	.5
24. Self-improvement	2	.5
25. Research (to improve product)	1	.2

There seems to be a very definite diminution of irrelevant use of the sex motive, which had characterized advertising for several years. In automobile and cigarette advertising in particular, it had been quite the regular thing to have pretty girls adorning the landscape in an entirely meaningless way. We do not intend to discourage the use of this instinct. Applied to clothing, jewels, and perfumes it may have tremendous appeal. But there is no merit in dragging it in by the heels indiscriminately.

V. RELATIVE STRENGTH OF APPEALS

Since advertising and selling consist in appealing to motives in the readers, it is of great importance to know which are strong and which are relatively weak. Starch conducted a general investigation on this problem, asking people to rate on a scale between 0 (low) and 10 (high) their subjective impression of the motivating force of each of many motives in determining their behavior. The motives and their median ranks are given in Table 46.

Some of the ratings are rather unexpected, especially the low ranks of economy and style. Both are considered strong incentives, even though acquired, and are among the most frequently used in actual advertising. Style is especially strong with women. The potency of economy as a motive undoubtedly varies with business

TABLE 46. THE RELATIVE STRENGTH OF MOTIVES IN GENERAL

Motive	Per cent	Motive	Per cent
Appetite-hunger.....	9.2	Respect for Deity.....	7.1
Love of offspring.....	9.1	Sympathy for others....	7.0
Health.....	9.0	Protection of others....	7.0
Sex attraction.....	8.9	Domesticity.....	7.0
Parental affection.....	8.9	Social distinction.....	6.9
Ambition.....	8.6	Devotion to others.....	6.8
Pleasure.....	8.6	Hospitality.....	6.6
Bodily comfort.....	8.4	Warmth.....	6.5
Possession.....	8.4	Imitation.....	6.5
Approval by others....	8.0	Courtesy.....	6.5
Gregariousness.....	7.9	Play—sport.....	6.5
Taste.....	7.8	Managing others.....	6.5
Personal appearance....	7.8	Coolness.....	6.2
Safety.....	7.8	Fear—caution.....	6.2
Cleanliness.....	7.7	Physical activity.....	6.0
Rest—sleep.....	7.7	Manipulation.....	6.0
Home comfort.....	7.5	Construction.....	6.0
Economy.....	7.5	Style.....	5.8
Curiosity.....	7.5	Humor.....	5.8
Efficiency.....	7.3	Amusement.....	5.8
Competition.....	7.3	Shyness.....	4.2
Coöperation.....	7.1	Teasing.....	2.6

TABLE 47. RELATIVE EFFECTIVENESS OF APPEALS FOR TOOTH PASTE

Appeal	Average Rank	Appeal	Average Rank
White, clean teeth	2.3	Price	12.5
Health	2.5	Convenience of tube and cap	13.5
Film on teeth	4.3	Beauty	13.5
Taste	6.1	Size of tube	14.5
Acid mouth	6.5	No grit	14.5
Effect on gums	6.7	Frequency of use	15.5
Pyorrhea	7.2	Habit of brushing regularly	15.8
Dentists' approval	8.5	Research in preparation of paste	16.9
Purifies breath	9.5	Concentrated paste	17.5
Pleasant feeling in mouth	10.5	Reputation of firm	18.0
Safe	12.0		

conditions. It may be also that rating motives abstractly tends to lower those which are learned or social.

Perhaps a better way of studying appeals is in relation to the specific product. We quote in Table 47 the results of another study by Starch, in which he had his subjects rank in order twenty-one appeals for a tooth paste. The averages of the assigned rankings show one interesting trend. In general the more potent appeals are those which are personal—appearance, comfort, health—while those toward the end of the list are largely technical arguments connected with the manufacture. With an article of different nature, say an expensive and technical piece of machinery, it is conceivable that the order of appeal values might be decidedly altered.

VI. POSITIVE AND NEGATIVE APPEALS

Appeals may be classified as either positive or negative. Some impel the individual to do something through desire to do it, while others motivate through fear of the consequences of neglecting to perform that action. A toilet article, for example, may show how one becomes attractive through its use, or may show a person shunned or neglected by others because he has failed to take advantage of this opportunity to enhance his personal appeal.

In connection with advertising the question is the relative motivating value of these two types of appeals. The problem comes down to positive and negative incentives to action in every-day normal human behavior. In one sense negative incentives seem stronger. One's life is generally pleasant and most people are generally optimistic. So we get to disregard pleasant circumstances and pay attention only to avoiding unpleasant conditions. We pay little attention to temperature unless it becomes too hot or too cold. We do not think of health until we become ill. Food attracts very little unless it has been some time since we have eaten and the stomach is empty. Youth is considered especially optimistic; it pays little attention to warnings and threats.

Let us look over a few samples of actual positive and negative appeals which were found in headlines. These are given in Table 48.

TABLE 48. EXAMPLES OF POSITIVE AND NEGATIVE APPEALS

A. Positive:

1. Successful men know the earning power of knowledge.
2. It's great after shaving.
3. The longer you drive—the stronger your praise for six cylinders—no more—no less.
4. I'll help you make the team!
5. Roses in her cheeks and health in her footstep. (Soup.)
6. Time to see an Exide dealer.
7. Darling . . . you look simply beautiful. (Yeast.)

B. Negative:

1. Public enemy No. 1 . . . takes his toll day after day. (Fire insurance.)
2. Don't let a cold run through the family.
3. The "accident" alibi.
4. Such skin troubles usually result from faulty elimination.
5. What a fool he is . . . proud of his well-groomed hair; ignores his teeth and gums and he has "pink tooth brush."
6. Bad breath? Ask any dentist about it.
7. Just ailing along. (Pluto water.)

C. Incorporating both positive and negative appeals:

1. Sleeplessness now overcome; tonight, without drugs. No more bed tossing, new energy, new stamina tomorrow.
2. No "hills and valleys" in this luxurious new-type inner-spring mattress, it's Tuffless.

Two complete examples are shown in Figures 27 and 28. The first is a good example of an advertisement with both positive and negative appeals, although the positive one is given more prominence. The other is a negative appeal to comfort.

In frequency of occurrence the positive far outweigh the number of negative appeals. In a tally of a large number of illustration and headline appeals the writer judged 58 per cent to be positive, 29 per cent negative, and 13 per cent uncertain. As to the situations in which each was used, it seems that the positive appeals are somewhat more general in application. Negative appeals are appropriate only in aiming at fear of something definite: poor appearance, lack of social acceptability, personal safety, ill health, etc.

Lucas and Benson conducted an investigation on the relative values of positive and negative appeals. They say: "A comparison of the numbers of coupons returned from 233 advertisements of both types showed no advantage for either positive or negative appeals in general. The 233 advertisements were paired into 117 comparisons, each involving a positive and a negative appeal." A summary of the results is given in Table 49. We see that there is no real difference between the two types of appeals, except in one case, and there the number of cases is insufficient to be certain of the trend.

TABLE 49. RELATIVE COUPON RETURNS FOR POSITIVE AND NEGATIVE APPEALS

Kind of Goods	Compari- sons	Compari- sons	Equal Compari- sons	Totals
	Favoring Positive Appeals	Favoring Negative Appeals		
Tooth paste	17	13	1	31
A food drink	19	17	1	37
A breakfast food	4	9	0	13
Sanitation articles	3	4	0	7
Total for manufac- tured products	43	43	2	88
Educational courses	14	14	1	29
Total	57	57	3	117

GREASE . . . GREASE

how men hate the grease!



Now men from 48 states hail my new Brushless Shave because it's a cream—NOT A GREASE

W. G. Mennen

I NEVER could stand grease on my face. When brushless shaves first came out I tried them. But not for me! Maybe I was prejudiced, but I just couldn't go the grease.

Then men began to write me letters. They liked the brushless idea, but the grease peeved them, too. Smearred up their faces. Clogged the razor guards. Messed up the wash-basin and towels.

Then I went to work with our chemists. I figured that a brushless shave good enough to hurdle my prejudices would certainly please other men. My idea was,—it must be a cream—not a grease. It took 13 months of work, but finally we got it—and what a HIT it made with shavers! The first announcement rang the bell. Up, up went the sales. Now letters pour in by the thousand. Men who tried old-time brushless shaves—and hated them—are

flocking to Mennen Brushless for these 5 advantages . . .

THE 5 IMPROVEMENTS

1. **With Whiskers**—and smooths the path of the razor. The blade sails over the skin—cuts clean, Swift! No pull!
 2. **Shows white on the face.** You can see the path of the razor.
 3. **Washes off EASILY**—off the hands, off the face, off the razor, off the basin. Being creamy and not greasy, it dissolves quickly and doesn't mess up everything.
 4. **Economical.** It spreads easier so you can use less (about 1/3 less).
 5. **Protects your skin**—and makes it feel relaxed, smooth, clean. Particularly good for dry, tender skins.
- "Convince yourself! See Special Offer below. It's a real bargain!"

NRA

SPECIAL OFFER!

3 PRODUCTS—ONLY 10¢

To get acquainted I offer you generous sizes of Mennen Brushless Shave, Mennen Skin Cream, Mennen Face Lotion for Men—affirm for only 10¢. Offer good only a short time—each unit to a person. Mail coupon now with 10¢ to Mennen Co., Newark, N. J., Dept. 5-7.

FIGURE 28. THIS PRODUCT IS ADVERTISED BY APPEAL TO ABSENCE OF WHAT IS HELD A DISADVANTAGE IN PRODUCTS OF COMPETING COMPANIES. (Courtesy of the Mennen Co.)

One must remember that the desired end, purchase, is a positive action, so the advertisement must lead to some positive result. Fear and doubt cannot be left in the reader's mind. If we take the case of a beauty preparation, the primary appeal may be directed to a woman's fear of not being attractive, but it must finally convince the reader that attractiveness will be produced by using *that* product. Otherwise she may buy *any* cosmetic having the same general function. Under these conditions it might be that a text is more necessary for an advertisement having a negative appeal than one which states a positive argument in its headline. As to the customer, it has been suggested that older persons and women are more susceptible to negative appeals. This, however, is probably more an individual than a group matter.

Many people object to the very strong type of negative appeals seen lately, especially those aiming at fear of social disapproval on the grounds of halitosis, body odor, and other physiological functions. They build up fear in one that he may be giving offense to others, and reinforce this fear by the insidious suggestion that one can never know when he is guilty of such offense. Undoubtedly these appeals work; a great deal of worthless merchandise can be sold on the strength of fear. It is doubtful if a permanent large-scale business can be built up in this way; the discriminating reader does not fall for such distasteful advertising, and will refuse to buy the product. But the percentage of such readers is probably very small, so it seems likely that an immense harvest will be reaped before the majority of consumers become disillusioned. From the standpoint of advertising, all social and æsthetic considerations aside, there is no doubt as to the strength of this appeal.

VII. ARGUMENTATIVE AND SUGGESTIVE ADVERTISING

(1) *Distinction*. Another way in which advertisements may be classified is as argumentative or suggestive. The argumentative type appeals to reason; it tries to sell its product by figures, facts, and logical arguments which demonstrate the need for that product and its superiority over all others. The suggestive type is aimed at the emotions; it works by suggestion and builds up good will through repetition of appeals.

(2) *Use of Argumentative Advertising.* In this type the reader has to go through a conscious and deliberate process of selection, comparing brands, and studying technical specifications and prices. This would suggest that it is particularly appropriate for expensive and complex articles, such as machinery. One who is buying an automobile, a harvester, or a printing-press intends to keep it so long and to get so much service from it that he will be willing to put real deliberation into its purchase, which will warrant the advertiser's use of figures and appeals which might bore readers if used for other products.

Samples of argumentative appeals are:

1. Long life, higher trade-in value, low upkeep, a lasting style. (Hupp.)
2. Eastman announces—not merely a new price but a wholly new principle that places Home Movies within the means of all.
3. Be sure of Economical Lighting. Buy lamps bearing a reliable name.
4. 5 cups a day is not too much . . . if the coffee is dated.
5. A plain statement of facts concerning Anti-Freeze. Important information for the protection of car-owners. (Followed by a rather lengthy text.)

One must be careful about overdoing argumentative appeals, as most people are reading for enjoyment and will not take the trouble to wade through a maze of figures and details. As a general rule it would seem better to pick out one main appeal and feature that. If there are a number of logical arguments, one may be used each week. The various points can be gotten across gradually, and interest will be kept alive. Goods where argumentation is necessary will rarely be bought as a result of the advertisement alone. The latter has done its work if it so interests the reader that he goes to the salesroom; the details can be brought out in personal conversation.

Poffenberger gives this example of an appeal which was too technical. It appeared on a New York Subway card.

Milk is an emulsion. The . . . Emulsion is emulsified 550 times finer than milk and its fat content is eight times richer than the best milk. That is why physicians and druggists all

over America, when asked to name the finest emulsion, answer, the . . . Emulsion. Tastes good—No Cod Liver Oil—Protects and Builds Health.

Questioning a number of people he showed that practically none really understood the meaning of the technical arguments. So the advertisement would fail unless possibly the technical-sounding words would carry conviction, whether they were understood or not.

(3) *Use of Suggestive Advertising.* This plays on the emotions, works chiefly through implying quality, and tries to sell by stirring up desire entirely apart from rational conviction. We may distinguish five general ways of using this type of advertising.

(A) *Display of the Name Only.* A very clever use of suggestion is shown in Figure 29. Two people, who could represent any man and wife, are shown entering the salesroom. This is recognized as the first step toward completing the sale. No product is shown. It is assumed that one is familiar with its quality and needs only the stimulus to action. Such a device is better for continuing publicity than for initiating an unknown article.

(B) *Quality Is Suggested,* by elegant surroundings, the high class of customers, and testimonials. "Purveyors to His Majesty," "Used by all beauty shops in Hollywood," "Recommended by champions," are appeals which lend authority.

(C) *Quality Suggested by Use.* A typical person is represented as using the product, suggesting that the reader do likewise.

(D) *Commands*—"Obey That Impulse," "Say It with Flowers," "Try This New Pipe"—suggest immediate action and are directed toward the individual reader. Using the imperative has a technical advantage in that it saves words, permitting either use of other words or larger-size print in the headlines.

(E) *Questions*—"Have you prepared your car for winter driving?" "Do you start the day tired out?"—put the question up to the reader in a personal and direct manner.

Suggestive advertising is especially appropriate for low-priced and luxury goods which are bought without much deliberation. Jewelry, perfumes, cigarettes, candies, negligées, and spices are examples.

Actually, very few advertisements are either purely argumentative or purely suggestive. The majority of advertisements have



**It may never again be so easy
to become "the man who owns one"**

PROBABLY you've often wished for a Packard. Perhaps on several occasions you've almost bought one. But somehow you've felt it would be best to wait for better times.

A better time to buy a Packard will probably never come.

Why? For the same reason that a better time may never come to buy sound real estate or seasoned securities.

Today's motor cars are priced to give you more

for your money than ever before. But there is still another factor in your favor. When buying turns, allowances on used cars will drop materially. Past experience bears this out. It will take a much greater cash outlay to buy a new car than it does today.

This year two and a half million cars will wear out. Only a million and a quarter new cars will take the road. This means that before long more than a million people must buy new cars—or walk.

Buying must turn. Before, it turns is the time to buy your car. And it is a particularly good time to buy a Packard, for today's Packards are the finest of a long line of fine cars.

Take your present car to a Packard dealer. Find out how much you can get for it on, say, a Packard Standard Eight. Learn how easy it is to pay the balance.

Then study the car itself. The Standard Eight has made more friends for Packard than any other model. It combines big car comfort with big car safety. It combines simplicity of design with low service costs. It has Packard's traditional ageless lines—lines that make the car young in appearance when it is old in miles.

And remember this: Your Packard Standard Eight will last for years to come—years that make your Packard a wiser investment than ever.

FIGURE 29. AN EXAMPLE OF SUGGESTIVE ADVERTISING. (Courtesy of The Packard Co.)

elements of each. The headline may be suggestive, and the text may have more factual arguments to convince the more careful reader.

VIII. CLASS APPEALS

Advertisements for a single article may be constructed very differently, depending on the type of person likely to read them. Suggestive advertising would be appropriate for selling automobiles to women, since they are more interested in comfort and ease of operation than in mechanical details, while a highly argumentative type would be logical in a trade journal circulated among dealers, garage men, and engineers.

(1) *Comprehension of Readers.* The advertiser should talk to his readers in terms they can understand without undue effort. One who knows quite a bit about a product is likely to introduce technical details which may be interesting to him and other experts, but which are totally incomprehensible and boring to others. Bradbury cites an instance where an advertisement in preparation was shown to a girl of Polish descent and of average intelligence and education, with the instruction that she mark all phrases which were not completely clear to her. This tryout, with subsequent alterations, improved the final printed copy greatly. In deciding upon the general appeal one can be guided by the known or estimated intelligence averages of different occupational or group levels. (Consult Figure 2, Chapter II, for suggestions as to these.)

(2) *Sex Differences* in outlooks and preferences should be considered when one is advertising certain articles or in certain journals which are circulated preponderantly among one sex or the other. Precise differences are not easily stated, and many which had been assumed have been found, when subjected to actual measurement, not to exist at all. Individual differences within a sex are usually far greater than the separation between the two. Each product will need individual treatment.

An empirical recognition of the fact that different appeals are appropriate is seen from an analysis by Starch of 150 advertisements each of men's and women's shoes. The ten most frequent appeals for each sex are given in Table 50. The most striking differences are that the style argument is used twice as frequently toward women,

that quality is featured four and a half times as often for men's shoes, and that wear is a very minor argument for the women. Price is equally stressed for both groups.

TABLE 50. APPEALS OR SELLING POINTS USED IN 300 SHOE ADVERTISEMENTS

150 Advertisements of Men's Shoes	150 Advertisements of Women's Shoes
1. Quality 63	1. Style 69
2. Price 43	2. Price 49
3. Style 39	3. Comfort 38
4. Wear 26	4. Quality 18
5. Comfort 24	5. Health 13
6. Service 21	6. Economy 8
7. Economy 20	7. Fit 7
8. Fit 6	8. Beauty 7
9. Durability 5	9. Service 6
10. Workmanship 5	10. Wear 5

(3) *Children* do not ordinarily purchase many of their articles, but if they can be reached and convinced that a certain article is preëminent or desirable they will often influence their parents to buy that rather than another. The arguments will be toned down somewhat, and stories appealing to their interests will keep their attention. The Hood Company, manufacturers of canvas-and-rubber shoes for play and sport purposes, increased their return sales and inquiries tremendously by appealing to children's interest in puzzles. This word puzzle appeared one month:

“SDOOH HTIW RAEW EROM TEG” (Reversed: “Get more wear with Hoods.”)

This puzzle is clever not only in drawing interest, but in featuring the product in the solution. Books on secret codes were distributed free and also aroused a great deal of interest.

(4) *Rural and Urban* dwellers meet different problems and so think differently in a number of ways. The differences are becoming less pronounced daily, with increase in educational facilities, better roads and means of transportation, and radio. An example of aiming right at the interests of farmers is this headline from an

advertisement in a farm paper by the Vacuum Oil Company: "Giving your tractor cheap oil is like turning a cheap rooster in with blooded hens." Failure to consider this problem is illustrated in an advertisement which appeared in many farm magazines, giving publicity to a certain antiseptic. It showed a crowded subway car, obviously trying to demonstrate the constant sources of potential danger met by everyone in daily life. The illustration could not possibly have been more inappropriately chosen for this audience.

(5) *Hobbies* form very strong incentives. Their appeal may be used both directly and indirectly. The direct use is obvious. The indirect use is to couple the hobby with a selling point for a certain product. In the *National Geographic*, for example, one sees a moving-picture camera advertised in terms of permanent recording of one's travels. A magazine devoted to child-raising and circulated chiefly among mothers sells the same camera by an appeal to the preservation of childhood incidents.

(6) *Occupational Groups and Technical Experts*. Among people who already have a great deal of knowledge and interest in a subject, our appeals may be more intellectual (argumentative), since we do not have to worry so much about attracting attention and arousing interest. Conviction is the chief problem here, so we can feature technical and statistical arguments.

IX. TESTIMONIALS

It is easy to see how the use of testimonials began. To a person who is a bit doubtful about the merit of an article the salesman suggests: "Just ask Mr. Smith, the president of the bank. He bought one and is very enthusiastic about it." Soon he may use Mr. Smith's name to assist conviction before any reference is asked. The next step is to seek a testimonial, enthusiastic or solicited, paid or voluntary, true or false. Implied testimonials also are used, quoting hypothetical conversations or mass figures. The various types are as follows:

(1) *Famous Person*. It has become a great fad to get well-known individuals to recommend certain products, or simply to state that they use them. Since such people are presumed to be superior, it is hoped that you and I will strive to be like them, in one respect at

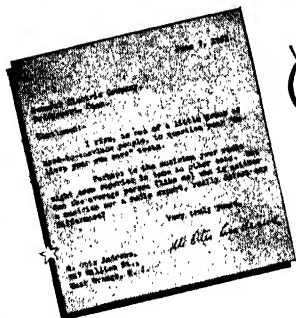
least. It is also implied that since wealthy and experienced people have practically free choice of products and have chosen a certain product, we should do well to follow their example. Society women, movie actresses, athletes, politicians, and others who are prominent in the news are particularly valuable prey to testimonial-seekers.

Such testimony is really valid only if the person is in a position to judge. The word of a movie actress may be all right for beauty preparations, but her statement on the supremacy of a new model of automobile would hardly convince experts. Nor can one take the word of a famous football player who never graduated and who was far behind his class when he quit, but whose name appeared at the head of a typewriter advertisement advising students to use that machine in order to keep up in their work.

(2) *Authority*. The word of a recognized authority helps to convince the reader. The most prominent example of this at the present time is the series of yeast advertisements backed by various European medical men. (The code of the American Medical Association prohibits physicians in this country from aiding commercial advertising.) Conviction is helped along by the atmosphere: white medical coats, formidable apparatus, diagrams or X-ray pictures, and a few technical terms.

(3) *Average Person*. By way of variation an advertiser will quote the words or experiences of an average individual. Advertisements offering commissions for selling in spare time make use of this device. After outlining their propositions they show pictures of persons holding rather poorly paid jobs who "made \$18 in one week-end" or "earned \$2.25 in an hour after supper." Simoniz published an advertisement showing a Buick six years old, which had gone over 91,000 miles, and had been largely in the hot sun of Arizona. A picture of the owner accompanies a statement by him. We infer from all the evidence, particularly the fact that the car is six years old, that the owner is a person of no great means, and that his problems are like those of most of us—to make things last and look as well as possible.

(4) *Impersonal*. The same type of appeal as discussed in the preceding paragraph is used, except that no name is mentioned, and the scene is supposed to be representative. Possibly a hypothetical conversation is carried on between two individuals, such as that



But... can the
AVERAGE PERSON
 detect any difference?"



MR. OTIS ANDREWS, of East Orange, New Jersey, was frankly skeptical—as his letter shows—and he asked us an honest question. There was only one way to answer—"Believe your own ears," Mr. Andrews," we said. Would he listen to a tone-test if we went right out to East Orange and staged it? He would. Fair enough—we'd do it!

He asked, "May a radio service man of my own choosing inspect the sets before the test?" We answered, "Most assuredly!" He asked, "May I bring a group of friends to hear the test?" We said, "By all means, do!" And so the test was staged—seventeen people attended. Seventeen honest doubters.

They listened, as four of the best-known radio sets in all the world performed—performed by number, hidden behind a screen. Time and again each set took up the broadcast. Time and again one set stood out in

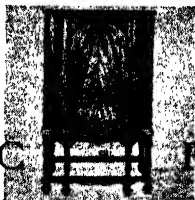
tone—and it stood out in the young! Sixteen of those seventeen listeners voted No. 3 best!—and No. 3 was the General Electric, the *best-spread* set in the group!

"I'm convinced!" said Mr. Andrews.
 In rest after test, time after time, G-E Radio wins. Wins because of its better, truer-to-life tone! And in the radio you buy, *tone* is the thing you want. It can

make or mar all that radio can bring. Make sure that the set you buy gives you the utmost in tone. You've heard other sets, now go to your G-E dealer—hear a G-E Radio! "Believe your own ears"—and your next set will be a General Electric! Prices are lower than ever—from \$48.75 up. Ask your dealer to show you the many beautiful G-E models. Or write Section R-728,

General Electric Co., Merchandise Dept., Bridgeport, Conn.

Of special interest to women—join the G-E Circle—on the air every week-day (except Saturdays) at noon Eastern Daylight Saving Time. It then writes for re-arranging your home, specify the G-E Strong System. It provides advance notices, conveniently controlled, and G-E materials throughout.



J-107 Console Model. New, 10 tube screen grid superheterodyne. Improved automatic volume control. 7-min-push amplification. Super control Pentode. Tone Equalizer with Acoustic Orifice. Dynamic speaker. 18th Century English cabinet. Price \$104.50, complete with tubes.

GENERAL ELECTRIC RADIO

FIGURE 30. TESTIMONIAL USING EXPERIENCE OF AVERAGE PEOPLE AS APPEAL.
 (Courtesy of the General Electric Co.)

quoted in Section III, Paragraph 12 of this chapter. A Ford advertisement tried to demonstrate class in the product by showing one standing in the driveway of an obviously expensive mansion, with a few persons standing around in evening dress. This implies use of this car by people other than those who can afford no other more expensive one.

(5) *Numbers*. Gross figures and percentages are quoted to show how widespread is the use of certain products. Buick has from time to time quoted the percentage of all cars costing over one thousand dollars which are theirs. Various beauty preparations state the number of movie stars or beauty shops which use their products. A few years ago Lucky Strikes displayed on billboards an assertion that somewhat over ten thousand doctors said that "Luckies are easier on the throat"—easier than what? Over the radio we hear that a certain mouth-wash is in every dentist's office; the truth is that free samples have been distributed to all dentists. The wording of many of these claims is ambiguous; the conditions under which the figures were obtained are not stated; and many companies will refuse to discuss the source of their information.

(6) *Indefinite Numbers*. Without any quoting of definite figures, it is implied that a large share of people use a certain item. "There are enough men wearing Paris Garters to elect the next President easily" is an excellent example of tying up a seasonal appeal with indefinite mass figures. "See how many Plymouths you meet on the road." "Ask any sailor what tobacco he prefers." "The 400 go to Europe on our steamships." "Everyone is talking about our new model." "We had dozens of orders on hand before the new model even left the factory." Such statements do not carry so much weight with a discriminating reader as reliable figures or statements by authorities, but they undoubtedly create a good deal of conviction. Claims are indefinite, and can be checked up in no way.

The pulling power of testimonials is considered to be great. They are very personal and seem to carry authority with them. Some of us who possibly observe the problem more carefully and have more personal knowledge of the conditions surrounding the obtaining of many testimonials than others are rather skeptical. According to one, for example, Nuxated Iron gave Jess Willard the stamina and strength necessary to enable him to knock out Jack Johnson. On

the day following Jack Dempsey's triumph over Willard the same advertisement appeared, but this time Dempsey attributed his battering victory to the tonic. One might wonder why Willard had grown careless and neglected such an important item in training for defense of his title. In many cases the fact seems to come first, and the credit is assigned later to the highest bidder. This reminds one of the newspaper accounts of two men in the same city who reached their hundredth birthdays the same day. One said his long life was due to total abstinence, while the other attributed his vigor to the fact that he had drunk a glass of whisky every day for the last eighty years.

However, the great majority of people accept testimonials as perfectly true and faithful, and the only danger of their becoming ineffective lies in their being so grossly overdone that all readers become suspicious.

X. SELECTION OF APPEALS

We might suggest a number of principles to be used in guiding one in selecting an appeal by which to feature an article.

(1) *Aim at a Strong Human Motive.* One should try to hit an instinct, native tendency, or acquired drive which is strong in practically every individual. Otherwise the appeal value of the advertisement will be that much weaker. Sex, food, health, comfort, and social approval are in general much stronger appeals than sympathy, aesthetic appreciation, curiosity, or humor.

(2) *Make the Appeal Broad.* One should appeal to as many people who may become potential customers as possible. Some interests may be strong in a few—hobbies for example—but an advertisement aiming at these will be too narrow in scope and will interest only a small percentage.

(3) *Appeal to Interests of Logical Customers.* If attempting to sell a certain article to one class of people, say women, or college students, or farmers, find out what is of especial interest to that class and try to tie it up with a selling point within the article. This will apply to choice of journal in which to advertise as well.

(4) *Make the Appeal Appropriate to the Article.* This is the

complement of the preceding one. One must select an appeal which is appropriate in selling that type of article to the class of readers who will be likely to be interested. Economy is of prime importance in the purchase of the cheaper automobiles, but the more expensive ones are bought by persons who do not have to worry about finances and who buy for luxury, beauty, comfort, and speed. Trucks are bought for endurance, sturdiness, and power, not beauty.

(5) *Emphasize Points that Will Sell Article.* One may realize the excellence of a certain automobile, of one make of shoes, or of a trip to Europe, but unless the appeal is of such nature that action (purchase) follows, the more promptly the better, the advertisement has failed and represents that much money thrown away.

(6) *Use Relevant Arguments Where Possible.* Appeals through novelty or curiosity may temporarily amuse, but are not as likely to be remembered or to inspire action as more direct ones.

(7) *Feature Your Own Article.* Unless one has a monopoly he has not only to sell the class of article he makes—shoes or shirts or tooth paste—but his own particular brand. If we reexamine Tables 43 and 44 we see that many of the appeals suggested will at best merely convince the reader of the desirability of having tooth paste or a vacuum cleaner of some sort, while others attempt to prove the superiority of that particular make over all others of generally similar nature. The latter will do much more specific selling.

(8) *The Appeal Should Not Be Too Technical.* In selling articles of a mechanical nature there is a temptation to quote specifications and figures which few will understand and be willing to wade through. The history of automobile and radio advertising shows interesting developments. Both started out by quoting detailed specifications, since in the beginning one had to be a mechanic or an electrician to run these devices and keep them in sound condition. But now selling arguments feature beauty, speed, power, range, quality. Part of the reason that appeals are becoming less technical is that women are buying or being consulted in the purchase of these products.

(9) *Give Technical Appeals Secondary Emphasis.* If anyone wants to learn the technical specifications he will have enough interest to take the trouble of going carefully through the whole

advertisement. These details, then, can be placed in smaller print in the text, and the illustration and headline used for the more general appeals.

(10) *In General Appeal to Desires Rather than to Reason.* In advertising one is appealing to the wishes and desires of the reader. If an appeal is made through facts and reasons, it is apt to prove rather boring to the majority of readers, and will be read carefully by only the few who are already more or less interested in the product.

(11) *Vary Appeals from Time to Time.* If the same appeal is used week after week, the advertisement will cease to attract attention and will fall flat. Two variations may be made in successive issues, different selling arguments about the product may be brought out, and different classes of potential customers may be aimed at. This will draw all potential customers, will bring out selling-points gradually instead of subjecting readers to a barrage all at once, and will keep interest alive.

(12) *Avoid Extravagant Statements.* Superlative claims will make the reader skeptical, rather than impress him. It is interesting to note in automobile advertising that the companies selling the best cars use more conservative language than those handling the cheaper ones. Refinement and dignity create an atmosphere of quality and quiet confidence. Scare-heads suggest fire sales and low-grade merchandise.

(13) *Avoid Negative Suggestion.* "Cut repair bills" has been used as an argument for the durability of an automobile. This may have a bad effect in that it suggests the possibility of a breakdown. It can be stated better in a positive way, such as "Initial cost the last expense."

(14) *Keep in Good Taste.* As a long-run policy with discriminating readers it would seem better to avoid appeals which may be distasteful. Great care must be taken in advertising certain articles, particularly those relating to bodily functions.

(15) *Don't Hit Competitors.* If one's article has not enough positive merits to sell itself, it does not deserve to be on the market. It is a short-sighted policy to abuse others, and will only end by incurring their enmity and a loss of confidence on the part of all.

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16. White, P., *Advertising Research*. Appleton, 1927, 597 pp.

attention value; it takes fewer eye movements and less effort to comprehend its meaning; and finally people like to look at pictures.

TABLE 51. RESPONSES TO LETTERS WITH AND WITHOUT ILLUSTRATIONS

Letter Number	Color	Cut Omitted Per cent	Cut Used Per cent
1	White	9	
2	White	12	
3	White		18
4	White		22
5	Corn	14	
6	Corn		26
7	Green	16	
8	Green		28
9	Gold	21	
10	Gold		34
11	Pink	26	
12	Pink		48
	Average	16.3	29.3

There is also a possibility of arousing interest by means of the illustration. We must remember that the reader is going through the magazine or newspaper for other purposes, and his attention will be gained only by something really interesting and attractive. The picture, if cleverly designed, will so arouse one's interest that he will tend to read the printed matter. A picture which realistically depicts a product may assist memory, but this function of the illustration is ordinarily not emphasized.

(3) *Types*. There are two chief purposes of an illustration: æsthetic, and utilitarian (realistic). The first is to appeal, to create a good impression, and to surround the product with an atmosphere of elegance and beauty. The utilitarian type aims to demonstrate the definite use and value of the product, and to enable the reader to comprehend its general nature.

In general it is found that the æsthetic or decorative type of illustration is used for luxury articles—jewelry, fine clothes, toilet articles. The utilitarian type is of greatest value in mechanical devices—factory equipment and machinery. The blue print or cross sectional view would represent the extreme form of this. However,

it is only rarely that one can class an illustration as entirely æsthetic or entirely utilitarian. The majority incorporate both elements. Travel advertisements, for example, depict scenes in realistic fashion, and yet so choose and photograph these scenes to make them as alluring as possible.

(4) *Make-up of Illustration.* Let us now consider the selection and construction of the illustration. We might point out from the outset that there are no absolute laws; each product and each class of reader present different problems. Variety also is an important feature.

(A) *Attention* is gained both through mechanical devices and through use of appropriate appeals. The chief mechanical devices are color, border, suggested motion, lines or arrows, and white space. These must be selected and used with care. The brightest colors, for example, have the greatest attention value, but at the same time may fail to impress the reader because they lack dignity. One may observe that the highest-quality products—expensive automobiles, for example—use more sober colors, such as purple, dark red, and dark blue. The factors of attention and quality have to be balanced against each other, according to one's purposes. The same is true with white space. One can achieve a certain degree of attention value through contrast and isolation, but at the same time is sacrificing that much of his available space.

If the appeal is well chosen and clearly presented, it will help to gain attention. Sport-lovers will always be on the alert for something relating to sport, and this may be used as a device to gain attention and start one reading an advertisement for some entirely different type of product. The same is true of food, sex, strong hobbies, travel, and other powerful motives which we discussed in the last chapter.

(B) *Relevancy and Realism.* We frequently see advertisements which appeal through novelty or through some motive which has no direct bearing on the product itself. Irrelevant sex appeals are often used. For several years one could hardly find an automobile advertisement in which the car was not half obscured by an attractive girl. Obviously the girl did not come with the car, like the spare tire or the jack, but the advertisers seemed to think that there was some drawing power in that type of picture. Those using

novelty feature humorous, ridiculous, or unusual situations. Occasionally one sees a negative appeal, directed at curiosity or stubbornness. On a direct-mail advertisement this notice was printed on the back: "Do not break this seal unless you are open-minded enough to give the matter serious consideration." This is a straight challenge, as everyone wishes to be considered broad-minded. On a filling station in the desert: "Don't ask us for information; if we knew anything, we wouldn't be here."

Experts are rather skeptical about irrelevant advertising. It may attract attention and provide interest and amusement, but there is serious doubt as to its memory value. There is nothing definite to tie up the product with the appeal.

In some cases a partially irrelevant illustration will be necessary. Perfume is purely olfactory, and as yet our advertising devices do not permit dissemination of stimulation in that sense. So that type of product must be advertised in an indirect manner, by showing pictures of social elegance, quoting testimonials, etc.

(C) *Use.* Depiction of articles in actual use is meaningful, has memory value, and suggests to others that they also might use them. One may show a person in the act of using soap, polish, bath salts, or clothes. Or the article may be lying passively in the background, like cigarettes or near beer next to a group playing cards. An effective way of demonstrating the worth of a product is to show a "before-and-after" scene. A window or an automobile may be shown partly polished, contrasting the dull and bright surfaces. It is impossible to show the definite effects of gasoline, oils, or tonics, but several suggestive devices can be used. An automobile may be shown passing another; it may be zooming over the top of a hill; or the negative appeal of one beside the road out of order because of not using that brand may be used. It is recommended that clothes be shown on a person rather than passively on a rack, since this is more personal and suggestive.

(D) *Artistic Qualities.* The illustration is enhanced and is better set off if one pays attention to a number of æsthetic matters. Distinctive surroundings suggest class and add to the drawing power of an advertisement. A recent Buick advertisement showed what was obviously a society wedding, with a car of that make with a chauffeur at the wheel waiting outside the church. Rugs and other

household furnishings are given implicit recommendations when shown in fine homes.

Presentation of human figures raises several æsthetic problems. In the case of small items of clothing the question arises as to just how much of the body should be shown. The more of the figure shown the smaller will the advertised item be. But if only a part of the figure is shown, say the foot or the waist, where shoes, sox, or belts are being displayed, the picture may appear rather ridiculous. With hats or neckties the matter is simpler, as the upper third of the body may be presented by itself with perfect harmony, as in a sculptured bust. If the picture purports to represent action, it is recommended that all figures be in a resting position, rather than in transition between two resting states. This imposes less strain on the observer, although this factor is less operative when one is looking for a few seconds at an advertisement than when the picture is a permanent one hung on the wall of one's home.

(E) *Using Several Illustrations.* If one wishes to advertise several products, like the various models and body designs of an automobile, he has the choice of showing them all in one advertisement or featuring them one at a time in successive issues. The latter is usually preferable, since interest is kept alive by the change and novelty, and attention is not scattered around the page. If one wishes to show them all at the same time, he may give one the main emphasis and show the others in smaller cuts at the bottom of the page.

A related series of illustrations keeps interest alive and connects one advertisement with the others. Examples are the series run by Packard showing various Oriental types of transportation, the health series of the Metropolitan Insurance Company, and Lucky Strikes "Nature in the Raw Is Seldom Mild" series.

II. COLOR

(1) *Use and Value.* It is only within the last two decades that color has been used with much frequency in advertising. Its use was delayed until accurate printing and shading had been developed so that illustrations looked natural. At first color was confined chiefly to the cover pages, but now we find it in all parts of the magazine.

It is even seen occasionally in newspapers, although the quality of paper does not permit very delicate or artistic work.

At present about one-quarter of the advertisements in the leading general magazines are colored, and this ratio will probably remain constant. The chief value of color is its attention-gaining function, and this will decrease as the number of colored advertisements increases. If over a quarter were colored, the gain in returns from each one would not justify the additional expense over plain black and white. (Practically all billboards and street-car cards are colored, but the situation is different here.)

A number of estimates have been made of the pulling power of color. Starch gives figures which showed that in 3,972,747 returns from 3,349 advertisements, the colored ones produced 53 per cent greater returns than black and white. A large mail-order house sent out half their catalogs with certain pages colored. Articles on these pages were ordered as many as fifteen times as frequently as the same articles presented by the same arguments on black and white. This ratio is undoubtedly much higher than would ordinarily be obtained, since the few colored pages which the catalog contained would stand out very markedly. Other estimates vary from 30 to 300 per cent greater returns for color. Lucas and Benson feel that color hardly justifies the expense in printing, but this is in sharp disagreement with other authorities.

(2) *Purposes of Using Color.* (a) The greatest value of color is to attract the attention of the reader. In turning the pages a colored illustration will stand out as it flashes by, and the reader is more likely to stop than if nothing but the usual black and white meets his eye. (b) More rapid reading is possible if the color combinations are selected from the standpoint of legibility. Luckiesh has shown that black letters on a yellow background furnish the greatest legibility; that green, red, or blue on white follow in this order; and that green on red or red on green are the least legible of the various combinations of standard colors. White letters on black, the reverse of the usual, have poor legibility value, although their contrast and novelty may be sufficient to attract one's attention.

(c) The product can be depicted better and more meaningfully. Clothes, rugs, cars, foods, and paints can be made much more realistic. (d) Perspective can be produced on a flat surface by show-

ing the background in the darker purples and blues, and reserving the brighter colors for the foreground, just as we can observe in a distant scene.

(e) Distinction can be achieved by the choice of certain colors which we consider to be more sober and conservative, or associated with high-class objects. Purple, for example, has traditionally symbolized royalty. We pointed out in the last section that distinction and attention values may run somewhat counter to each other.

(f) Individuality can be gained by use of one particular color. The familiar red-and-white band on Campbell's Soup and the ease of recognition of any of Maxfield Parrish's paintings illustrate this.

(3) *Choice of Colors.* The choice is rather limited at the outset, since the color must be at least reasonably realistic. The background is the chief variable. We have to choose between flashy colors for attention value and the more sober ones which suggest dignity and quality. Legibility of the lettering is another consideration.

Many of the colors cause characteristic feeling tones, whether native or ingrained through tradition. Red is associated with war, anger, and courage; blue is stately and soothing; purple gives an impression of royalty, stateliness, and pomp; yellow in certain shades is gay and warm; greenish yellow suggests disease and cowardice. The last named would ordinarily be avoided, unless one wished to inspire fear or dread through a negative appeal. Other colors would be chosen according to the particular purpose.

Sex differences in color preference have been suggested, but these are found to be very slight. Both sexes prefer red and blue above others, and both dislike yellow. Current styles undoubtedly influence preferences, particularly in women's clothing. Preferences should be studied in relation to the article advertised, not on a basis of absolute color.

III. HEADLINES

(1) *Functions.* The illustration and the headline are the first two parts of the advertisement seen, since they are in large scale, occupy at least half the space, and are at the top. The picture serves to attract attention and in many cases to depict the article. The headline also attracts attention to a certain extent, but its most important

function is to arouse interest. If it is made so attractive that the reader will go through the advertisement more thoroughly than otherwise, it has served its function very well.

Memory value should also be considered. Probably the majority of readers do not go beyond the headline and illustration; so one should plan to have the advertisement fairly complete in meaning through these two parts alone. For this reason one should be extremely careful in wording the headline, so that it will both inspire people to go through the rest of the advertisement and furnish some memory value to the more hasty reader.

(2) *Choosing the Headline.* It is chiefly through the headline that one displays the appeals to the wishes, motives, and thoughts of the reader, as discussed at some length in the last chapter. It is here that one makes the chief effort to tie up the outstanding selling-points of the product with human interests.

Hotchkiss suggests these criteria for headlines: they should be short, specific, apt, original, and interesting. Belding also gives some recommendations, in question form. One may test a projected headline by asking these questions: (1) Do I get my man? (2) Have I used primer words? (3) Have I tied to the news? (4) Have I touched an instinct? (5) Have I invited action? (6) Have I invited reading?

A question which arises is whether the headline and the illustration should present the same argument. With some appeals, such as beauty, social acceptability, and family regard, the picture can supplement the printed appeal very nicely, but others, like price or quality, are difficult to demonstrate pictorially. The problem comes down to deciding whether one wishes to stress a single appeal with double force or to use coördinate appeals.

A similar balance must be hit in wording the headline and text. We have stated that the headline should so arouse the interest of the reader that he will go through the rest of the advertisement, and also that it should be meaningful enough so that it will have memory value for the person who goes no further. These two are somewhat contradictory. One device to get the reader to go on is to have an unfinished sentence in the headline. To complete it one must start reading the text material, where the really potent arguments are brought out. This is rather risky, however, as the person

who reads only the headlines may not derive any meaning. So in general it is considered better to confine the headline to arousing interest and to stating one main argument.

It is preferable to have the headline relevant and meaningful. Novelty headings may arouse curiosity, but their memory value is poor and they may interest only a fraction of the audience. Before one ventures to use an irrelevant device to arouse interest, he must be confident that the appeal is so alluring that a large proportion of readers will go on to the meat of the advertisement.

Tying up the headline with current topics of general interest is an effective device, since it hits the present interests of more people than would any other appeal. "On your summer vacation . . ." or "When winter comes, will you be protected against . . ." are ways of starting selling arguments for many articles. "Enough men are wearing Paris Garters to elect the next President easily" appeared in the *Saturday Evening Post* just before election. Advertisements for radio sets are especially strong on seasonal appeals, suggesting the desirability of bringing in baseball, football, or hockey games, election returns, market quotations, and of whiling away long winter evenings.

(3) *Mechanical Set-Up*. There are several points of psychological importance in constructing the headline. The first consideration is the number of words. Obviously, the fewer words the larger the type for each can be. For purposes of legibility and ease of reading, four to six words are ideal. If more are desired, it might be well to split the heading into two lines, thus permitting the use of a fairly good-sized type. If the advertiser wishes to stress a second point or to amplify the first, he may use a secondary headline in somewhat smaller type between the first and the text.

Type, like color, exerts certain subjective influences on the reader. The Dodge Company for many years enhanced their main selling arguments, dependability and durability, by using a heavy block type in their headlines. Advertisements for trucks use this same type face. Grace and speed may be suggested by lighter sloping lines. Italic and Gothic faces suggest quality, refinement, and æsthetic features. An Oriental effect has been created by using a special type face simulating brush strokes. Speed of reading of the unusual and ornate types is rather slow, but there is less worry on

this score in connection with a headline of a few words than if the whole text were printed in this way.

IV. TEXT

(1) *Purpose.* The text is the body of material in small print, usually found below the illustration and headline. It is described by Lucas and Benson as being "the part of the advertisement which most closely resembles the argument of the personal salesman." Accordingly, we would presume that this part takes care of the conviction feature. It is here that we meet logical arguments and figures. If the reader's interest has been sufficiently aroused so that he is willing to go on, he will devote a certain amount of energy to studying and analyzing the merits of the product.

(2) *What to Place in the Text.* Since as a general rule the text is straightforward logical presentation, it is to the majority of readers the least interesting part of the advertisement, and must be so treated. One must curb a tendency to bring out many details.

The first consideration is whether the advertisement is suggestive or argumentative. If suggestive the text will be shorter and a more direct appeal to the emotions will be made. If argumentative, the text will occupy a larger proportion of the whole advertisement, as the article is such and the readers will be interested in such a way that a number of good sound arguments are in order. A combination of the two can be effected by arguments by analogy, telling a story or using other human interest material. This has the merits and drawbacks of any irrelevant or novelty appeal. It seems better to make the message pertinent, and directed right to the selling-points, like economy, durability, and uses.

Like other parts of the advertisement, the text should not be jammed too full of arguments. An important text appeal may be featured by printing that paragraph in bold-face type. Various strong points may be spread over successive issues. Advertising is not carried on in single issues or spurts, but rather through campaigns planned well ahead. One can plan to use different selling arguments and to aim at different classes of potential buyers in successive issues of a magazine. This not only takes some of the burden off of each single advertisement, but it provides new points

in later variations of an advertisement to interest the constant reader. Each advertisement must be complete in itself, however.

V. TRADE MARKS AND SLOGANS

(1) *Functions.* Physically the trade mark is the smallest part of the advertisement. But it is very important in providing a link between the advertisement and the article itself as displayed in retail stores. Memory, then, is its chief value. It is a constant in the midst of a number of variables. One can always identify the product or advertisement of a certain manufacturer by this little symbol, design, or name.

(2) *Value.* A well-chosen trade mark or trade name has tremendous advertising and selling value. This has material proof in the value assigned to it when a business changes hands. There is a certain item, often very large, above the value of goods, raw materials, and plant, added to the valuation because of this intangible feature. The value is also shown in another direction, when disputes over infringement arise. If by imitating, with only a minor change or two, the trade mark or name of a well-established company, a new one is able to build up a large business, the value of this good-will feature is demonstrated.

A well-chosen trade name or slogan will often receive a lot of free advertising. In personal conversation one hears such expressions as "99 44/100 per cent pure," "Eventually, why not now?" "Unneeded." Kodak has so symbolized photography that it has almost displaced the word camera in our language. "Caterpillar" is similarly used to refer to tractors in general, whether of that make or not. Rolls-Royce has for so long been a car of supreme quality that it is used as a standard of reference, to designate quality, luxury, and wealth.

Finally the trade mark has value in guaranteeing to the regular customer goods of constant quality and standards.

(3) *Types.* There are three main types of trade mark. The first is the trade mark proper, or design. The seals used by the Bell System, Columbia Phonograph, U. S. Rubber Company, General Electric, and Smith Brothers illustrate this. The second type is the trade name: Postum, Coca-Cola, Cliquot Club, Post Toasties, and

Kodak. Thirdly, we have descriptive or catch phrases. "It floats," "Economical transportation," "Good flour makes good cooks better," are examples.

(4) *Selection of Trade Mark.* The mark is a means of identifying the advertisements and products of a company, just as one's personal signature is the proof of his work. It may have as its chief characteristic a certain design, a picture, a face, a color, or a signature. It is recommended that the trade mark be distinctive, easily identified, suggestive of the product, and of permanent value. This last point is suggested as a result of the experience of several companies which have featured a human figure performing some action, and have found, after a few years, that the trade mark looked antiquated because of changes in clothing styles. Designs which are familiar to all of us are the red and green design of Lucky Strikes, the script letters "G.E." on all General Electric products, the yellow triangle of the Ethyl Corporation, the two bearded gentlemen on Smith Brothers' cough-drop boxes, and the Rocky Mountain goat used by the Great Northern Railroad.

(5) *Selection of Trade Name.* It should be short—Lux, Mum, Jello, Ivory, Kodak, Victor. It should be easy to read and to pronounce. This principle is frequently violated by tooth-paste manufacturers, who devise such fanciful combinations of meaningless syllables that one feels positively embarrassed to go into a store and ask for a particular brand, for fear of having his pronunciation corrected. The writer noticed, once while driving through Northern Illinois, a series of highway billboards advertising a candy with the trade name of "Beich." Under each was the exhortation, "Say 'Bike.'" When such instructions are necessary, the trade name seems unsuitable.

The name ought to be suggestive of the product or its uses: Jello, Flit, Ground Gripper, Kro-Flite. Otherwise it will take longer for the public to learn to associate the trade name with the product; meaningless associations are much slower in formation. The name should be dignified and suggestive of the qualities of the product, whatever they might be. The writer once owned a tennis racket named "Attaboy." Actually it retailed for over fifteen dollars, but his friends could never be convinced of this after seeing the name. Much better are such names as Dreadnought Driver, Top-Flite, and

Davis Cup. Foreign names seem to lend distinction; and certainly add to the price. French perfume can be sold for twice the price of domestic perfumes of equal quality. Finally, a trade name should be so devised that it is not easy to copy, and is not easy to confuse with that of a rival.

(6) *Selection of a Slogan.* Companies frequently devise some catch phrase which is used in their advertising for a season or longer. The "It Floats" slogan of Ivory Soap is one of the oldest. Buick for years advertised "Valve in Head," but now, with automobiles being bought in less technical fashion, this has been discontinued. Plymouth advertising advises one to "Try all three." This incidentally shows that the company is not only unafraid of competition, but is willing to invite it. Other easily remembered slogans are "Not a cough in a carload" and "Just Wright Shoes."

Practically the same principles apply to selecting the slogan as the trade name. One has somewhat more leeway, however, since he has several words at his disposal and since he does not have to commit himself for such a long time. Catch phrases have excellent memory value and often will be repeated in every-day conversation.

(7) *Infringement* is a very interesting problem and one particularly open to psychological approach and treatment. New, weak, and unscrupulous companies try to profit by the reputation built up by expensive advertising and quality production through using a name so similar that people who give the article only casual inspection may purchase the wrong item. Accordingly, the government allows companies to protect themselves by registering their trade marks. Some very interesting suits have developed as a result of claims of infringement. One concerned a company which put out "Arrow" collar buttons. The makers of Arrow collars protested, but at first were denied, since it was alleged that while the name was the same, the merchandise was not clothing and so did not conflict. Appeal led to reversal on the grounds that the fundamental question was what the public would think. Since collars and collar buttons are complementary equipment, it was felt that the majority of people would assume that the same company produced both.

Laboratory tests have been conducted on confusion of identification and memory, and their results have agreed only slightly with

TABLE 52. CONFUSION VALUE OF TRADE NAMES

Original	Imitation	Order	Percentage of Confusion	Legal Decision
Spur	Par	1	20	Non-infringement
Cutex	Cuticlean	2	23	Infringement
Necco	Nawaco	3	33	Non-infringement
Jello	Mel-O	4	33	Infringement
Sozodont	Zodenta	5	37	Non-infringement
Hebe	Meje	6	40	Infringement
Cottolene	Chefolene	7	47	Infringement
Peptenzyme	Pinozyme	8	67	Non-infringement
Colonel	Colonial	9	73	Non-infringement

court decisions. In Table 52 we quote some results from a study by Shure, reproduced in Poffenberger's text. We see that in one case where confusion with the original occurred less than a quarter of the time infringement was ruled, while two others which caused over two-thirds confusion were held not to be imitations. It is not possible to lay down generalities as to what constitutes infringement; each separate case has to be settled through a laboratory test.

VI. LAYOUT

(1) *Importance.* We have been discussing the separate parts of the advertisement, and have made scarcely any mention of the relations of one part toward the rest. The whole must be built up so that the reader has his attention called toward the advertisement, so that he is directed through it in the proper order, so that each item occupies its proportional size and place, and so that the whole is balanced.

It is perfectly conceivable that the advertisement as a whole may fail, owing to faulty arrangement at the same time that the separate parts may all be excellent. A case is quoted where an advertisement which just did not seem to "click" was changed in several minor aspects. A rather prominent border which seemed to distract attention from the main features was removed; the headline was put in reverse, white letters on a black background; the type underneath the headline was made smaller; a black bar was placed at the bot-

tom; and a black circle was placed around the text material with the illustration breaking it at one place. These changes may sound rather extensive, but they are all of minor elements which are ordinarily not noticed. The same headline, illustration, and text were used. These changes in layout reduced the cost of inquiries (*i.e.*, number of response letters divided by total cost) from around two dollars to seventy cents.

(2) *Practical Devices*. In respect to the major features there is one traditional layout which is followed in almost all advertisements. The illustration is at the top, the headline just below, and the text follows. At the bottom of the page we find the trade mark, return coupon, address of the firm, etc. Occasionally there is a slight variation, the headline being at the top, with the illustration just below. There are a number of possibilities for variation, however, in the minor features.

(A) *Border*. Attention will be better directed to the advertisement if it is set off from surrounding material. A border of black lines or of some special design will assist in holding together the advertisement and in keeping it apart from others and from the narrative material of the magazine or newspaper. This is particularly important for an advertisement on the lower half of the page; some outstanding feature is necessary so that the reader will separate it from what is above, and not pass it by entirely. Border lines may be so designed that they are suggestive of the product or the company, as seen in Figure 31. Designs may also be arranged to be appropriate for the season—for example, holly berries around Christmas-time. Just as with type faces, there are certain emotional attitudes which may be set up by the character of the border. Actual use of borders has decreased considerably in the last few years.

(B) *White Space* accomplishes practically the same purpose as borders. By isolation the advertisement gains in attention value. Strong conducted an investigation on the effects of using different proportions of white space. He found that 20 per cent white, or vacant, was the most effective. Having as much as 60 per cent of the area blank was beneficial. Overcrowding is thus seen to be inadvisable. A certain amount of vacant space creates an impression of more dignity, like a large drawing- or reception-room.

(C) *Reversed Lettering*—white letters on a black background—

BALANCE
The only Balance[®] pen which is guaranteed to last for life.

SHEAFFER'S LIFETIME[®] PEN

No one will ever wear out his Sheaffer's Lifetime[®] pen

Come what may, Sheaffer's Lifetime[®] pen is simply and flatly guaranteed to serve well as long as you live. Some pen guarantees cover defects in material, some cover only certain parts, some expire in time. But Sheaffer's Lifetime[®] guarantee is unconditional, the pen is perpetually our responsibility. Moreover, through Sheaffer's Balance[®] design you enjoy relaxed writing forever—no top-heaviness, no finger cramp. And with Lifetime[®] pens, the points are made individually for each handwriting style. Is it any wonder that Sheaffer's sales lead the world? You are paying for Sheaffer writing service. Why not have it? And with it, enjoy Skrip, the perfect writing fluid in the leak-proof, practically unbreakable Safety Skrip package that saves rugs and clothing and keeps Skrip in perfect condition. Every literate person from 5 to 100 years of age should have Safety Skrip!

At better stores everywhere

SHEAFFER'S
PENS-PENCILS-DESK SETS-SKRIP

W. A. SHEAFFER PEN COMPANY FORT MADISON, IOWA, U. S. A.
New York Chicago San Francisco
W. A. Sheaffer Pen Co. of Canada, Ltd. Toronto London, England
Wellington, N. Z. Sydney, Australia

1932 U. S. Pat. Off. © W. A. S. P. Co. 1932

SAFETY SKRIP
Successor to Ink,
Stamp-filled 50c

FIGURE 31. SHOWING APPLICATIONS OF PRINCIPLES OF BALANCE. (Courtesy of W. A. Sheaffer Pen Company.)

gives added attention value and will catch the reader's eye where he might otherwise pass by the advertisement. This contrast device is used much more frequently in newspapers than in magazines. It is often seen on the theater page in large city newspapers, where moving-picture announcements are placed in single-column width and not more than an inch or two in height. The speed of reading of this type is slower than the usual black on white, so it is suggested that only the few words of the headline be printed in this way.

(D) *Avoid Overcrowding.* Just as a speaker may overrun his time, so does the advertiser tend to put too much material into a single advertisement. We have previously suggested that one appeal be used at a time, and others saved for subsequent issues. One should practice self-restraint in what he puts into the advertisement and keep it fairly simple. Not every inch of space needs to be occupied. This applies particularly to the amount of text material and to the insertion of several illustrations.

(E) *Guiding Through the Advertisement.* One should plan the advertisement to carry the reader through a process largely corresponding in order to the five functions of the advertisement. His attention must be aroused by certain features; then he must be interested so that he will spend some time absorbing the appeals and arguments set forth; and then he must be convinced. Memory and purchase follow. If the traditional arrangement, from top to bottom, is followed, there is no particular worry about the order of reading. But each advertisement presents its own problems. These are especially acute where more than one illustration is used.

An arrow, a hand pointing, or a figure looking toward something are good mechanical devices which direct the reader's attention and guide his eye movements in the desired direction. Wide differences in the ability of advertisements to gain attention have been traced to as simple a thing as whether a human figure was facing inward or outward. Apparent motion is another device which is useful in gaining and directing attention.

In case there are several illustrations or several articles described, as when a company advertises various of its products at once, there are several suitable arrangements for guiding the eye through the layout. Technical treatises on advertising speak of the C, S, and Z shapes, with reference to the general arrangement of the various

illustrations. These are very frequently seen, so we shall pass over them with only this mention.

(F) *Balance* is an æsthetic matter which can make a difference in the reader's feeling toward the advertisement and can also influence his ease of going through it. In general, balance is attained by symmetry in the vertical and horizontal dimensions. The ideal position for the main feature, say an illustration of moderate size, or the center of a larger one, is in the middle of the page horizontally and about 40 per cent below the top on the vertical axis.

A fine example of balance is seen in Figure 31 on page 425. The upper four writing implements are balanced in pairs, and all point to one spot. And this spot is right in the middle of the page. The two lower objects also have equal angles. This same advertisement illustrates two other principles. There is an art border, which is arranged in an "S" shape, corresponding with the Sheaffer initial. This "S" also contains all the main features of the advertisement with the exception of the small amount of text material.

A reasonable departure from a symmetrical arrangement is permissible, although we usually find that even in these exceptions there are definite configurations. Suppose there are two or more illustrations, each accompanied by some descriptive material. It would be rather monotonous to have each illustration with its text just below, or to have all illustrations on the left with the text at the right. Alternation or some sort of varied arrangement will make the effect more pleasing, as long as the whole is not thrown too far out of balance.

(G) *Presenting Secondary Appeals* complicates problems of arrangement. Suppose we wish to show the various body designs of a new model automobile or wish to bring out an argument just slightly less important than the main appeal featured in the headline. It will probably be most effective if one illustration is featured prominently and the others are placed in miniature farther down the page, possibly occupying some of the space usually devoted to text. These latter models may be given the main emphasis in turn in succeeding advertisements. A secondary headline may be differentiated from the first by having the main one above the illustration and the one of lesser importance below the picture in smaller

type. This device is also useful to lead the reader by gradual steps from the headline into the text.

PART II. PUBLISHING THE ADVERTISEMENT

We have discussed ways of designing the advertisement so that it makes the best impression on the reader. There are a number of other considerations entirely apart from the design of the advertisement itself. With the same general copy, there may be variations in the choice of the magazine or newspaper in which it is placed, frequency of insertion, size, and the place within the journal.

This is not to be taken too literally. In a quarter-page advertisement one cannot have some of the details that are placed in one of a full page. The chief appeal may be varied according to the type of reader: women, children, sportsmen, or technical experts. One cannot design an advertisement without knowing where it is to be placed and how large it is to be.

VII. SIZE

Advertising is expensive and most companies have to plan carefully to derive the greatest return from their expenditures. The first problem that arises is that of the size of the advertisement and the frequency of publication. Is it better to use a quarter-page each week, or a full page once a month?

Psychologically the problem of size comes down to attention value. If one sees the advertisement it will be equally effective regardless of size. But there is danger that a small one will not be seen at all.

Several experiments have been conducted on the value of size. Because of different conditions of the experiments, the results cannot be lumped to permit simple generalization. Some tested recall, some recognition; some studied length of time spent on various advertisements; some used actual returns from advertisements; and others tested in laboratories. The most valid results are those of sales produced by one size or another. Unfortunately, it is not always easy to isolate a single factor like this. We take this table from Strong. From this Poffenberger suggests that, "regardless of the number of repetitions, the experimental value does not vary

TABLE 53. ATTENTION VALUE OF SIZE

Number of Exposures	Quarter-page	Half-page	Full-page
For advertisements seen once	1.00	1.45	2.00
For advertisements seen twice	1.00	1.50	2.24
For advertisements seen four times	1.00	1.28	2.00
Average	1.00	1.41	2.08

directly as the size of the advertisements, but rather that it conforms very closely to the theoretical square-root relationship." On this basis the expectation would be 1.00, 1.41, and 2.00; the figures nearly fulfill these expectations. The results of this investigation would suggest using smaller advertisements more frequently, or placing smaller ones in several magazines simultaneously. There is a possible source of weakness in this study, as in any laboratory investigation, since attention is fairly well directed, while in a life situation it might not be.

Starch shows the comparative returns from different-sized advertisements to be in almost direct ratio to their size. There is another possible discrepancy here. Different types of advertising are placed

TABLE 54. COMPARATIVE SIZE VALUES OF DIFFERENT SIZED ADVERTISEMENTS

Size	Size Ratio	Reply Ratio
Full-page	100	100
Half-page	50	53.5
Quarter-page	25	31.9
Sixth of a page	17	17.3

in advertisements of varying sizes. Want ads, theater and movie announcements, and similar notices which are eagerly sought for can be safely placed in small print, since readers voluntarily look for the notice. In general the writer feels that the larger the advertisement the better. There are exceptions: a two-page advertisement is probably less than twice as effective than a single page; successive pages probably do not bring in as high a return as the same space in several journals or in successive issues; and size makes less difference in advertisements for which attention is voluntary. Practice is a fairly good index in the business world; if the trend is toward larger advertisements it must be because smaller ones did

not draw as many returns. The unit cost of preparation is less for a large advertisement, since presumably the same time would be consumed in making up one, regardless of published size.

VIII. FREQUENCY OF INSERTION

Frequency and size are problems which go together. One cannot be considered without the other. There are only a few exceptions. Seasonal advertising, say of skating or golf supplies, has to be concentrated. One may insert advertisements for these goods somewhat more frequently for a short time than he could afford to do over the whole year.

There are also variations depending on the status of the advertised goods. If a new product is being introduced the company will probably choose to advertise somewhat beyond its normal amount for a while in order to build up its sales. Thereafter it can ease down, and advertise just frequently enough to keep interest and memory alive.

We occasionally see reference to the curve of forgetting as applied to frequency of advertising. In technical learning terms the question is probably more one of relearning and overlearning than of simple retention or forgetting. One does not see a product advertised just once and never again. Rather he sees it at regular or irregular intervals. Not everyone sees the first, or any subsequent, advertisement. So the suggestion that, since a thing is better retained if better learned, insertion should be fairly frequent at first, and then gradually spread out, is not entirely appropriate. The laws of forgetting have been derived from laboratory experiments, where attention is voluntary and learning is complete. The question in advertising is one of incidental memory, not purposeful learning and retention. Yet from such evidence as is available we may recommend an intensive short campaign at the outset, followed by a more widely spaced and a less expensive steady program.

IX. LOCATION WITHIN THE JOURNAL

The charges for space in different locations in the magazine differ greatly, which is recognition of the fact that advertisements in

certain locations attract more attention than if placed elsewhere. The preferred spaces are the two pages inside the front cover, the first page after the main block of solid reading material, the middle double page, the back cover and the two pages immediately preceding, and the page opposite the table of contents.

It is rather difficult to attempt to evaluate these in relation to one another and to the rest of the pages. They are usually bought by the larger companies, which might be assumed to have better advertising than others, anyway; so their advertisements might produce better results even if location were no factor. Further, these pages universally carry color, which gives them greater attention value.

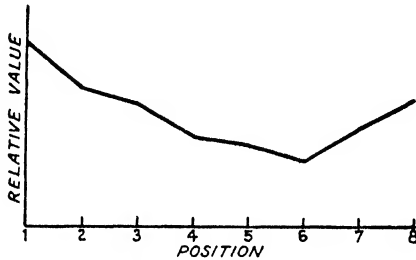


FIGURE 32. PROPORTIONATE VALUES OF DIFFERENT POSITIONS.

There is good agreement as to the proportional values of the rest of the pages which are not in preferred locations. The general tendency shown for eight advertisements in Figure 32 is typical. The first advertisement shows the best returns, the second and the last are just below it in value, then the third and next to last, and so on. In fact the whole curve looks very like one we might obtain by hanging a slack rope, with one end just a bit higher than the other.

Practical application of these facts would be that one should request one of the first or one of the last pages, if he is not using a preferred location. The intermediate pages generally cost equal amounts, so price is not a consideration within this section.

Apart from these general factors it may be desirable to place the advertisement in a position where the class of people sought as customers will be likely to see it. This is easy in newspapers, where

the main news, feature, household, sports, and financial sections are clearly separated. In magazines such coördination is more difficult, calling for careful planning ahead and laying out the pages. One sometimes sees sporting goods advertised near an article on some phase of sports, or travel advertisements next to a story of that nature.

For advertisements of less than a full page the position on the page may make some difference. One's eye hits the upper right-hand corner first, so this quarter is to be preferred.

X. CHOICE OF MEDIUM

The advertisement must be placed carefully. One cannot give it to the first magazine or paper one hits on, nor can it be published where it costs the least. The vital consideration is the cost in cents for each sale which results from the publicity. A higher initial cost may prove ultimately economical, if that medium reaches more readers who become customers.

The most important things to consider are the extent of circulation and the class and interests of the readers. Information on the first is easy to obtain. Certain estimates may be made of the habits of subscribers by analysis of totals by states and cities, knowing their chief industries and outlooks. In the case of newspapers one may study the residence within the city of subscribers of each paper. It is difficult to make better than a fair estimate of the occupations, financial status, social position, and degree of education of readers. This might be inferred indirectly from the nature of the contents, since editors have to plan their articles and editorials to match the tastes of readers.

This list of questions is suggested for consideration before one gives any advertisement to a magazine or paper:

1. How large is the circulation?
2. How wide a geographical territory does it cover?
3. Are readers urban or rural?
4. Does it aim at a specific class of readers, or is it general?
5. What is the average economic status of the subscribers?
6. What occupations are they in?

7. Is it "highbrow," or does it circulate more among the poorer and less educated classes?
8. Is it circulated among men, women, or both equally?
9. Does it appeal to people of particular interests—sports, travel, technicians, gardening?

XI. RESEARCH; STUDYING RETURNS

(1) *Tryout Campaign.* Before one commits himself to an extensive and expensive campaign it is good policy to test projected advertisements. The writer of the copy knows more about the product and is more interested in advertising, so his judgment or that of other members of his department may not be indicative of the impression it will create on the public.

There are three general ways of trying out an advertisement. One is to select a group of people, preferably some who are not technically interested in advertising, and test their reactions to the trial advertisement, particularly as to interest, length of time spent on it, ease of reading, comprehension, and memory. The deliberate opinion of a group of average people can be obtained in this way. A second way is to post the projected advertisement in some prominent place and watch to see what attention passers-by give it. One may place two advertisements in a show window and study, unknown to the onlookers, the interest expressed in each. In this way the relative effectiveness of various appeals, illustrations, texts, colors, etc., may be studied. The third way is best of all. The advertisement may be placed in a magazine or newspaper of limited circulation and low rates, and returns checked. Slight variations may be tried, and the relative effectiveness of each determined. Then the copy to be used in the intensive campaign can be built up with more assurance of success.

(2) *Coupons.* Many advertisements carry coupons at the bottom to be filled out and returned to the company as a direct order. These are usually keyed so that the particular advertisement which was responsible for the sale may be identified. There are several ways of keying. A common way is to use a department number which is changed for each issue and each journal, as "Address Smith and Company, Dep't. 107-A." The magazine may be identified by symbols, as "SEP-11-23," meaning the *Saturday Evening*

Post of November 23rd. "Mention the *Geographic*" appears at the foot of the advertising pages of that magazine. Compliance with these instructions will show that customers were attracted while reading the *Geographic*, and will incline the advertiser to continue favoring that magazine with business.

(3) *Media*. One should ascertain which journals give the best return. Identical advertisements appearing simultaneously in two different media may bring very different results. Advertisements to attract advertisers occasionally appear in papers, magazines, and advertising trade journals. These show the extent of circulation and sometimes quote figures to show the greater drawing power of advertising presented to their readers than to the circulation lists of their competitors. *Liberty Magazine* inserted such a one in the *Chicago Tribune*, showing two identical advertisements. It stated that the one which was in *Liberty* "stopped 71 per cent more persons per dollar invested than the other." One must be cautious in interpreting such figures, as a certain appeal may hit squarely the readers of one type of magazine and not interest the subscribers of another; poor returns may be because the advertisement was not appropriate and not because the magazine itself was not an effective one. The same product may need different appeals to go over with different classes of readers.

(4) *Difficulty of Tracing*. A large company, like any of the major cigarette producers, automobile manufacturers, or mail-order houses advertises simultaneously in many magazines and newspapers, on billboards, through mail, and in showrooms. Hence it is practically impossible to ascertain which particular bit of publicity has persuaded the individual to buy. This is even more complex when exactly the same advertisement is featured in newspapers, magazines, and billboards. This practice has characterized Lucky Strike advertising for several years. In this case, however, we can determine the effectiveness of the appeal, even if not of the medium. Coupon returns provide the only positive and isolated means of tracing the pulling power of any particular bit of publicity.

(5) *Use and Misuse of Successful Appeals*. If a tryout campaign or actual use proves an appeal or a complete advertisement to be effective, the natural tendency is to use it more widely. There are two limitations to this procedure. The same appeal cannot be used

indefinitely. Seasonal changes may lower its effectiveness after a certain lapse of time. The prospect of cold weather may be pleasing rather than appalling in July. Further, readers will get tired of seeing the same copy constantly.

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to prepare his copy weeks ahead and can only estimate roughly what may occur about the time of publication. But the local merchant can take advantage of prediction of rain or frost, news of a convention meeting in the city, or timely current affairs, and plan his copy accordingly. Certain days are traditionally devoted to certain activities: Monday is wash day; on Saturday people tend to go to theaters and dances; in many cities maids are given Thursday afternoon and evening off; and lodge meetings may be held one particular night. Goods or services appropriate to each of these may be featured on that day.

In local advertising the wording is usually somewhat more personal than in a widely circulated medium. As we pointed out while discussing the history of advertising, many of the earliest advertisements were news items of both personal and commercial significance. This touch has not been lost yet. As Sheldon puts it, there is a "John to Jim feeling."

The next important consideration is the way in which people read newspapers. Attention is somewhat more voluntary to a paper, since it is read to keep oneself informed of daily events, while a magazine is read primarily for amusement and usually only secondarily for purposes of instruction. Certain parts of the paper are consulted for the advertising as much as for the news stories: theater page, want ads and personal notices, travel section, sales and bargains. However, the newspaper is read rather hastily, especially in the morning. It is very short-lived; the morning paper is rarely referred to after noon, or the evening paper after that day. These facts have important applications. The advertisement must be short and simple, and it must impel the reader to immediate action. Many advertisements are specifically designed to attract the shopper or the worker on his way to the business district. Prices are featured more prominently than in magazine advertising, where such immediate action is not sought and where perusal is somewhat more leisurely.

Since evening papers can be read in more leisure than morning ones, and since most places of business, except theaters, are closed until the next day, one might imagine that there would be some differences in make-up of the advertisements designed for the two. Actually there does not seem to be any particular differentiation.

Another important difference between magazine and newspaper

advertising is that the latter is usually attempting to draw customers into a place of business, while the former is trying to sell one particular product. The national advertiser is selling one particular brand of soup or tooth paste, while the local storekeeper does not care so much what brand the customer purchases as long as he buys it at his place of business. This distinction is not true without exception, as many of the larger dailies carry much national advertising. But these usually carry the name or names of local dealers who stock that item. Local advertising often caters to steady customers, a practice which is not very feasible in national publicity campaigns.

The outstanding apparent difference between the two types of advertising is the absence of color and artistic illustrations in the newspaper. This is due to the poor quality of paper and to the high speed of printing. The illustration, where used, shows only the article for sale without any serious attempt at artistic features. Little background, or even accuracy of contour or gradation of shading, is seen. Lately there have been a few colored pages in newspapers, but these so far have been confined to rather crude splashes designed more to attract attention than to give better depiction or to make the effect more decorative. What future this has is impossible to predict.

III. STREET-CAR CARDS

People riding on street cars and buses rarely have anything to do. The trip is comparatively short, the distractions are many, and the jolting prevents much reading. If one is alone, he cannot talk, and even if he has a friend with him, he may hesitate to engage in much personal conversation with so many around. All in all, the ride is usually very boring. Conditions are highly favorable for the advertiser. In terms of the percentage of potential readers who actually do read, attention is probably better than for any other type of advertising except that used in the movies. It is still higher when the cars are so built that people sit on lengthwise benches. Then there is the choice between staring at people opposite and looking at the advertising over their heads. In the subway there is nothing to be seen outside the windows; in these, with all conditions favorable, as

high as 50 per cent of passengers have been observed to be reading the cards at a given time.

Since the cards are rather simple, to be readable from a distance, they will often be read several times apiece during a ride of fair length. This repetition amounts to nearly the same thing as several successive insertions in a magazine or newspaper, except for the lack of temporal intervals.

In contrast to most other types of advertising these cards are not controlled by the reader, but must remain at a constant distance. The nearest one will be at least five feet away, and the farther ones as much as forty feet. The middle of the car is the most advantageous position for reading, yet there are many cards as much as twenty feet distant. Since the cards are rather small—eleven by twenty-one inches is standard—the various features will have to be large scale and the whole will have to be simple in design. Text is out of the question. What we usually see is a picture, colored or plain, possibly a colored background, and from a few to not more than twenty words. Color is perhaps not quite so important as in a magazine, since attention is more spontaneous.

Since the cards are necessarily simple, the information, arguments, and suggestions possible are rather limited. Therefore the use of street-car cards is usually confined to supplementary advertising. By means of newspaper and magazine publicity a product is introduced to the public, and it is kept fresh in the mind by street-car cards and other posters.

A part of this reminder function is the fact that the card is often the last thing seen before one goes into a store to purchase. This suggests the well-known law of recency in learning. One tends to remember better and to repeat those things which have occurred most recently. In advertising, one would prefer to make the first and last impressions on a customer, and take a chance on the products to which he may have been exposed in the meantime.

In general the articles advertised in street cars are those of low price, mass use, frequent and quick purchase. Among the most common are: standard articles of clothing like sox, silk stockings, handkerchiefs, neckties; toilet articles, foods, and confectioneries; cheap household articles; common magazines and newspapers. These

are very close to those previously named as appropriate for suggestive advertising.

IV. OUTDOOR ADVERTISING

(1) *Highway Billboards* may be located along the roads in open country, just as one enters the city limits, or alongside railroad tracks. They are seen by people who are traveling fairly rapidly. The driver at least must pay attention to the road, and the passengers may be so occupied with other matters that the advertiser cannot count on more than fleeting attention.

The placement of these billboards is an important matter. What might be termed a preferred location, like a cover page of a magazine, is one which is directly ahead at a turn. One cannot help seeing it by day, and by night the lights of the car illuminate it. Companies often take advantage of corners to combine their advertising with warning signs, arrows pointing the correct turn, or models of policemen directing traffic. Giving the distance to the next town is of interest to the motorist, and keeps attention on the billboard longer than would otherwise be the case.

Signs are sometimes placed outside or near establishments along the road, like filling stations, restaurants, tourist camps, or hotels. One should calculate carefully the appropriate distance from these for placing the sign. If the only sign is right in front of the building, most tourists will pass by. At forty-five to fifty miles an hour it is difficult to stop within a quarter mile, even with an instantaneous decision, for since most cars have several occupants, a little time will be necessary to discuss whether they will stop now or later, and time for this must be allowed. A sign about a half mile away, as well as one directly in front of the place, seems advisable. Attractive signs even farther away may make tourists wait until they get to the advertised establishment, instead of stopping at the first one they see.

In advertising a hotel it might be well to consider the entire distance covered by the motorist during the day. Signs within even as much as fifty miles of the city concern only those travelers who pass by it after the middle of the afternoon. The Sir Walter Hotel at Raleigh, North Carolina, has frequent billboards all the way down

from Washington, about 300 miles. Each gives the distance to Raleigh and emphasizes different features of the hotel. Since this is an average day's drive from a main center, it keeps hammering the motorist during the day. Those who start nearer in the morning may stop for lunch.

Since these signs are seen by motorists, there is a great preponderance of advertising aimed at their needs. Automobiles, tires, oil and gasoline, hotels and tourist camps, lunch places and barbecues, occupy a large share of the total. Certain other common articles and places to buy these things are featured—shaving cream, tooth paste, cigarettes, and soft drinks.

Railroad billboards follow the same general practices as those on automobile roads. The types of goods advertised are slightly different; factory sites, commercial enterprises, and hotels, as well as commonly purchased articles, are featured. Placement must be parallel to the tracks and at some distance, since vision is to the side rather than to the front, as in automobile riding.

The make-up of the sign is largely the same as in a street-car card, except for size. It is chiefly illustration and color. Few words are used, since the reader has very little time before he passes by. Judging by practices, the catch-phrase type of wording must be very effective. There is good chance for the use of color, since the paint-brush is used, and the technical limitations of printing are not encountered here. Appeals should be kept very general, since the audience represents no particular class, unless it could be said that those who own automobiles or ride on trains constitute one.

Mention should be made of the broken signs used by Burma Shave and a few other products. More words are used than can be put on a single sign, so they are painted on a series of signs with appropriate spacing. This novel type of advertising has created a great deal of interest and discussion, but it is uncertain whether this is due to the mechanical features, the novelty, or the catchy poetry. Sales are said to have jumped to many times their former amount. Yet there have been very few imitators, and one wonders. It may be that an imitation would for a long time be associated with the first product so advertised, and that no one wishes to put himself in this position.

(2) *Posters* present so nearly the same problems as highway bill-

boards that they warrant little separate comment. We recognize the following types: advertisements painted on side walls of buildings; on roofs; hung outside stores or the offices of professional men; sidewalk displays; and "sandwich men." Many are similar to highway billboards; others are of smaller size and have nothing but the name of the concern or individual on them, without attempt at description or evaluation.

(3) *Electric Signs* are largely confined to business and theatrical districts of cities. They are expensive to install and maintain, so must be placed where large and varying groups of people will see them at night. In smaller cities the signs are largely outside of movie theaters and a few stores and hotels, but in New York and Chicago one sees all manner of commodities advertised: phonographs, stores, beer, chewing-gum, tires, tobacco, etc. The brilliant display of "spectaculars" in Times Square is a sight never to be forgotten.

The chief value of lights is to gain attention. Both the contrast with surrounding darkness and the movement possible make them stand out. Possibilities for artistic effects and verbal description are very limited. So the nature of this advertising must be suggestive—to keep good-will and the name before the public.

(4) *Pernicious Influences*. The subject of billboards and posters cannot be dismissed without comment on some of their pernicious aspects. The citizens own the roads, which are paid for by them for their convenience and enjoyment. Companies therefore have a duty to the public. Welfare of the nation comes before the greed of one person or company. During the last few years there has been a growing tide of feeling against the practice of defacing the landscape by hideous and blatant signboards. Resentment is especially pronounced in regions of great scenic beauty. Recently measures have been taken to allow tourists their rightful pleasure from nature. Along the Columbia River Highway no signs are allowed; this was a provision when this scenic drive was built. Other communities have limited signboards to certain stretches of road, say within a mile of the city limits. One state recently considered placing a tax on all signs within a thousand feet of main highways. In recognition of the growing tide of disfavor several companies have voluntarily removed or reduced their signboards.

Outdated posters constitute another source of irritation. They

are bad enough when new, but even more disgusting when tattered and months out of date. The company which puts them up should be responsible for removing them, and possibly subject to fine or forfeiture of a deposit for failure to do so.

V. THEATER ADVERTISING

(1) *Programs* have the same advantages in attention value as street-car cards. People are bored before the show starts and between acts, and will read the program through time after time. The time which will be spent, coupled with the fact that the reader holds the sheet at a good reading distance, makes possible the use of a good amount of text material. Illustrations are not as important as in magazines, and color is practically never seen. The advertisement is predominantly headline and text.

Articles advertised seem to be chiefly clothes, toilet articles, and beauty shops. Sometimes we see advertisements for stores or automobiles, but general commercial advertising is not frequent. Most articles are of a personal nature.

(2) *Moving-picture Advertising*. The usual movie program consists of a main feature, a news reel, and a comedy. Sandwiched between these is advertising of various sorts. Commercial advertising may be in the form of lantern slides or of short films. One sees a man coming home at night and complaining about feeling tired, whereupon his wife says to him, "Well, dear, put on these slippers I got at —, and after you have eaten a steak from —'s market, and settled down in our — armchair to smoke a pipeful of — tobacco and read — magazine, I am sure you will feel rested." About then one begins to suspect that he is seeing advertising, not a comedy.

Coming attractions have largely replaced general commercial advertising. Patrons will stand for only a certain amount of time devoted to advertising, and apparently the managers feel that it is more profitable to keep up their own business than to take in less direct paid advertising.

The movies have an exceptional advantage in being able to command almost absolute attention. There are no distracting influences, and if one does not wish to watch the screen he must shut his eyes.

Since one does not want to take the chance of missing part of the show, he usually watches, even if somewhat passively and begrudgingly.

(3) *Miscellaneous Theatrical Methods.* We may mention, without expansion, a few other uses of advertising in the theater. The asbestos curtain, required by law to isolate the stage from the audience pit, is often blocked into squares, like a billboard, and advertisements for local concerns painted on it. Faintly illuminated signs on either side of the stage may announce coming attractions. In the lobby one finds posters of present and coming shows, and sometimes displays of articles.

VI. RADIO

In one respect radio advertising is unique. It stimulates the auditory instead of the visual sense. Every other type of advertising, with the exception of the talking film, hits the latter. Sounds occur only momentarily; one cannot refer back if he has missed something. The words are gone forever.

Broadcasting started as a novelty, with the owner deriving direct and indirect publicity from his station. Local talent of various sorts provided the entertainment. But as soon as the novelty of merely hearing some one far away wore off, it became necessary to provide higher class entertainment. This cost more than single companies could bear, so they began to sell hours. The next step was the network, whereby one program was presented through local stations to listeners in part or the whole of the country. It has been estimated that a number of very important broadcasts have had as high as thirty to fifty million listeners.

The investments are rather heavy and the companies paying for the programs naturally wish a return. So in addition to the entertainment there must be mention of the sponsor. Just as with newspaper advertising the mention did not seem enough, so we are forced to listen to descriptions of the merits of one product or another.

The average receiving set can pull in about a dozen stations regularly and satisfactorily. The ease of changing from one program to another places a demand on the broadcaster to make every

minute interesting. If a long-winded sales talk is put on, the listener will not only tune it out, but will feel resentment against the product. A poor radio advertisement is probably worse than a poor printed one, since all one will do to the latter is to ignore it and turn to the next page.

Sentiment can work in a positive direction also. One feels a certain obligation to a company which consistently sponsors high-class broadcasting. Salesmen frequently report a customer's coming in and saying: "I don't know much about these goods, but after hearing that wonderful program Sunday I want to try some."

It has been estimated that attention starts to wane after about fifty words of talking. It is only in exceptional cases, as between rounds of a prize fight or innings of baseball, that people will continue to listen to advertising. This is because the interest is very high and there is nothing going on during these intervals, anyway. But the storm of protests which followed a nationally known announcer's rather indiscriminate boosting of Los Angeles climate during the actual play of a New-Year's football game showed that one can carry the thing too far.

Broadcasts related to the product give opportunities to stick in a phrase of advertising every now and then without making it offensive to listeners. Steamships, railroad lines, or gasoline companies can take listeners on imaginary tours, with occasional mention of the company's name. Manufacturing concerns take their listeners on tours around the plant, describing each week a different process or product, avoiding technicalities and introducing human interest.

There are a number of direct and indirect ways of working in one's advertising. The simplest is to announce the program as sponsored by a certain company, as, "Through the courtesy of the Bulova Watch Company we will now give you the correct time." Very similar are announcements of this type: "The General Electric Orchestra will now play —." Along with each announcement a slogan may be interspersed. "Thompson's *must* be a good place to eat" is a short phrase which is heard frequently during baseball broadcasts from Chicago. Mention of the goods may be worked into the dialogue now and then. The Shell Oil Company sponsored a series of broadcasts in which a young couple was touring the West. Every once in a while, after conversation or description of

scenery, one would remark, "We're running low on gasoline; let's go into this Shell station." The service-station operator would then toss in perfectly naturally a few remarks about the quality and variety of products to be obtained there. G. Washington's Coffee, in sponsoring a series of Sherlock Holmes adventures, always prefaced the narration of a new story by having the participants prepare and enjoy a cup of their coffee.

A slightly longer talk, comparable to the text of a printed advertisement, may be put in once in a while. The favored place seems to be at the end of the program. If the listener wishes to hear the next program from the same station he will not tune away, since he knows the speech will not last long. The longer programs, of a half or a full hour, may be broken in the middle. To retain listeners it may be advisable to announce, "Sixty seconds time out," or, "We will now hear another of our one minute talks." This guarantees that it will not last indefinitely and holds the audience.

Talks should be changed fairly frequently. Several companies have announcers read the same arguments for months. If the advertisers could see a roomful of people chanting the sales talk along with the announcer, making various wise-cracks, or turning off the set for a minute or two, they would realize the necessity of variety.

The program should be designed for the hour of day and for the class of people who are likely to be listening at that time. Household items are discussed in the morning, when only women are listening, when they are of direct application, and when rates are lower. Lunch and dinner music is heard around meal-time, without much attempt at advertising, since no one will listen to talking then. Children's programs come just before dinner-time. The evening is devoted to entertainment, with general musical programs, dramatic sketches, humorous episodes, etc. Speeches, outside of political, are not often heard in the evening, as people are more in the mood for recreation then. Dance music has a virtual monopoly after ten, since that is the desire of those who remain up after that hour.

The content of the program may be compared to the appeal chosen in printed advertising, although it is usually less related to the product. Many types offer themselves—classical music, old favorites, dance music, musical comedy, chorus or quartette, instru-

mental or vocal soloists, humor, drama, adventure, travel, news reviews, and speeches. (We omit irregular features such as football games, prize fights, speeches by famous men, and celebrations.) As a steady diet classical and semi-classical music has more lasting appeal than any other type. Instrumental music can be heard a little more often than vocal. The good programs contain variety. In the course of an hour one will hear two or three classical selections, some of lighter nature, songs, and perhaps some dialogue or a short talk.

An interesting development has come lately in the increasing number of humorous programs on the air. Dunlap, writing less than five years ago, mentioned this as a form of entertainment which so far had not met with much success in broadcasting, and did not seem to be especially suitable. At the same time he said that program-devisers were looking for new methods and material to pep things up. We have only to point out Amos an' Andy, Eddie Cantor, Ed Wynn, Baron Munchausen, and others to prove that whatever disadvantages existed once have been largely overcome by now. Experience is showing that each of these cannot come on more than once a week or they grow stale. Music will have to remain the nucleus of entertainment. Developments in television may change our forms of entertainment drastically.

An unsolved problem is whether broadcasting of sporting events benefits or harms attendance. In several prize fights broadcasting has been forbidden, since the high price of tickets and the ease of listening in at home has cut down attendance more than the sale of microphone privileges has contributed. But fights are irregular and do not present the opportunity to build up the steady patronage of baseball and hockey. Many people have listened to these latter at first with only mild interest, then have become enthusiastic about the team and the players, and have finally gone out to see them in person. Broadcasting, even with television, can never quite equal personal attendance. But whether the saving of time, money, and trouble is seriously cutting into receipts is uncertain.

The actual effectiveness of radio advertising is more uncertain than that of any other form. It is largely of the suggestive or goodwill type, so sales response is not as direct as to some more specific varieties. In fact, at times the advertising has been so subtly handled

that customers have ordered goods in stores without realizing that their knowledge of the products came from radio programs. The audience is scattered over a wide area, so even check-up on sales is only an indirect measure.

Mail responses to stations and to individual artists give an index as to how many people listen in. Some contain praise, others complaints. Some inquire about the product, while others request special numbers or refer in other ways to the entertainment aspect of the program. A more direct estimate is possible when free samples are offered to all who write in. Prices are rarely mentioned over the radio, although more leeway than formerly is allowed. In the future such mention may become common.

VII. DIRECT-MAIL ADVERTISING

The cost of printing, addressing, and mailing letters is higher per unit than for any other form of advertising. But the percentage of returns is probably higher also. One can obtain from agencies lists of fairly likely prospects, or he may make them up himself, and thus send letters only to those with whom there seems to be a reasonable chance of doing business.

Mail advertising is more flexible than other types. One can send a letter to arrive at an exact time, say the 12th of the month, or the day before Christmas, or to avoid an unfavorable time, like Monday morning, when mail is heavy and second-class matter might not be given much attention. One can quickly adapt to seasonal and weather changes, and to economic fluctuations. Form letters of different sorts can be sent out on occasions of birthdays, weddings, funerals, arrivals of new children, etc., to advertise appropriate goods and supplies.

Mail is more personal than any other form of advertising. Anyone but the most busy is always eager to look over his mail, as it may bring letters from friends, welcome news, contracts, or checks. So it is with a favorable attitude that letters are opened. The business or professional man may be pestered with too many advertising letters, but the person who has less mail will be flattered and is likely to respond favorably. Even on a form letter the prospect's name can be typed at the top and the letter addressed "My dear Mr.

Brown:—" which makes it semi-personal. At least he is the only one to whom this particular sheet of paper can be sent. Some companies attempt to make the letter appear personal, even going so far as to print in hand script "Personal" on the outside. Resentment may follow detection of such deceit.

The personal letter gives a certain opportunity for variations for the benefit of the individual. A number of forms may be made up, and the appropriate one sent to the prospect in terms of his occupation, age, sex, interests, and possibly individual requirements.

A good example of a directly personal appeal is seen in the following letter, sent by a tire dealer to an automobile owner.

Dear Mr. —:

I happened to park next to your Dodge [written in] the other day and noticed that you had several worn tires. I am writing you this line to see if there is any way we can fix you up.

The following tires are worn smooth: right front, right rear, and spare. [These were written in.] We can allow you from \$2.75 to \$4.50 on these in exchange for new —'s.

(A few more sentences about dropping in to investigate the proposition more thoroughly, without obligation, etc.)

The personal touch and the enterprise exhibited by this dealer so impress the recipient that a good start has been made toward making the sale. The appraisal of one's tires hits one in a way that no magazine or newspaper advertisement, or even a form letter, could do.

Next we quote in part a letter sent to a college girl by a senior girl who worked in a branch of a well-known city store in the college town. This appeal is very personal, from a college-mate, written in informal style, and ties up its appeals with things that will be on the student's mind just before the beginning of the college year. Nearly everyone buys some clothing then, so this shop tries to get this trade ahead of some one else.

August 16, 19—.

Dear Constance:

Only a few short weeks until we get our notebooks out of mothballs and start for classes again. But meanwhile good news

for me—I'm going to be at — and —'s College Shop 'til then. And good news for you because you'll find everything you'll need to wear here, from First Chapel straight through to Finals and Commencement—not to mention all the trick gadgets you need for your room. . . .

Letters or cards are often sent out to regular customers, as well as to attract new ones. It has become a practice in many service stations to send cards to patrons a certain time after they have had their oil changed to remind them that it is about time to do it again. The form card has spaces to fill in the date and speedometer reading at the time of the last change. Stores often send letters to regular customers, inviting them to purchase, in advance of regular public sale, from a new stock of goods or mark-down of stock on hand.

If reply envelopes accompany letters, a higher percentage of returns will doubtless come in, since it is that much easier to answer and since the recipient does not have to furnish his own stamp and envelope. This has become less wasteful and costly to the advertiser with the new postal regulations, which permit sending envelopes with promise to pay postage on return.

There are two technical advantages in direct-mail advertising. First, the relative effectiveness of various appeals can be studied very directly by keying letters or by comparing mailing lists with orders received subsequently. Second, one's proposition and methods are not quite as open to the public if letters are sent as if printed advertising is used. This may help to maintain a clearer field for sales if one has a new type of article or a specially low price. However, in no case can secrecy be maintained for very long.

VIII. FREE SAMPLES

Samples are the most direct possible form of advertising. One is given some of the actual product to use. He tries it out, and if he likes it and gets in the habit of expecting it, he will buy a full-sized one when the sample runs out. Proven satisfaction furnishes its own reward.

Factories are not only willing, but eager, to receive visitors. They show them around and often give away samples of the product

when they leave. This type of free sample is the most effective of all, as it creates good-will as well as giving the customer the material item. As a furniture-polish manufacturer observed: "Five cents' worth of oil is better than twenty-five cents' worth of printed publicity." A manufacturer of food products said: "Every person to whom we give food in our factory becomes a walking advertisement." He will not only use the goods, but will tell his friends of the kindly treatment he received.

The writer had an experience along this line a few years ago. When starting a tour of the Eastman Kodak factory the official to whom he was talking noticed the bulge of a camera in his pocket and said, "I'm sorry, but the rules forbid anyone's taking pictures in the plant." I replied, "Not much danger; the camera is out of order, anyway." "Would you like it fixed? I can have it rushed through so when you leave tomorrow it will be all ready." The next day the camera was brought back, practically rebuilt. When the cost of the repair was asked the official waved the query aside and said, "Oh, nothing at all; we like to do small favors." Yet at retail those repairs would have cost between five and ten dollars. This favor has never been forgotten. I have related the incident to friends from time to time, and am now passing it on to the readers of this book. Was not that advertising comparatively cheap in the long run?

An interesting way of dispensing free samples is used by the Beech-Nut Company of Canajoharie, New York. The plant is across the river from the main Buffalo-Albany road, so they have erected a small booth beside the road where sandwiches and other samples are given out. People will tend to buy immediately or later after receiving this kind of treatment.

Offers of free samples frequently appear at the bottom of advertisements or are made over the radio. One who is interested can write in and receive a small package of the goods. There is some question as to the type of patronage secured in this manner. It seems unlikely that anyone who is fairly well fixed financially or is very busy will take the time to clip, fill out, and mail in a coupon. Yet this is just the class of customers who will do the most business if they are once attracted. In their case the company will have to take the initiative, reaching them by handing, deliver-

ing, or mailing samples to them. If they are pleased, they will order that brand the next time they have need for that kind of goods.

Another question is whether the request to send in stamps to "cover the cost of packing and mailing" is a good practice or not. It may scare off persons who will only write for things that are absolutely free, while on the other hand the nuisance may drive away legitimate prospects who might otherwise become interested.

IX. STANDARD PACKAGES AND WRAPPERS

The trade mark or similar characteristic device can provide a link between advertising and retail selling, as it furnishes a common feature appearing on both.

Many standard products, such as groceries, toilet articles, and bottled goods, can be identified at a glance by the coloring, printing, design, or shape. Campbell's soups can be spotted the length of a store by the red-and-white bands. The yellow and red box of Post Toasties permits immediate identification. Who does not recognize the green background and red target of Lucky Strikes?

In terms of the functions of the advertisement these standard markings aid memory. They enable the customer to *recognize* the product, rather than forcing him to *recall* it abstractly. Recognition can be demonstrated to be much easier than recall. For example, if one has been at a social gathering and is asked afterward to name the guests, he may be stumped after mentioning just a few. But if he is asked if certain people, suggested specifically by name, were there, a more complete report can be given. Applied to selling, one may not remember the name of a product, but he will recognize the label or name when he sees the actual object.

Another value of branded goods is that the customer is guaranteed constant value, quality, wear, or taste wherever he purchases. This gives the buyer more assurance, makes the process of purchase that much simpler, and boosts sales for the producer of branded merchandise.

Containers which are useful for later service act as permanent advertisements for their companies. Pictures from Asia and Africa frequently show five-gallon gasoline-tins manufactured by some of our large oil companies being used to carry water. Every person

who sees these is confronted with the name of that company. The same is true of empty cigar-boxes, syrup-tins; and packing-boxes. One sees the value of labeling and making these of more permanent service than just to identify and deliver the original contents.

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tiser. This has been compared to using a rifle rather than a shotgun. The advertiser plans his copy in terms of the interests of his potential customers, and in terms of the outlooks of readers of various media. Yet under the best circumstances this can be little better than a general approximation. The retail salesman can choose his line of attack according to the general personality, apparent financial status, sex, age, etc., of the individual customer as he appears.

(C) The salesman can change his arguments at any stage of the conversation, while the advertiser's appeal is stated once and for all. If the prospect does not seem to be convinced by the item first suggested, the clerk can use further arguments or can bring out other goods which seem more suitable. The salesman can answer objections and questions, while the advertisement must be taken just as it is.

(3) *Types of Selling.* Most of the discussion in this chapter will concern itself with problems met by a salesman in a retail store, where the customers come to him. In contrast to this we have other types when the salesman calls on the prospect, when a wholesale dealer calls on a buyer in a retail store, when a life insurance salesman calls on a prospect, or when one is selling from door to door. In the main, all forms of selling present similar situations. Certain special problems will be given separate attention in this and the next chapter.

The paragraphs which follow presuppose, for the sake of simplicity, *the point of view of the person who wants to sell*; the consumer's point of view will be discussed later (close of Chapter XXI).

II. SELECTION OF SALESMEN

(1) *Necessity of Selection.* Who makes a good salesman? Can anyone sell as well as anyone else? Present practice would seem to give an affirmative answer. People who cannot obtain a regular position or who do not have in mind any particular career can make their living temporarily by selling something. This is obviously unsound vocational selection. The loss to the individual is severe. There is usually no particular loss to industry, as employers who take on salesmen in such casual manner usually pay only by

commission. It does not matter how long it takes to make a sale, how many failures are experienced, or how far each sale is from others. A certain amount of goods are bought regardless of the quality of salesmanship. If one needs shoes or a shirt he will buy, provided only the salesman can bring out suitable goods. Salesmanship is not so much of an art in prosperous times, when demand is as great as supply. But the differences between a good and a poor salesman are disclosed when people are not so anxious to purchase.

(2) *Is There a Sales Type?* Authorities agree that there is no single clearly defined sales type. Anderson says, after an extensive study which we shall discuss: "It is obvious from the study that good sales people do not possess traits and tendencies wholly absent in poor sales clerks, or that poor sales clerks are not handicapped by conditions that are never found among good sales clerks. There is no clear-cut, sharp dividing line, of such a nature that it separates absolutely good from poor sales material." So the best we can do is to discuss trends or probabilities.

Just as in selecting workers for other positions, our selection of salesmen begins with the occupational description. We draw up an outline of duties and functions, and then determine just what sort of a person is needed to discharge them. Not all selling positions demand the same type of individual. Certain common traits may be desirable, but there may be great differences between successful salesmen of automobiles and jewelry, sporting goods and household supplies, and in wholesale and retail selling positions.

(3) *Desirable Traits.* Let us now examine a considerable number of traits which are of greater or less importance. There have been many recommendations, but little in the way of actual verification of these generalities. One thorough study was conducted by Anderson. He analyzed, in detail, personality and physical characteristics of a large number of successful and unsuccessful sales clerks in R. H. Macy & Co.'s department store. He used two groups, one of salesmen who had high and low unit costs of sales, and the other of individuals who were designated as the best and worst salesmen in their departments. Presumably all were worth continuing in employment and were earning a living wage, so we have no instances of utter failure with which to contrast the best salesmen.

(A) *Extroversion* appears to be the outstanding personality char-

acteristic necessary in a good salesman. He can meet people more easily, is a more ready talker, laughs more frequently, has fewer doubts and inhibitions, likes action, is somewhat more adaptable, can work better in a group, and is materially more ambitious than the introvert. Anderson found that 54 per cent of low-cost salesmen were extroverts, while only 11 per cent of those with high unit costs were thus classed. On the other hand, the introverts furnished 40 per cent of high-cost salesmen and only 10 per cent of low-cost salesmen.

(B) *Social Qualities*. Since the work of the salesman consists in meeting people, mainly for a single time, it is obviously of great importance for the potential salesman to be adept in social situations. On Moss's "Social Intelligence" test (involving some forms of knowledge about, and interest in, persons), it has been found that salesmen score higher on the average than persons of equal or greater general intelligence who are in other occupations. We should not say that selling experience produces higher scores on the test; rather it would suggest that people who like and are good in social situations tend to go into selling. To be a good salesman one must be interested in people, pay attention to their conversation, be able to make a good impression, and be able to bring them around to one's way of thinking in a tactful manner.

(C) *Appearance* is largely a physical trait, but it is important in salesmanship since it affects other people, so it must be considered of social importance. We know that race, swarthinness of skin, color of hair, height, and weight, and irregularity of features are not at all indicative of personality traits. But since certain presuppositions and attitudes in purchasers exist, we must recognize them and act accordingly. If the customers of one's store do not like to deal with an Oriental, a Jew, or a Negro, or a person with gold teeth or a scar across his cheek, one's business will suffer before the public gets educated to the fact that these individuals may be as good salesmen as others. What types are not desirable will depend on the locality and the class of customers.

Appearance is partly a matter of personal habits. Anderson found that 20 per cent of his low-cost group were rated as not neat, while only 10 per cent of the high-cost group thus neglected their personal appearance. This does not prove, of course, that appearance

is detrimental to good selling. To start with, the proportion in each group is small. More significant is the fact that meticulousness of personal appearance seems to be a characteristic of an introvert, who has been found to be poorer as a salesman than the extrovert. As to clothes, a person is satisfactory as long as he is reasonably clean and neat. One can look decent by washing, shaving, polishing his shoes, and keeping his clothes pressed, even if he cannot afford the highest quality clothing.

(D) *Enthusiasm*. If one is sold on his own product he stands that much more chance of convincing the customer. The lackadaisical salesman is really more an order-taker than a salesman. With many products enthusiasm comes through personal use: sporting goods, household supplies, foods, trips.

(E) *Confidence* is closely allied to enthusiasm. The good salesman has confidence both in himself and in his goods. He will not let himself fail. By an air of expecting to sell he keeps the customer from thinking that a negative or dilatory answer is possible.

(F) *Aggressiveness, Initiative, and Perseverance*. In Anderson's study 90 per cent of the best department salesmen were rated as having good initiative, while 46 and 44 per cent of the worst salesmen were rated as only fair or as poor, respectively. Aggressiveness is a necessity in the severe competition between city stores, automobile agencies, and life insurance companies. Leisurely tactics may suffice in a small-town store which has a virtual monopoly, but will not work with open competition. Perseverance is especially valuable in selling high-priced goods.

(G) *Courtesy and Tact* are necessary in any individual whose duties are primarily social. He must be able to meet people gracefully and to get them in a good humor before starting the serious discussion. When people meet there are always bound to be a certain number of disagreements and arguments. If he can minimize these or keep them under control he will be of that much more service to himself and his firm.

(H) *Emotional Problems* do not create so severe a handicap in selling as in some other occupations. The work is not steady, so little slips or lack of attention will not usually be as serious as if one is tending a machine or performing some other constant routine task. While talking to a customer there is less chance for

brooding than when doing a repetitive task alone. Finally, the type of people who go into selling are not the ones who incline to worry unduly. A few of the poorest salesmen were found to have emotional difficulties, but apart from this no trends appeared.

(I) *Intelligence*. We quote in Table 55 results from a survey by Anderson of the intelligence of 500 sales clerks in Macy's department store. The average is rather low, so we would conclude that intelligence is not a very important factor in successful selling of this type.

TABLE 55. INTELLIGENCE DISTRIBUTION OF 500 UNSELECTED SALES CLERKS

Intelligence	Number	Per cent
Superior (I.Q. above 110).....	27	5.4
Average (I.Q. 90-109).....	203	40.6
Dull average (I.Q. 80-90).....	172	34.4
Subnormal (I.Q. 70-80).....	78	15.6
Borderline mental defect (I.Q. 60-70) .	20	4.0
Mental defect (below 60).....	0	0.0

There are a few of the more intelligent who fail to do well, but the majority of poor sales clerks are toward the lower end of the distribution. The frequency of exceptions is important. Even a person of moron level can become an excellent salesman, assuming that he is pleasant in appearance, good in meeting people, straightforward in presentation, and efficient in other ways.

The minimum intelligence necessary to succeed will vary with the type of goods handled, as was seen in the study by Miner reported in Chapter II. To work in a "5 and 10" one needs to know little more than to read, write, and make change. But to sell harvesters or printing-presses real technical information is necessary, and this cannot be assimilated without a good degree of intelligence. The clerks should be up to the average of customers, so that they may meet them on even terms.

(J) *Education* makes very little difference in selling success in most fields. Turnover is lower in the higher levels. Grammar-school graduation is about all that seems to be required, although a little more is helpful, particularly if one expects to rise.

(K) *Experience* is ordinarily not required, except in certain

specialized types of selling. In the department store of which we have been speaking the exceptions listed are clothing, sporting goods, Oriental rugs, shoes, and diamond jewelry. The experience does not necessarily have to be in selling; knowledge of the goods is sufficient. A golf or tennis expert with the proper personal and social qualifications will have had suitable experience for selling these goods. In some cases technical training may be necessary. Unless goods are very complex and technical, about a month's experience is usually sufficient to bring an individual up to approximately full efficiency.

(L) *Marital Status*. It has been found that married men furnish more of the highest-rating sales clerks than do the single men. Widows seem especially good. It is risky to attempt to assign any definite cause and effect here. It seems more likely that the higher average age, the responsibilities involved, and financial necessity are more contributory than the fact of marriage itself. Widows are often in stringent financial positions, and, having been married once, they are able to keep their minds on work rather than on the social possibilities of their male associates.

(M) *Age*. The best salesmen, according to Anderson's study, come from persons between 25 and 50. Above and below these ages, particularly below, the sales cost is higher. Kenagy shows that different types of selling may demand people of different ages. He says "only 5 per cent of insurance salesmen become big producers before they are thirty, whereas 22 per cent of salesmen selling to dealers and 40 per cent of house-to-house salesmen gain superior rating before they reach that age. Again, 34 per cent of the insurance salesmen continue high production after forty-five, while only 13 per cent of the salesmen to dealers and 10 per cent of the house-to-house salesmen are able to maintain the pace."

The effect of persons of different ages on the customers is another aspect to consider. Middle-aged women, preferably married or widowed, would be desirable in handling household goods. Middle-aged men are better for the furniture department, suits, and luggage. Youth is an advantage in sporting goods and radio departments. For many departments, however, no special ages are demanded.

(N) *Sex* has been mentioned incidentally in connection with a

number of the preceding topics. In sheer selling ability there seems to be no appreciable difference between men and women. The only consideration, then, is the expectation of the customer. One expects to see one or the other in certain departments.

(O) *Health* of itself is not a material factor in selling, but it has indirect importance since it contributes to one's energy and disposition. Quite a large number of the "worst" salesmen had health problems, such as underweight, high blood pressure, diseased tonsils, and kidney trouble. It is interesting to find that many of the best salesmen were overweight. This would seem to verify the commonly held supposition that fat men are jolly and good mixers. There is undoubtedly a good deal of truth in this, as increase of weight ordinarily means good health. Many of the poor clerks were rated as listless, which may often have had a health cause.

(4) *Comparative Values of Traits*. Anderson says ". . . the low-cost-of-selling employee is predominantly an extroverted, active, alert, aggressive, convincing, ambitious, responsive, pleasant, and well-integrated individual, while the high-cost-of-selling employee is more frequently likely to show such characteristics as introversion, underactivity, tendency to mental reverie, lack of ambition, unresponsiveness, instability and the like." Extroversion, good social qualities, aggressiveness, and enthusiasm seem to be the most important factors in salesmanship. Intelligence, education, experience, appearance, health, and emotional stability seem to be only slightly correlated with success. Factors which contribute practically nothing to selling are sex, physical size, care of stock, etc.

(5) *General Recommendations*. Anderson gives the outline reproduced in Table 56, with his recommendations for the selection of sales clerks. After the foregoing discussion it needs no additional comment.

III. TRAINING SALESMEN

There are three major fields in which the potential salesman must receive training: (1) Knowledge of the goods, commodity, or services which he is selling. (2) Knowledge of how to take care of the technical aspects of the sale and how to handle transactions of all types; and (3) how to handle and deal with customers most

TABLE 56. PERSONAL QUALIFICATIONS OF SALESCLERKS

- Age: Men, 22 years or over; Women, 18 years or over.
- Schooling: Men, public-school graduate; Women, 1-2 years high school preferable.
- Work experience: not necessary in most departments; exceptions are such departments as Clothing, Sporting Goods, Oriental Rugs, Shoes, Diamond Jewelry.
- Physical condition: Freedom of movement of arms and legs; Freedom from flat feet; Good eyesight and hearing; Good vigorous general health; Height, women 5.5, men 5.8; Normal blood pressure.
- Special abilities: Legibility of writing, fair or good; Arithmetic, fair or good.
- Personality: General—alert, active, stable, well integrated, good attitude; Special—likes contact with people, interested in selling, aggressive, convincing, extrovert or ambivert, pleasant and agreeable contacts, good appearance, able to inspire confidence, poise, able to talk well, adaptable to different personalities, responsiveness.
- Intelligence: I.Q. 80-100.

effectively. The first two requirements are obvious. Even the experienced salesman must learn the merchandise and methods when he becomes associated with a new store. Training is also necessary to make the individual more efficient. He may be what is called a "natural salesman," in being able to meet people gracefully and having fine persuasive powers, but without special training he may waste time and handle fewer customers in the course of the day.

The training may take anywhere from a few minutes to several weeks. In small stores there is no formal training program; the new man is just turned loose and if he gets stuck he asks the owner or an older clerk to help him out. In city stores the customers are more demanding and business is conducted at a higher pressure, so the clerk must have a pretty good idea of what he is about before he is given full powers as a salesman.

(1) Knowledge of the goods in the store will have to be acquired chiefly on the floor. The clerk can study the prices and specifications before and after work, can ask other employees during the day when he cannot answer a question asked by a customer, and can learn while waiting on customers. A large department can afford

to mimeograph lists of items regularly carried, and can give clerks catalogs of manufacturers from whom they obtain their supplies.

If the salesman is to deal with a line of rather specialized items, like automobiles, tractors, factory machinery, electrical equipment, or calculating machines, a more thorough training course will be necessary. A man should know not only the price and leading external features, but also the internal mechanism in detail. It is true that many automobile salesmen are sent out on the floor with the scantiest technical knowledge, but this means that their sales training is really insufficient.

(2) The new employee is taught all the routine phases of his work. The writing of sales checks is the major item under this head. Different types of checks are used for various kinds of orders: taken-paid; taken-charged; sent-paid; collect; etc. One must be careful, in the case of delivered goods, to get the name, initials, street address, and apartment number of the customer. The correct names of the articles purchased, the quantity, and possibly certain technical details must be filled in properly and completely. In stores having centralized cashiers' rooms, checks for different kinds of transactions are sent down in different colored containers. Those involving cash will need immediate change, while those of the charged-delivered type call for no special haste. Charged-taken purchases demand immediate verification from the files. Collect transactions naturally do not appear in the cash-room until the delivery has made the collection. Service is speeded up if the clerk knows what to do when the customer requests that an item be delivered on a certain date, or sent in a special hurry; if a check is presented by an unknown person; if partial payment is made; or if other infrequent type of transaction arises. He should also know how to handle exchanges and refunds. Instruction along these lines is valuable not only for teaching the clerk what to do, but in enabling him to perform these operations semi-automatically. He can talk to the customer while engaged in writing out the check, and speed up service that much. Efficiency also gives the customer a better impression. If he is unable to handle routine details without constantly asking his supervisor, the customer may begin to doubt whether he knows his goods thoroughly.

(3) Methods of handling customers are also suggested. Appropri-

ate greeting, methods of presenting arguments, ways of displaying goods and of suggesting additional purchases, are discussed. These situations are social, and as such are so variable that instruction is necessarily incomplete. A person cannot acquire social grace and tact in three days. The problem then becomes that of selecting salesmen from the standpoint of their social qualities, and of giving them a few hints on conduct in certain situations.

(4) Follow-up work is included in the training program, even though it occurs after the individual has been allowed to start selling. The buyer or supervisor may notice his methods and give him suggestions on refinement of technique. A representative of the training department may visit him, to talk over any difficulties he may have. He may receive additional technical instruction in certain types of goods. Finally, if he gets into trouble, a pleasant and constructive talk will straighten him out before anything serious happens.

IV. ESSENTIALS OF SUCCESSFUL SALESMANSHIP

(1) *Knowledge of the Goods* is the most important factor in high-class selling. Without it no one, no matter how strong his personality characteristics, can be more than moderately successful. "Know your goods and know their values, because people seldom see what they look at; they see only what they have been educated to see. Whenever you are trying to sell a customer, do not for one minute take it for granted that he sees the difference between the low-priced article and the high-priced article. He often does not see it until you point it out to him." This quotation from Ivey illustrates the value of the salesman's knowing his goods thoroughly. It is particularly important in selling items of high price and high quality. One must be able to show in what ways his brand is superior, will give better service, will last longer, is of better appearance, etc.

Knowledge of goods covers quite a variety of facts: prices, colors, styles, sizes, grades, guarantees, accessory equipment, possibilities for special orders, discounts for large purchases, delivery and shipping specifications, size folded and open, fabrics, technical and

mechanical specifications, cost of operation, power demanded, cost of repairs, ease of adjustment, etc.

Strong gives these graphic instructions for analyzing a product:

Weigh it; smell it; taste it; pound it; take it to pieces; put it together; listen to it; squeeze it; shake it; roll it; spread it; pour it; bite it; file it; whittle it; burn it; freeze it; soak it; saw it; cook it; eat it; kick it; run it; stop it; bang it.

While we would not recommend following literally all these drastic suggestions, the principle is sound. It means that one should study the article from all possible angles of use and manipulation.

The following quotation shows how one salesman suddenly realized the importance of full knowledge of his goods:

This morning I received about the best lesson in salesmanship I have ever gotten—all in one remark. We received a small shipment of imported alcohol cooking-stoves, at which I took a glance and turned to something else I wished to do before the store opened. I noticed Mr. Perry, the experienced salesman with whom I was working and who had been assigned to break me in, was inspecting them in some detail. He not only studied the price and general features, but he took them to pieces and put them together again, and read the printed directions carefully.

I asked him jokingly why he was so interested in that item. He answered: "About 9:30 I know just what will happen. You will call over to me, 'Oh, Mr. Perry, how do these stoves work?' and I won't tell you."

That remark set me thinking. I realized that I had been asking him a lot of unnecessary questions. I had been banking a little too heavily on my newness as a clerk and on his experience. I realized that the only way I would get a complete knowledge was by study; the facts wouldn't soak in by themselves. So I started systematically to learn the merchandise in our department, filling in time before the store opened in the morning and spare time during the day. I found that I soon became much more independent, could handle more customers, made a better impression because of greater personal efficiency, and finally my sales went up.

Manipulation is included in knowledge of the goods. One should be able to fold and set up, adjust, drive or run, and otherwise take

care of the dynamic aspects of goods of that nature. The value of skill is shown in this quotation.

Yesterday I sold a folding army cot to a middle-aged man. Today he came back with it and said he wished to return the cot, as it was impossible to set up. He said he and his son had spent ten minutes on it and hadn't been able to put it in working order. Not liking to lose a sale like that, and perhaps more out of stubbornness than anything else, I offered to bet him the price of the cot that I could put it up all alone in less than one minute. He wouldn't quite take that bet, but he said if I could he would not only keep the first cot, but would buy three more, enough for his whole family to use at their cottage. Well, I took my coat off and got another clerk to hold a watch—and set it up in thirty-five seconds. So I made the additional sales. To help them out, I set the cot up again slowly and showed them the proper way to do it. It's really easy when you get the hang of it.

Later in the sale one's detailed knowledge may be put to test when the customer asks various questions and raises objections. One does not need to tell everything he knows about the product in the opening talk. He can point out the major features in fairly concise fashion, and hold in reserve the more technical information for the back-and-forth conversation which will follow. Many technical points will never need to be used at all; in fact, they will bore the average customer. They are ordinarily of no great value in promoting the sale, but are useful chiefly for convincing persons who are particular about special points. A motorist, for example, may have had a good deal of trouble with his last car because the vacuum-tank did not function properly, and he may be very cautious about this particular mechanical detail in subsequent purchases. But it would be inappropriate for a salesman to describe in detail the construction of the vacuum-tank to all customers. It has been said "A salesman cannot know too much, but he can talk too much."

(2) *Confidence and Enthusiasm in Goods.* Unless a salesman has real confidence in his goods he cannot sell them successfully. If he is not genuinely convinced, his arguments, no matter how hard he may try, will fall flat. Try it out for yourself. Think of some commodity which you feel is worthless, and see if you can present

an enthusiastic argument for it. Even if the words may be all right, the tone of the voice is certain to be flat and expressionless. The functions of the salesman are to give information and to make the person who came into the store with only mild interest so enthusiastic that he wants to own that item very badly. Unless the salesman can create desire through his own enthusiasm, the store might as well have articles displayed with printed cards giving specifications, and order-takers stationed here and there to write down addresses and make change.

It is nearly impossible to obtain definite figures on the rôle of enthusiasm in creating sales. But we can give evidence to show that the particular articles sold depend on the attitude of clerks toward them. This quotation not only shows the importance of confidence

To check up our supply of tents so that we would never unexpectedly run out of any model, we were each asked to check on a card every time we sold one. Out of curiosity I studied the checks to see how many each of us had sold, and I noticed a very interesting difference.

Mr. Perry and I had sold about fifty each of a certain square and a round tent known as a palmetto design. The two models were nearly alike in all possible specifications: size, price, quality of cloth, floor-cloth, ease of setting up, etc. Yet Mr. Perry had sold about 35 of the round tents and only 15 of the others, while I had sold about 40 of the square ones and only 10 of the round tents.

I asked him which of the two tents he would prefer to use if he were going on a camping trip. He said that he felt that the two tents were really about alike, and the two, rationally considered, were probably a toss-up; but at the same time he somewhat preferred the round one. I felt about the same way, but professed a leaning toward the square one. These preferences were in agreement with our proportional sales.

in the goods, but answers the claims of some skeptics who have asserted that there is no such thing as salesmanship in a store where customers come to the clerks. We might assume that the customers coming to the two clerks were similar in ideas and interests, yet one can see the difference in sales due to no other factor than the clerk's predisposition. Another short quotation bears out the same point:

We carry some rubberized air pillows, which should be very handy, since they fold up in the pocket, and fill with air in a few seconds to the size of a small pillow. Yet none of us have sold many, since they do not hold air well, are easily damaged, and prove defective in other ways. We actually discourage the customers from buying them.

(3) *Work in Proportion to the Size of the Sale.* This is the third major rule in selling. Cheap articles more or less sell themselves. One does not have to have much power of persuasion to work in a 5-and-10 or a grocery store. But one of the greater points of difference between a good and a poor salesman is in the ability to sell high-priced goods, or, in the case of a wholesale salesman, to write orders for a large amount of the product. Two men may each make the same number of sales, yet one may sell a hundred or two hundred dollars more day after day. This difference can always be traced to a few large sales. Let us take another quotation from the same camping-goods salesman. We can see how this is true if we reverse the picture and think of how we go about purchasing some-

I learned another valuable lesson from Mr. Perry today. I had noticed that he was selling many more high-priced tents than I was, but that I had sold as many army cots and steamer chairs as he. So I thought I was as good a salesman, but that he had had the luck to hit on customers who placed larger orders.

I commented, possibly a little bitterly, on his continual luck in landing higher-priced orders. He replied: "I work for those sales. Did you notice those two women I was just waiting on?" "Yes, you sure took a lot of time to get rid of them." "Maybe, but look at this," he answered, flashing a sales check for over eighty dollars. I had waited on four customers in the meantime, but my sales had totaled less than twenty dollars.

I then realized that I had been expecting to sell fifty-dollar articles with the same amount of effort as was necessary to dispose of a Boy Scout cooking outfit. Since then I have been working hard to land big orders, and have made more.

thing rather expensive. Before parting with a lot of money we wish to study and compare it from all aspects, and then decide whether we can afford it or not. The salesman must remember this, and

continue his efforts, even if he has to resort to casual conversation and to reiterating his major selling-points.

V. HANDLING CUSTOMERS

Let us now consider, largely in chronological order, a number of major and minor points in carrying on the sale.

(1) *Greeting.* The customer should be approached pleasantly as soon as he enters the department. A friendly "Good morning" will break the ice, show interest, and will not be too brusque. "Can I help you?" or, "May I show you something?" are good neutral questions to use next in starting the conversation. Such greetings are not so blunt as to scare off the person who has no immediate intention of buying at the present time. The customer will now state his desires or interests, which will enable the salesman to present the right goods with minimal loss of time.

Even if one is busy one should take care to greet new customers who enter the department by saying something like "Good morning; I will be with you in just a minute." This shows the customer that he is recognized and that his turn is established. He will await his chance with more patience, and will usually wait for that particular clerk.

(2) *Sizing up the Customer.* The clerk should attempt to get a general line on the customer, so that he may display appropriate goods and use suitable arguments. One can tell from the clothes and general appearance of the person, and from his general manner of starting conversation, something about his personality. One's method of displaying the same item may vary widely according to whether he is dealing with a pleasant young man, a pompous elderly gentleman, or a timid old maid. A jovial attitude will make things go along splendidly with some people, but others will think it too presumptive and want a business conversation to be precise and impersonal. The attitude with which people come into different departments is interesting. Customers come into the sporting goods department showing unusually pleasant dispositions. The goods which they want are for purposes of recreation and pleasure, and the attitude in buying corresponds. Customers can be treated ac-

cordingly. In contrast to this, people are more finicky when buying yard goods, sheets, shoes, suits, and dresses.

A few general questions will aid one in choosing the appropriate article to display. If a person inquires about a pair of shoes, one should immediately ask him whether they are to be used for business wear, formal occasions, golf, hiking, etc. Not until one has a fairly clear idea of the needs of the customer should one bring out merchandise. One should also try to estimate the quality and price of goods likely to be wanted. This is not an easy matter. People who have low incomes, as judged by their dress and residence, often surprise one by insisting on the best quality of goods. This results in ultimate economy. A pair of shoes costing twice as much as a cheap pair will last three or four times as long. In case of doubt one should usually start out by displaying a grade of medium price. The customer can then go up or down, without having to make too great a change. If one brings out the highest-priced article, hoping to earn that much more commission, he may so embarrass a customer of limited means that the sale is lost entirely.

(3) *Presenting Arguments.* Having diagnosed in general the wants of the customer, one should select from one to three possible solutions and point out their merits. Displaying more may create uncertainty and result in a delayed decision. A delayed sale is two-thirds lost. If dealing with certain articles, like neckties, sox, or yard goods, one must display a wider range, but even here it would be a mistake to bring out the whole stock at once.

Having selected a number of items to push, one should go at it enthusiastically and whole-heartedly. An old saying may be slightly altered into "Faint heart never won fair customer." The higher priced the goods the more energy is necessary.

(4) *Concentrate on One Item.* It seems to work out best to present in rather brief fashion the merits and specifications of the several possibilities one has selected, and watch very carefully the reactions of the customer to each. His eye movements may indicate a slight leaning toward one article, even before he himself realizes that he is developing such a preference. The salesman may then drop for the moment consideration of the other articles and go into detail concerning the one which seems to be preferred. Now one may deliver the full broadside. But at the same time one should

leave an opening for retreat. One may have been mistaken about the customer's initial preference, and find it necessary to concentrate on a second choice. If the salesman has committed himself too irretrievably on the first the customer may feel that he lacks sincerity when he talks up the second.

(5) *Value of a "Line."* Many salesmen pride themselves on having a magnificent line. It has always been our personal opinion that it did more harm than good. A line means that one has developed a standardized, rapid-fire, lengthy sales talk. The use of it deprives the salesman of the advantages he has over the advertiser. It loses the personal touch, and is not adapted to the individual customer. It soon loses genuineness and enthusiasm and sounds flat. One might as well make up standard phonograph records describing each article carried in stock as have salesmen with highly developed lines.

It is far preferable for one to study his stock and select the major appeals that may be used for each article, and to present these in an informal and conversational manner. The wording should be different for each customer, even though the general outline is the same, so that the talk will be genuinely sincere and spontaneous.

We are not discouraging fluent talking. It is valuable, but only when it is varied and appropriate. Keeping a conversation going, even if it is somewhat irrelevant, often bridges an embarrassing gap of silence while the customer is making up his mind. This is particularly true in selling higher-priced articles.

Partially irrelevant discussion, chosen judiciously, can often stimulate sales through creating more desires on the part of the customer. We give two quotations to illustrate this:

Coming from near the White Mountains of New Hampshire myself, I found that I could supply personal aid to many customers in planning their trips for them. I knew what were the best sights, best roads, distances between points, good camping spots, places for fishing, etc. Description of the glories of some of the scenes crystallized their desire to buy, so it was far from wasted time on my part.

Quite a number came back to the store after returning from their trips to tell me all about it, and to thank me for the advice I had given them. This of course brought them into the store a second time, and must have established plenty of good-will.

This afternoon business was pretty slack, so I welcomed the chance to talk a little longer with a very pleasant and interesting middle-aged man who had purchased a palmetto tent for around \$50. I told him all about the scenic possibilities of New England, and we had quite a fine time talking for about three-quarters of an hour, while sitting under the awning of a palmetto tent, just as if we were African explorers watching the sunset.

When he finally left, Mac, our assistant floor superintendent, came over and chided me for wasting so much time with one customer, and asked sarcastically why we hadn't ordered tea served. I showed him the order I had taken, which in the course of our conversation had grown from the original single purchase to include two cots, two mattresses, a gasoline stove, and a few other items—totaling slightly over a hundred dollars. Mac turned on his heel without saying a word, and walked away.

(6) *Meeting Objections* demands very careful handling, as there is opportunity to stir up ill-will in a number of ways. Up to this point the salesman has had his own way, selecting the goods he thinks are suitable for the customer and stating his positive arguments. Now he will hear certain objections, and he should be prepared to answer them with fact and conviction. It is well to be prepared to answer objections, by anticipation and preparation, just as a debater tries to tear down his adversary's case before the latter gets a chance to state it. Objections of the customer cannot be brushed aside with an air of finality or dismissed as unimportant. This would antagonize, by implying that the customer was stupid. If one can quote figures, guarantees, experiences, and other proofs of quality, or be able to state that the feature desired can be obtained for so much additional, he will allay the doubts of the listener and at the same time demonstrate his knowledge of the business.

The salesman, however, can use only the positive arguments for his own product. Mention of a rival's products often suggests to the customer that he might look them over. Nevertheless, under knowledge of goods one might include a certain knowledge of competitors' lines. Only by such knowledge can one answer authoritatively certain objections customers may raise. The following quotation bears on this.

We had heard from a number of people that —'s was selling an identical army cot for fifty cents less than we. I couldn't believe it, but after hearing it a number of times I resolved to find out for myself, so at noon today I ate lunch hurriedly, put on my hat, and went over to their store. I found that the cot mentioned was of the same construction and made by the same firm, but was somewhat less sturdy and 24 inches wide instead of 26. We had the narrower width in stock for 45 cents less than —'s, but didn't have one on display. The difference in width may sound minor, but you take two inches off the width of a cot already pretty narrow, and it really amounts to something.

One should refrain from knocking competitors' goods. Products should be sold on their own merits, not through running down others or claiming them to be worthless. We realize that rationally there are, as a rule, only slight differences between goods of the same general price class, say automobiles selling within a hundred dollars of each other. A man buys the car he does because it seems somewhat better fitted to his needs or because he thinks that there is *slightly* more value for the money. The differences, suggested by advertisers and salesmen, are usually found to be pretty minor. So it is better for the salesman, when told frankly that the customer is wavering between his make and another, to admit that the rival produces a fine car, but that he thinks he can demonstrate how his is somewhat superior. Proving this by facts, figures, and demonstrations is not knocking in any sense. When the Plymouth manufacturers advise one to "Try all three" (cars in that price range) they are inviting competition, and have confidence that one will purchase their make after giving all three equal consideration.

(7) *Handling Disputes.* Occasionally on the sales floor, as in all social situations, people may disagree and become emotional. Real tact is called for here, to save the situation and not to send away a disgruntled customer who may never return. The best way for the clerk to settle the argument is to quit arguing himself. Most people want to get in the last word, and at this rate a dispute would never stop until one person gives in or leaves. If one will admit he is wrong, whether he really is or not, he will take the wind completely out of the other person's sails. The salesman should be the one to do the conciliating, since he is in the less favorable position.

He must make a good impression on the customer, while the customer has no such obligation. This is the reason most stores tell their clerks to observe the instructions: "The customer is always right." There is everything to be gained and nothing to be lost if the salesman apologizes and suggests that they resume business amicably.

Sometimes another salesman can step in and take the place of the first, and finish up the transaction satisfactorily. The following quotation shows how this may work.

Danny got into a heated argument with a woman today, and I stepped in before it got worse and asked him to let me take care of her. She was in pretty much of a huff, but I was unusually courteous, and calmed her down in a minute. I happened to think that Danny's wife was expecting a baby any minute, and told the lady that he had been pretty nervous on this account, and to excuse him. She was very nice about it, placed her order, and left completely satisfied.

This worked so well that I made the same excuse several times later, even with a couple of the boys who were not married. My conscience didn't bother me much for this slight untruth, as it did no harm and fixed things up satisfactorily all around.

VI. CLOSING THE SALE

In the course of most sales there comes a time when the arguments have been stated, discussion completed, questions and objections answered, and all that remains is for the decision to be made. The customer is on the fence and it is the problem of the salesman to pull him over to his own side.

It is often the practice to speak and write of "closing the sale" as if it were something separate and mysterious. However, authorities like Strong and Ivey scout this idea. They point out that the whole of the sale is designed for the purpose of closing it favorably, so that it is impossible to isolate one part of it and designate it by a special name. McClure follows the same line of argument when he says that it is ridiculous to suggest that a man may have fine powers of salesmanship up to a certain stage, then suddenly lose them, and reacquire them when the next sale starts. These arguments are at least partially true. With articles of smaller price,

particularly, one may not need to use his whole sales talk to convince a customer. He should be alert for a chance to finish the sale. On the other hand, the customer may still remain unconvinced after the main arguments have been covered, and they may need to be repeated in different form. This is further evidence of the inadequacy of a line. With high-priced articles there may be need of definite closing tactics. There is a natural hesitation in buying a new automobile or a heavy insurance policy,[†] even after all the arguments have been marshalled and one realizes the value of the purchase.

The ideal procedure is to try to close the sale gradually while carrying on the talk. One may concentrate on a single item to prevent vacillation, bring out the arguments in a well-ordered series, and finish in a strong climax. Thus one (theoretically) works the customer up to the peak of enthusiasm, and finishes the sale without danger of his cooling off while weak and minor points are appended.

If a person does not buy it is clear that he has one or more negative incentives which inhibit him from action. He has already shown that he has one or more positive incentives by the fact that he voluntarily came into the store to inquire about and to look at the article. It is up to the salesman to discover what the negative incentives are and to remove them. If they relate to the quality of the goods the problem can be approached directly. If cost is the deterrent factor, the task is a little more difficult, as one cannot put non-existent money into the pockets of the prospect. One may then show the customer that purchase will result in ultimate economy. With a new automobile, for example, "Yes, Mr. Simmons, a new car does represent a heavy investment for any of us. But you will have this car for a number of years. You admit that your present car is giving you some worry all the time for fear it will break down, and that your repair bill is constantly increasing. The new model is faster and easier to drive, has all the improvements we have been discussing, and will be more economical than the one you are limping along with now."

In a recent book, Link has presented the most up-to-date tactics for selling. Two fundamental points are stressed. (1) Instead of trying to beat down sales resistance, *avoid* it. This is achieved in part by following his second recommendation, which chronologically really

comes first. (2) Design the goods to satisfy existing demand. Too often, he points out, the manufacturer has made some goods, and then expects his advertising department to sell them. As he says, "A cigarette stand or humidior, sold for its convenience, may turn out a failure because, in actual use, people find it does not fit in with their smoking habits." To avoid sales resistance, one first studies the buying habits and desires of the potential customer, and then plans his product, his advertising, and his sales arguments in terms of human behavior as it actually is, not as he conceives or hopes it to be. Then a direct and logical selling appeal can be used; it will not be necessary to stimulate desire artificially.

In removing objections one must be careful not to insult the intelligence of the prospect. The salesman may admit the validity of the objection in general, thus flattering his judgment, and then may proceed to show how it does not apply in the present instance.

Getting the prospect to agree with each point as it is made makes an ultimate refusal that much more difficult. This procedure has the very important advantage of forcing the buyer to make up his own mind, which is an active rather than a passive process. The customer will really sell the thing to himself.

Some salesmen have reported successes by allowing the prospect to build up his whole defense on one objection. They deliberately allow him to work to the end of the rope, get him to admit that that is the point which deters him from buying, and then suddenly bring out arguments which demolish the whole structure. With the let-down following this the decision often results immediately.

A gentle push may make up the customer's mind for him. All arguments have been stated and analyzed, no further discussion is necessary, and inertia is all that is standing in the way of the sale. The customer is like a person standing on the bank of a cold river, ready to dive in. He is ready, he knows that he will go in eventually, but he hesitates. One may show that one assumes he has made up his mind, offering a remark like, "I am sure you will get lots of enjoyment from this," "I will see that this is wrapped and delivered right away," or "Your address is—?" while opening the sales book and holding the pencil poised. The person is placed on the defensive and in rather an awkward position and may be bluffed into acced-

ing. Care should be taken to apply this method only when conditions and the prospect's personality are favorable.

A representative of a building firm reported landing a large construction contract after several months of negotiations, when he said, after being asked to wait three weeks more for the decision: "Mr. Blank, we have spent a great deal of time on this proposition. Our estimating department has gone into it very thoroughly, and, as you know, I have done little else for the past three months but carry on negotiations with your organization and lend my technical knowledge to the working out of the problem to the best advantage of your people. Now if it is going to be another three weeks before you can even give it attention, I shall have to withdraw the proposition and devote my time and thought to something else. I am sorry." The proposition was immediately accepted. We should not recommend general use of such a drastic and spectacular method. One must know that a proposition is fair and desirable, that it is about to be accepted, anyway, and that the buyer will not get angry at such tactics.

Time and persistence may be the factors that cause the negative incentives to vanish. All the arguments and facts may be brought out in the first interview, but after a few more calls, perhaps conducted in a perfectly casual and friendly way, the prospect will suddenly announce that he is ready to go through with the deal. This is especially true in large-sized sales. The salesman must be careful, in cases where he hopes to land the order eventually, not to betray disappointment or resentment at not completing the deal on the first call.

VII. BUILDING UP GOOD WILL

(1) *Treatment of "Sight-Seers."* Salesmen in large stores use this idiom to refer to a person who browses around with no intention of purchase and even without any particular interest in any single article. A city store is really an excellent show place, and people may fill in spare time wandering around, or may even entertain friends from out of town by showing them the larger stores along with other sights of the city.

When the salesman greets a visitor and finds that he has no

special mission, his attitude should not change. Unless he is very busy he might as well give some time to such a person. Often sales follow such courteous treatment, now or later. Good-will is established for the store in general, even if that salesman gets no additional commission for his thoughtfulness. The effectiveness of a salesman is not measured entirely by the size of his book. The visitor may be a bona fide customer in another department in the store, and may be just looking through this one on the way in or out. Also she (it is usually a she) may be a steady customer of the store, but may be merely browsing around today. Finally the individual may have some intention of later purchase, but may be so vague about it that he prefers to look around unostentatiously now. If one gives such a person attention and information with as genuine enthusiasm as if he were counting out his money, he may even buy now; or if he buys later he will not only return to the store, but will look up the same salesman from whom to purchase.

(2) *Special Orders*. It is somewhat of a nuisance for the salesman to handle orders for merchandise not in stock and to take care of other irregular transactions, such as delayed delivery, parcel post on out-of-state and out-of-city packages, request for immediate delivery, etc. The management usually tells the clerk to cater to every whim of his customers. Actually this takes a disproportionate amount of time, and unless the order is rather large usually results in a net loss to the store. The clerk may ascertain whether the request is a deep-seated desire or only a momentary whim. If the latter, he can often persuade the customer to take the goods as they are in the usual manner. If he is insistent, one accedes, of course, and charges the effort to good-will. A favor may pay extra dividends later.

(3) *Duties to the Customer*. Salesmanship is often represented as a battle between the clerk and the customer. This view is not held by the better type of organization. The latter emphasizes service, honesty, reliability, guarantees, courteous treatment, and good-will. The store stands back of its merchandise, whether the manufacturer does or not, and cheerfully replaces anything that proves defective. It has learned through experience that losses sustained in this way are more than made up in the steady patronage from satisfied customers. Similarly, it realizes that forcing unwanted goods through

high-pressure selling is a short-sighted policy which results only in returned goods or ill-will.

The same principles hold true for the individual salesman as well as for the organization. Considerate treatment and special effort will result in customers looking for a particular salesman when they return for subsequent purchases. Building up a steady clientele is especially important for wholesale salesmen and for proprietors of small neighborhood stores.

References for this chapter appear at the end of Chapter XXI.

already filled up with the type of thing you wish to sell. He may be a steady customer of some other company. He may have no need or wish for it at all. Finally, he may be too poor to buy, regardless of desire.

A careful selection of prospects will bring a far higher percentage of returns and will save a great deal of time. Salesmen often make a particular point of trying a few of the most prominent individuals in the city first, attempting to interest and to sell to them, and then to use their names as references to subsequent prospects. The first people interviewed may be asked to suggest other likely prospects. Saying that "Mr. Williamson suggested that you would be interested to hear our proposition" adds a personal touch and makes it difficult to refuse at least a fair hearing. This assists in driving the opening wedge.

(3) *Analysis of Prospects.* To make a sizable sale one must make thorough preparations. One should find out the prospect's business, daily routine, personality, age, chief interests, hobbies, and spare time activities. In dealing with insurance the most important facts center around family and business. One would not suggest a straight life policy to a middle-aged bachelor. He will be more interested to invest in an endowment or retirement policy. A married man with no children will desire a trust fund for his old age or for his wife in case of his early demise. A younger man with growing children is good game for an educational policy. If an automobile salesman wishes to demonstrate a new model, he should find out the number and nature of the members of the family so that he may bring out a car with the proper body design.

Such information is valuable in choosing the item to push and in *planning the interview*. It has been suggested that it is a great help in starting the sale to make the prospect say "Yes" two or three times right at the beginning of the conversation. In selling an educational insurance policy the conversation may be planned somewhat as follows: "Mr. Robinson, you have a young son, haven't you?" "Yes, he's seven now. Great boy." Obviously a point of great interest has been touched. "You want him to go to college, don't you?" "Of course, he's going to State, where I went." "Will he be in a position to go if you should happen to drop off, become dis-

abled, or if your business should fail?" The ground is now prepared for introduction of the detailed arguments and facts.

(4) *Securing the Interview*. This sounds like an entirely routine and perfunctory matter, but it is not so easy as it sounds. It is very different from calling up a dentist, barber, or tailor, from whom one intends to *purchase* something. Everyone is more willing to sell than to buy, and busy men usually have a definite resentment against salesmen.

On this point Strong says, "The secret of success in securing an interview is to behave like a man whom the prospect would not want to exclude." Act confident; the man who half expects to be refused will let himself into his own trap. There are a number of ways in which an interview may be secured. A telephone call is a dignified and time-saving method of making an appointment. If one simply appears without previous arrangement, it may not only waste time in waiting, but it will appear that he is not at all systematic. Worse still, he is placed in a position of begging to be let in.

Combining the request with a personal introduction is helpful. One may say "Mr. Franklin just suggested that I tell you of the service we can render you. May I see you for a few minutes this afternoon?" Phrasing the call, "May I see you at ten this morning, or would two this afternoon be better?" contains a powerful positive suggestion, as it assumes that the interview will be granted and that the only question is the exact time.

Getting past the secretary or office boy presents problems. Some salesmen succeed with the aid of flattery or with the aid of a slight tip. Impressing them with one's importance may also enable one to bluff one's way through. Use of the business card is usually delayed until one is in the prospect's office. A personal card may be presented in the outer office. But if the business is printed on it the prospect is forewarned and has a chance to build up resistance or to refuse the interview entirely. The card should be given the individual, preferably at the start of the interview, so that he may be sure of the spelling and pronunciation of the name, and may keep it for later reference.

It may be difficult or almost impossible to secure an interview which has been refused previously. One must present the intro-

ductory appeal in such a way that it seems to the prospect's advantage. "I wish to give you first chance." "A careful and intelligent man like you surely cannot refuse to consider this." Suggesting that rival concerns are considering your proposition may bring results, unless the prospect is of such a contrary nature that this approach spoils one's chances with him. This very interesting indirect approach was reported by a salesman for an oil furnace. He had been stalled off many times, but finally approached the prospect again and met objections by saying "No, I do not wish to sell you an oil-burner this time. I want to sell you some coal—cheap. Your next-door neighbor has just put in one of our heaters and wants to get rid of a few tons of coal he has left over. Since you want to keep on using coal, I thought maybe you would take it off his hands."

(5) *Starting the Interview.* This is comparable to securing the attention and arousing interest in an advertisement. It is much more critical in interview-selling than in retail-store work. A few words of greeting and a strong opening sentence are necessary. One must carefully balance one's manner between effusiveness and too meek an attitude. A handshake will start things off in a friendly manner, but the salesman should not force matters if the prospect seems reserved.

It has often been suggested that the salesman will do well to discover a man's major interests and hobbies—family, radio, golf, fishing, travel, etc.—and to hit one of these at the outset. This advice is not all it sounds, as interests are not always easy to detect, since they cannot often be tied up with the product in a direct manner, and since the customer may not respond favorably. A busy man will keep his golf out of the office. However, the suggestion is applicable if one interprets it broadly and takes it as meaning that one should study the characteristics and needs of the prospect. Selling trust and educational insurance policies to married men with families is an example of this. Appeal for this type of service may be made very easily.

Two other examples of using personally appropriate appeals may be drawn from experiences in selling oil-burners. The salesman stumbled on the fact that the owner of one house was interested in photography, but had a difficult time in carrying on his work

because of lack of adequate permanently available space. He made the sale through using the appeal of being able to form a new room in the basement where the coal-bin had been located, and keeping it clean and suitable in every way. He discovered that another man's wife had a minor heart weakness, and an oil-burner was sold on the basis of protecting her from possible serious injury in climbing stairs from the cellar.

(6) *Presenting Arguments.* The same general principles which are followed in retail salesmanship hold here. In selling a service like insurance the case must be made very strong. The policy cannot be used directly as can shoes or an automobile; it burdens one with payments for many years; it cannot be shown off to the neighbors, and it is not an immediate necessity.

Strong suggests three general steps in selling. (1) Make the prospect realize his wants; (2) show him that these wants, present or future, are not being satisfied at the present time; and (3) plan the best solution for attaining these desires.

The first step is the most important and the most difficult. A man will not buy anything he does not want, so he must be made to want it. This phase of the salesman's activities has come in for a great deal of criticism. While it is true that many people are excited into buying unnecessary things, at the same time we may point out that it is variety of wants that makes civilization. If one does not have an automobile, a radio, an electric refrigerator, evening clothes, a modern house, and insurance to protect his family, he is in these respects living in a lower civilization than are others who possess these refinements.

Dramatic negative appeals can be used in connection with selling insurance. In urging personal-liability automobile-driver protection one can argue as follows: "Mr. Johnson, you simply cannot afford to take the chance of being unprotected. Do you realize that according to the laws of this state, in case of judgment against you for injuring some one while you are driving, the court can attach the greater proportion of your wages for the next twenty years?" If one can find a somewhat parallel case known to the client, the arguments are that much more impressive.

Another strong argument for insurance is the feature of regular investment. Less straight life is being sold at the present time, and

more attention is being devoted to various forms of endowment policies. An objection may be brought up that the rate of return is lower than that from the majority of business investments. A stronger positive appeal must be used to counteract this, somewhat as follows: "We grant that insurance pays a rate below some of the better stocks, but just how many of these do you own? If you decide to invest in stocks, when do you do it? 'When business picks up a little; when I have saved some money up,' you will say. But you don't do it regularly. With insurance you will have regular amounts to pay on stated dates, and will budget yourself to include these, just like your rent and your taxes."

After interest has been aroused, the rest of the discussion will proceed more easily and logically. The prospect will be ready now to listen to the proposition and will pay attention to the development of detailed arguments and facts. A man who is able to make a sizable investment will be the type who can appreciate figures, so arguments can be placed on a rational level after interest has once been obtained.

It is a good plan to present figures in growing fashion; that is, to show calculations in process of being made rather than finished. This will enable the customer to understand them more easily, will force his attention just as you wish to direct it, and will present a logical development; and the conversation will be more informal and personal than if one appears with a printed or typed outline. One may consult tables, but the development should come from pencil and paper computations on a separate sheet of paper. Such a procedure is entirely unique and personal. Through using it one may also be prepared to vary his figures and the propositions as the conversation develops.

(7) *Meeting Objections.* These are encountered and handled just as in retail selling, except that they may be advanced even before one gets a chance to state his proposition. Such objections are not often raised in store selling, as the retail customer has some interest in the goods and usually knows in general the cost and a few other facts.

If the prospect seems interested in general, but does not seem to respond favorably to the particular proposition suggested, one can change arguments very quickly and bring out different products or

services. Various types and prices of insurance policies or of automobiles are examples of this.

Mention of the price is often rather embarrassing. If it happens to be rather high, it is recommended that one take pains to point out all the advantages and features of superior quality before price is mentioned. Then the prospect will be in a position to understand why the total cost is high, or why that particular article costs more than others of generally similar nature. The price is made to seem much lower if quoted by the unit or by the month. For example, instead of quoting the annual insurance premium as \$240, one may say that \$20 a month will take care of the payments. This is carried still farther by high-pressure salesmen, who speak of the few cents a day which will secure all the advantages of their goods. A few cents a day sound like nothing; most people spend more than that for papers, tobacco, and soft drinks. Yet ten cents a day means over thirty dollars a year; three cents daily commits one to approximately ten dollars.

A number of calls will usually be necessary to land a large order. There is naturally greater inertia in placing such an order than in ordering something of slight value. The prospect may wish to consult with his associates, get comparative estimates from other concerns, and study his financial situation at leisure. Later calls may be made either by appointment or by casually dropping in once a week or so. The prospect should not be allowed to forget for any length of time. If the proposition is complex and detailed, like a contract for constructing a number of buildings, one may develop more and more detailed plans at successive interviews. The first may lie along general lines, and the others bring out technical specifications and cost estimates. This brings the deal along gradually and logically.

II. WHOLESALE SELLING

In the main the problems encountered in this type of selling are similar to those in dealing with retail and intangible commodities. We shall confine ourselves to discussing some of the major differences.

An interesting fact is that the retail owner or buyer, who usu-

ally sells goods to private individuals, now is a customer himself. This has advantages to both parties. Both understand that efforts are being made to put through a sale, and both have a desire to effect some transaction. The merchant must have desirable goods to sell, although he must be careful not to overbuy or to buy inappropriately.

Selling should be able to proceed on a more intellectual and technical level than in other types of selling. Both parties are familiar with salesmanship, so the problems of arousing interest and enthusiasm toward the article can generally be ignored. The buyer is usually willing to listen to the wholesale salesman's proposition, since he is always eager to find high-quality goods which will have a rapid turnover.

The chief problems of the wholesale salesman are to make the prospect (1) buy from him, (2) buy his type of goods only, and (3) buy now. The first and second are very closely related.

Practically the whole success of the wholesale salesman is founded on good-will. Hence friendship between the buyer and the salesman is very important. A call on the part of an out-of-town person is enjoyable, and if he is some one who comes around frequently there is much in common to talk about. It is good business for the salesman to encourage such friendly contacts. The writer knows of a wholesale salesman who made the circuit of his territory every few weeks, and became unusually successful through his personality and sociability. He gained a virtual monopoly for himself. At the same time he was careful not to unload unwanted goods in this manner, or they would rebound on him later. When the place of meeting is reversed and the buyer goes to the wholesaler in the city, dinners and entertainments are often in order. Many a business deal is settled at a lunch or dinner table, and the foundations for many more are laid in this manner.

At the same time the goods must make a good line. They must sell well and prove to be of good quality. If a man sells paint, shoes, clothing, tires, or oil through friendship or other emotional appeal, and the goods do not sell well or do not provide customer satisfaction, further orders will not be obtained. Business of a representative of a factory or wholesale house cannot be based on single orders.

An important but difficult task for the salesman is to break down a strong predisposition to buy from one single representative exclusively. The following incident illustrates an interesting way in which it was accomplished in one case. This salesman found out why he had been rebuffed and why his proposition had not even been given decent attention. The merchant would buy from none but fellow lodge members. The wholesale representative came in one day, bringing a card, and saying: "I don't want to sell you anything today; I only want to give you this card, which should help you in your business." And he produced the card which read, "I Do Business Only with Members of the Grand Brotherhood of American Freemens." "What's the big idea?" came back, indignantly. "I really got the idea from one of your brothers in the order. He's selling you goods and told me one day that you prefer to buy from fellow lodge members. He thinks you let this get in your way. The humorous idea struck me that if you want to *buy* only from members of your fraternal order you should go one step farther and *sell* only to customers who are of that order. You see you really aren't fair to members of other orders. For instance, if a dealer who is a Mason *buys* only from salesmen who are Masons, but *sells* to Elks and Odd Fellows as well as Masons, he's cheating the Elks and Odd Fellows." This rather drastic tirade earned him an audience. Getting a fair hearing gives one a good chance of making a sale.

Presentation of the proposition, meeting of objections, closing the sale, and other minor steps will differ in no way from those previously discussed in connection with other types of selling, with the exceptions already noted.

III. DOOR-TO-DOOR SELLING

This type of retail selling has most of its problems in common with other kinds of selling. As in advertising, one has to attract attention and arouse interest. As in retail selling, one is selling to the ultimate consumer in a personal manner. As in wholesale selling, one calls on the buyer rather than having him come to the salesman.

It is unfortunate that many individuals who engage in this form

of selling are unscrupulous about their methods of doing business, gain orders by taking the prospect off his guard, and are even dishonest at times. From an ethical standpoint we cannot condemn such behavior too strongly. But since there are legitimate and desirable business enterprises which make use of this type of selling, and since it makes a good deal of use of practical psychology, we shall devote some space to discussing it.

Articles sold in this manner are generally of comparatively low price and mass use. Hence practically every household can be taken as prey. The greatest problem of the door-to-door salesman is to gain the interest of the prospect. Curiosity may be aroused by making some startling statement or offer. One writer suggests that one should first "unsell" the customer; that is, make him dissatisfied with his present conditions. Then the solution to that dissatisfaction can be presented. Curiosity may be aroused by a trick statement such as "I am here to save you five dollars," which, upon inquiry, is discovered to mean that something will be sold for five dollars less than it can be purchased elsewhere. A rapid demonstration to arouse interest was arranged by a cleaning liquid salesman. When the housewife came to the door he asked to be handed any aluminum pot or pan which might be handy. He quickly wiped off its surface with a rag soaked in the polish which he had ready in his hand, and thus demonstrated an instantaneous cleaning effect.

Some salesmen have the trick of casually placing one foot inside the door. They realize that there is a certain resistance against itinerant workers and that there is danger of the door being slammed in their faces. If the foot is in the way the door cannot be shut, and they will be granted at least a chance to tell what they have. This is an important opening wedge.

Owing to the unscrupulousness surrounding much of this type of selling we will close this short discussion with a few points of special warning to the customer. To start with, do not fall for a high-sounding proposition. It is worded to sound remarkably fine and cheap. Analyze it out to see just what the total value and total cost will be. Some propositions may be genuinely cheap, but may let one in for a number of years. Even if they are desirable at the time, one's status may change later in such a way that there is no further use for them. Magazine subscriptions come under this class.

Be careful against signing anything without a thorough reading. The high-pressure salesman may emphasize the easy features and pass rapidly over others or omit them entirely. One should consider the company producing the goods, to make sure that it is reputable and well known. Encyclopædias and maps are often sold, and on arrival are found to be poorly designed, incomplete, and even definitely out of date. Finally, one should refuse to hand over cash in case the goods are to be delivered later. Inferior goods may be sent, or the salesman may abscond without sending in the order at all. A fractional down payment may trap the unwary and distract one from the thought of defraud, but a dishonest person can work one community in this way for several hundred dollars.

PART II. STORE MANAGEMENT

IV. ATTRACTING CUSTOMERS TO THE STORE

Unless customers come to the store, it is in the same position as an advertisement which fails to attract attention. Business will suffer, no matter how well equipped the store is and how good its selling policies may be.

(1) *Location* is by far the most important single factor. There are a number of recommendations which have been suggested as a result of customer analysis. Before one builds or rents a store the location must be studied with respect to possible customers. Passive factors are presence and absence of competitors, size of town, and part of the city. Active factors are the number and kind of people who pass by. The number of pedestrians and vehicular passengers is the first but not the only point. The type of individuals and the hours at which they pass by are also important considerations. Stores have attracted very little trade in extremely busy districts because it had not been noticed that the passers-by were chiefly workers in large near-by plants rather than shoppers. Sex, occupations, and financial status are other points.

What seems rather surprising at first is the fact that stores prosper better when near others than in comparative isolation. Women do the greatest share of the buying, and they like to "shop." In contrast, men usually buy rather rapidly in the most accessible store.

It has been found that women neglect an isolated store, but prefer to look around in several of similar nature within a limited district when they wish to buy something. Hence we see most of the department stores, furniture stores, and clothing shops in definite parts of the business district. There is competition between these, but they also reinforce one another's sales. Two which are close together will attract more than twice the number of customers that each would attract if widely separated.

Neighborhood stores—drug, grocery, tobacco, etc.—are exceptions to this. Goods bought in these places are standard, of low price, and are purchased hastily.

The type of neighborhood is the next consideration. These gradually change in most of the larger cities. New York has seen several such shifts within the last half-century, the center of the shopping district moving gradually northward. If a store is located in a decadent district, customers will fall off and a change will become necessary. This involves expense, loss of time, possible damage to merchandise, and a necessity of getting customers acquainted with the new location.

Corners and proximity to street-car stops, junctions, and waiting-places are especially valuable for newspaper and magazine, tobacco, and ten-cent stores. These places are patronized by all classes of people, and so little time is consumed in purchase that there is no fear of missing a car or bus. The few minutes of waiting can be occupied with routine purchases such as these. A store might as well take advantage of a location in a spot which will draw such business.

Finally, the side of the street may make a difference. The majority of shoppers are in circulation during the warmest hours of the day, so the shady side is generally advisable. The sunny side may be desirable during the winter or to set off certain types of window display, but it may prove too warm at other times, and may cause displayed goods to fade. The fact that rents are usually higher on the shady side is indirect proof of its greater desirability.

(2) *Store Front.* The store should have its name on the outside, so that persons who are looking for it specifically and do not know its exact location can spot it, and so that others who are attracted by the display can identify the store. This identification is assisted

by overhead signs, brass plates, name on windows, and characteristic architectural features. An overhead sign should be kept at a minimum height from the ground so that it may be readily observed. Each window should have a sign on the glass or on the price cards placed with the merchandise on display. A few days ago I walked by six windows of the leading department store of a city of several hundred thousand without being able to find a single mark of identification. A potential customer might easily pass by and go into some other store.

Familiar to everyone are the characteristic fronts of several chain grocery, drug, tobacco, and ten-cent stores. By means of the color or design one can stand on a corner and spot the desired store within at least a block on either side of the street in all four directions.

(3) *Window Displays* form a link between the outside and the inside of the store. They attract the attention and arouse the interest of the potential customer. They also act as advertisements for the store in evening hours.

The articles displayed in the window should be representative of a variety of products sold in the store. A grocery store, for example, may display canned goods in one window and fresh fruits and vegetables in the other. Goods so displayed should be timely, things one wishes to push, such as new clothing styles, sporting goods of the season, sale goods, etc. Space should not be taken up in showing goods which are sold regularly or which bring in small profit.

In arranging the display there are a number of artistic principles to be considered. Any models used in the display should be so placed that the spectator's gaze is directed toward the center of display rather than away from it. Balance, dignity, and relative isolation are other important technical points. Class is suggested if fewer articles are in the window. By contrast we think of cut-rate stores, where window-dressing seems to come more under the head of acrobatic feats than of artistic endeavor. The background can add to the quality of the display, and isolate the window from the store. It is usually recommended that the view from the window into the store be closed off, since it would distract from the display and tend to create peculiar depth illusions. Auto showrooms and barber shops

are among the exceptions, since it is desirable for potential customers to look in.

Since the display is designed to be seen as much at night as during store hours, lighting arrangements become necessary. Choice of color and shade in the display becomes doubly important. Certain colors do not show up well under artificial lightning or demand much more power than do other colors. Articles and fixtures of lighter colors and shades will appear less somber. Care must be taken to avoid shadows. The use of indirect lighting and numerous point sources will minimize this danger.

Displays should be changed frequently. Keeping the same display week after week will fail to arouse and sustain interest.

(4) *Doorway* location is a rather minor point, but one which may make a difference in the number of people who enter the store. There are several possible variations away from the usual simple door arrangement, which is little more than a cut in the wall. A doorway set diagonally on a corner makes easy access from both streets. An inset door enables window shoppers to avoid being jostled by passing traffic and allows more frontage of window space for display purposes. It also gives shelter in case of rain, and some of those who stop will come into the store.

(5) *Parking Lots* are maintained by some stores to attract customers. In large cities parking is a serious problem, and must often be solved by paying to park in a lot. If the store maintains a free lot or cancels the charge on display of a receipt for a dollar (or so) many customers will come there rather than go to another store of otherwise equal desirability. Minor necessities, such as tooth paste or cigars, may be bought to avoid paying the charge.

V. LAYOUT OF THE STORE

(1) *General Problems.* Sales may be increased by bringing the customer in contact with as many items as possible. Thus he is tempted to buy goods in addition to those for which he came into the store. Things should be arranged as conveniently as possible for both the customer and the clerk.

(2) *Demand and Impulse Goods.* Authorities on store management make this important dichotomy: *Demand* goods are those

which are bought regularly and by necessity, such as bread, butter, eggs, flour, shirts, tooth paste, soap, and cigarettes. *Impulse* goods are those which are bought irregularly and are of luxury nature. They include candy, flowers, seasonings, unusual fruits, neckties, ornaments, and novelties of various sorts.

The customer will buy demand goods regardless of the location, but will not usually ask for those of the impulse type unless he sees them and gets a sudden desire for something out of the usual routine of life. Practically, this suggests that demand goods can be placed in an inconspicuous location and that impulse items should be placed in full view of every customer. In a grocery store one can place the meat, bread, potatoes, and similar items largely out of sight at the rear, and make the customer walk past tables and cases displaying impulse goods on the way back. Sales of small items like candy, beef cubes, and cigarettes have been increased many times by placing them on the cash register or wrapping counter where a customer cannot help seeing them while waiting.

These layout suggestions apply chiefly to the small store and to the woman customer. Men are in more of a hurry when purchasing, and will refuse to walk very far to buy their demand goods of slight value. Shirts, collars, sox, neckties, drugs, and cigarettes are usually placed at the right front of the main floor. The system of handling charge in these departments must be expeditious.

(3) *Department Stores*. In stores having a large amount of floor space and several floors definite problems concerning the arrangement of departments arise. As a result of studies on customer habits a certain number of uniformities among stores have arisen. In a one-floor store, for example, we see men's goods to the right, and toilet goods, gifts, jewelry, lingerie, hosiery, and fancy goods all occupying various parts of the front third of the store. In the middle we find piece goods, domestics, notions, knit wear, sweaters, towels, and linen. At the rear are ready-to-wear clothing, millinery, and shoes.

In a store of several floors we find on the main floor men's goods, toilet articles, stationery and books. In the basement are household accessories, hardware, and possibly bargain counters. The lunch-room, if any, will usually be either here or on the main floor. The second and third floors usually contain the larger items of clothing,

yard goods, sheets, and pillowcases. Above these are toys, sporting goods, luggage, furniture, rugs, and other articles of higher value and infrequent and deliberate purchase.

There are certain considerations behind these arrangements: (1) Goods which are bought in a great hurry or upon impulse are given locations which are prominent and easy of access. (2) Goods like furniture and suits may be placed in a less prominent location, since they will be sought out, since the buyer spends more time considering them, and since he will wish peace and quiet. (3) Related departments are placed side by side. Examples are sporting goods and sport clothing, shoes and sox, shirts and neckties, and household goods of various types. (4) Goods which may be embarrassing to purchase should be placed in isolation, so the buyer need not be afraid of being seen by many people. Maternity apparel, reducing garments, wigs, trusses, and certain drug supplies would fall into this classification.

Aisles are planned for convenience and to lead customers in desired directions. It has been found that men almost universally turn to the right upon entering the store, whereas women turn by chance. It is for this reason that men's goods are placed at the right. Wide aisles allow persons to go to the rear of the store and to the elevators without having to force their way through the crowds doing business in the departments toward the front. Elevators or escalators are necessary, for the convenience of women particularly. They hesitate more than do men to climb stairs, although they will go down into the basement readily.

VI. RETAIL SELLING STRATEGY

We shall discuss briefly a number of points of selling strategy which are valuable in promoting sales. The ones which we shall list are taken from an angle differing from those we discussed in connection with retail salesmanship. These recommendations are from the standpoint of store management and discipline.

(1) *Study Customers.* By studying the habits, likes, and dislikes of customers one may learn how people behave and what they want, and treat them accordingly. We have already suggested the practical use of observations on shopping habits of people in regard

to locating the store, laying out the departments, and placing the aisles. Some surveys have confined themselves exclusively to women, since they form such a great bulk of the buyers. Rather surprising facts are discovered when one ascertains who purchases various articles. For example, women buy a great deal more men's clothes than one might expect. Men buy most of the candy and flowers. Details concerning the placement and management of shops and departments handling these things can be worked out in accordance with these facts.

A survey which suggests many practical business policies to the merchant was conducted by Waters. Actual customers were asked to rate a large group of successful and unsuccessful business men on thirty items of customer treatment. The successful merchant was defined as one with whom the rater liked to do business; the unsuccessful as one with whom one did not care to deal. We present the results in Table 57. We see that there are a number of things which a successful merchant does and a number which he does not do. In general the customer prefers the merchant who keeps a full, reliable line of goods, gives everyone equal treatment, tries to solve with equity the problems of each customer, and furnishes satisfaction. The less successful owner fails to take interest in the indi-

TABLE 57. CHARACTERISTICS OF THE SUCCESSFUL MERCHANT

Positive		Negative	
Item	Per cent Yes	Item	Per cent No
Stable business	97	Tries to load customer	97
Uniform quality	94	Overanxious to sell	95
Fair price	94	Tries to rush purchase	94
Well-organized business . .	93	Worried, preoccupied air . .	88
Interest in customer	91	Long, personal conversation	84
Full line	89	Maligning competitors	84
Same treatment to all	88	Hard to reach (phone)	81
Satisfactory adjustments . .	88	Misrepresents goods	79
Honest	88		
Accommodation	85		
Courteous employees	84		
Courteous himself	83		
Deliveries with dispatch . .	77		

vidual customer, has a less stable and well-organized business, tries to dispose of as much merchandise as possible without regard to its real desirability, and does not stand in back of his goods to the highest extent. It can be seen that mental set and the halo tendency have fine chances to operate in this questionnaire type of study, especially since the subjects were asked to select the merchants for their own rating. Many bad traits which may not be deserved are likely to be attributed to merchants whom one dislikes or about whom one knows a few bad things. However, there are numerous concrete suggestions which can be adopted by a merchant who wishes to establish a permanent, high-class business, and to make himself respected in his community.

(2) *Greet Customer Who Is Waiting.* The owner should lay down a strict rule for the clerks to greet any new arrival immediately upon his entering the store, even if busy with present customers. The reasons for this were stated at some length in the last chapter.

(3) *Allow Customer to Circulate Freely.* Counters and aisles should be made wide and open enough so that the customer can wander about at will. This will keep her occupied while waiting for attention and will establish in part a self-service system. In stores like the A and P the customer may have practically waited on herself by the time a clerk is free. Merchandise can be studied at leisure. In some cases the customer might hesitate to ask the clerk to pull it down from the shelf unless he has a pretty definite intention to buy it. This arrangement will ease the burden of the clerks and allow each to wait on more customers. Prices must be plainly marked for this scheme to work well.

(4) *Place Merchandise So that It May Be Handled.* It has been said that an article in the hand is half sold. This applies to sporting goods like tennis rackets and golf clubs, and to tools, neckties, and canned goods. Articles placed on a rack should have their handles up and outward, so that they extend an invitation to be handled. Certain articles must be kept covered for sanitation, danger of thievery, and similar reasons.

(5) *Have Samples on Hand.* Free samples of cookies, candies, cigarettes, and similar small objects of low cost can be placed so

that customers can help themselves. Sales will be stimulated by this "impulsive" appeal.

(6) *Plan Demonstrations.* Like free samples, demonstrations will attract attention to certain items: washing-machines, stoves, foods and raw foodstuffs, paints, and automobiles. A small driving range will give a golfer opportunity actually to use clubs.

(7) *Weigh Out Quantities up to Total.* In weighing out bulk goods the usual practice is to make a general estimate of the amount and then adjust to bring it to the exact measure. It gives the customer a little better feeling if the initial amount is estimated somewhat conservatively and then little by little *added* to bring it up to the total. This makes it appear as if one were trying to give all possible. On the other hand, if too much is put on the scales at first and then some is taken away, the customer will feel as if he were getting just the bare minimum. The same principle applies to filling the gasoline tank. The hose is usually tilted up to drain it to the last drop. Actually it makes no difference whether the hose is left empty or full, as long as the same procedure is followed consistently, but the impression is different.

(8) *Ventilate, Heat, and Cool Properly.* Meat, fruit, and vegetable stores must be kept at the proper temperature and be properly ventilated or customers will suspect the freshness of foods. Several large city stores have installed cooling systems to keep the selling floors comfortable during the hot weather in the summer. These stores become that much more attractive to shop in.

(9) *Establish and Keep Good-will.* So many points come under the heading of good-will that we can do no more than hint at a few. Neighborhood and small-town stores depend a great deal on steady patronage. To do this they must make people like to trade with them. One of the most important ways to do this is to stand back of one's goods. The better type of store will accept return of goods which have not proved satisfactory with complete cheerfulness, without any argument, and without time-consuming technicalities. They have found that losses sustained in this way will be more than made up in continued patronage. One who has been well treated will feel an obligation to give his subsequent trade to that store, while a dissatisfied customer will not return and may even spread unfavorable and undeserved publicity against that place.

(10) *Provide Personal Conveniences.* The store will be more desirable to trade in if it maintains certain side lines—soda fountain, restaurant, branch post-office, theater-ticket agency, lounging-rooms, play-rooms for mothers to leave their children, etc.

PART III. THE CUSTOMER'S SIDE

VII. DEVELOPING SALES RESISTANCE

(1) *Make Sure of the Value.* Remember that the purpose of the salesman is to get you so interested that you will desire to possess the product he is selling. It should, therefore, be your purpose and duty to make sure that the thing will be of that much value to you.

(2) *Wait a Week.* This admonition is perhaps the first that should be given relative to a purchase about which one is not entirely convinced. If at the end of this time you want it as much as previously it is a pretty fair bet that the article is suitable. But it will surprise you how much your enthusiasm for many things dies out through time alone. One might as well let it die out without spending the money as have an unnecessary article on one's hands because of an impulsive purchase. It is because of this fact that the high-pressure salesman tries to force a decision at the first interview and that impulse goods are placed in a prominent place in the store.

(3) *Think over the Proposition from All Angles.* Very few articles satisfy all of one's requirements in every respect. Purchase and satisfaction result from there being, in one's judgment, more desirable than undesirable features. The salesman is careful to point out only the desirable ones and he hopes to sweep one off his feet thereby. Later leisurely speculation will disclose the less favorable aspects and will enable one to gain a more complete perspective of the whole.

(4) *Get Full Information.* Insist on all the facts and complete specifications. It is the salesman's business to know his product thoroughly and to be willing to answer all questions within reason. One should be especially careful to study prices in case of buying on an installment basis. Low down payment and monthly rates often obscure a rather high total price. Further, one may commit

himself to a financial obligation of longer duration than may be advisable.

(5) *Compare Brands and Stores.* It is perfectly legitimate and a real duty to oneself for the customer to see what various stores have to offer before he commits himself. It is only in this way that one can select from articles of a general class the particular one which most nearly matches his requirements. Women are much more careful on this score than are men, who usually have less time and less inclination to shop around.

(6) *Be Willing to Say No.* One should not buy anything that is not entirely to his satisfaction. Men are much more easily bluffed into a sale than are women, for if they walk into a store and find the article twice as expensive as they had expected they rarely have the nerve to say so frankly and walk out. If they do it at all it is with embarrassment.

In addition to these general cautions, attention must be given to the new scientific attitude toward advertised goods—the systematic study of actual values and the training of the consumer to acquaint himself with the results of such study. A separate section will be devoted to this new attitude.

VIII. PROTECTION OF THE CUSTOMER

(1) *Problem.* Ordinarily one thinks of manufacturers and sellers as reasonably well intentioned and honest. We think that, while they are of course in business to make money, they demand only interest on their investments plus adequate return for their efforts, and that they try to turn out full-value goods.

This supposition is not necessarily justified, according to many keen analysts and research workers. Stuart Chase and F. J. Schlink have done most noteworthy work in calling attention to the frauds practiced by industry in cheating the consumer out of a good share or even all of his dollar's worth. The reader will derive much enlightenment and personal benefit by reading *Your Money's Worth*, written jointly by these two experts, as well as other writings by either or both.

(2) *Deception in Advertising and Selling.* Because of the vast number of products which may be sold and the intense competition

among them, there has developed what really is a race to get the customer's dollar before anyone else gets it. As we saw in our brief tracing of the development of advertising, claims become at times more and more alluring, more and more extravagant. These claims are often far beyond the ability of the manufacturers to make good, deliberate misrepresentation is practiced, and great pressure is put on the reader to buy things for which he has no need, use, or means to purchase.

To illustrate these practices we may cite three typical industries—automobiles, gasoline, and patent medicines. All three have a common basis in trying to sell on emotion rather than on scientifically proven facts. To profit, as organized at the present time, the automobile industry must keep up a rapid turnover. One is sold a car partly on the assertion that it will be good for a hundred thousand miles; then the next year the same salesman tries to show you that your car is outdated by the new model with certain (actually minor) improvements. And if you succumb, you will be lucky to obtain in trade-in one-half the original value for a car which has not gone one-fifth its promised mileage.

The gasoline-producers provide another, less pernicious, type of misrepresentation. While most standard gasolines are fairly good, in respect to efficiency scarcely any differences among them can be found. Yet to read the advertising one would think that each type of gasoline must be the only brand which will permit one to run his car without permanent damage to the motor, to start on cold mornings, or to pass other cars on the road. Recently, while driving West, the writer saw what seemed to him the height of attempts to differentiate among products. One rather large company had erected rather frequent billboards, all identical with the exception of the last word. The last line read "Tailor made for Iowa," then "Tailor made for Nebraska," and finally "Tailor made for Colorado." Just what mysterious change in driving conditions occurred in crossing the Missouri River from Iowa into Nebraska, or in leaving the western Nebraska plains to enter identical eastern Colorado plains, could not be discovered.

The patent-medicine racket is more full of fraud than any other single industry. One pays a dollar for a bottle of worthless, or near worthless, concoctions costing the manufacturer at the most a few

cents. The appeal is usually to fear—dyes for gray hair, constipation and lost vigor remedies, nerve-upbuilding tonics. Such slight benefits as may be obtained from a few of them can usually be gained from simple standard remedies to be gotten cheaply at any drug store. Most of them are absolutely worthless; and some are actually harmful.

(3) *Waste in Pressure Selling.* One of the great difficulties in high-pressure competition is that the market must be stimulated at the cost of great effort. Certain articles, like sugar, are bought in nearly constant quantities. We like to use sugar with cereal, grapefruit, tea and coffee, and in various desserts. We do not enjoy these without sugar, nor do we enjoy sugar with many other items of diet. So the manufacturers do not have to use special efforts to keep purchases up; and on the other hand no efforts would persuade us to use sugar on other things. The result is that advertising and pressure selling do not appear in connection with this type of goods.

But take golf trousers or pianos. After those who really want these goods have made their purchases, additional sales are only secured at great effort and cost. High-salaried expert salesmen and organizers of sales campaigns must be secured. So in contrast to our usual assumption that large-scale manufacture must reduce costs, we find that the price may actually go up. The consumer has to pay the salaries of high-pressure salesmen and advertisers. One must not, of course, conclude that this is true in every case. Where the market is in a natural, rather than artificial, condition, or where use of an article becomes more common by popular demand, as in the case of radio, the price may come down.

(4) *Tremendous Cost of Simple Articles.* Because of extravagant claims, standard brands, secret processes, and pressure selling, the customer may be forced to pay disproportionate prices for simple articles. One of the prize examples is the case of cleaning fluids. We buy a neat little bottle for half a dollar or more, without realizing that we can remove just as many spots from a necktie or coat with a few cents' worth of carbon tetrachloride. Most of the cleaning fluids are simply this, with possibly a little perfume added. Insect spray is largely worthless, and sells at ten or more times its cost of manufacture. Another prize example is seen in the history

of safety razors. The first Gillette razors sold for five dollars, since they had a monopoly and could sell as many for that as for one dollar. Now with certain basic patents expired and great competition, we get similar razors given free with shaving soap, or with blades.

Chase and Schlink recount an example of how price was built up. A simple reading-lamp, adequate for every purpose, could not bring more than three dollars at the most. So the manufacturer proceeded to make it ornate. On the upright he put iron leaves, Grecian designs decorated the top, and a fancy silk shade completed the supposed artistic effect—all of which added little to the article but price.

(5) *The Relation between Quality and Price.* One of our usual assumptions is that we get just about what we pay for in an article. We assume that a ten-dollar pair of shoes will give at least twice as much satisfaction as a pair for five dollars, that a two-thousand-dollar car is far superior to one for a thousand, etc. In general this may be true, particularly in highly competitive industries and in those where performance is easily, immediately, and objectively traceable. The automobile industry, in the opinion of the writer, is one of these. One gets just about equal service and comfort from all types of cars selling for six hundred dollars; those selling for one thousand are better, but just about equal to each other. A poor car soon gets that reputation and drops out. But with clothing and household articles, use is so irregular and under such varied conditions that it is very difficult to ascertain the durability and value one does obtain from them.

Research on various articles has shown that price and quality may be totally unrelated. Bed-sheets were studied by the government Bureau of Standards, with partial results as follows: the second costliest was next to last in quality; the best was cheaper than three other samples; and of two makes of identical quality one cost two and a half times as much as the other. For an interesting check, groups of consumers and sales clerks were asked to judge the relative qualities of the sheets, and neither could estimate better than chance. How can one expect accurate guidance from a salesman when his knowledge is as deficient as this? The writer, having acted as a salesman himself, realizes the difficulty of knowing the

detailed technical specifications of hundreds of articles, but objective specifications (not manufacturer's claims) should assist the wholesale buyer in making the original purchase for the store. With such scientific buying the "gyp" manufacturer would soon be driven out of existence, and the customer could safely depend on merchandise.

For some articles lower-grade and lower-priced goods are perfectly satisfactory. Fruits, for example, often come in three grades, the best being large and perfectly shaped, the second slightly smaller, and the third those fruits which are broken. The quality is usually the same, and one can save if he is not interested in the æsthetic aspect of the fruit. The third grade of gasoline may be perfectly satisfactory in warm weather and on comparatively level ground, provided it does not deposit too much carbon. Many articles from a ten-cent store will prove as satisfactory as those obtained at several times the price from a hardware store, but one will have to be careful in ascertaining the facts.

The final test of an article is the actual value received. Many people will buy the cheapest, or the one for which they receive the highest trade-in value on the old, regardless of other considerations. A ton of coal at six dollars may turn out to be more expensive than another at ten, if the former contains more slate and other impurities. By paying slightly more for a pair of sox, or by buying from the right manufacturer, one may obtain far more wear. Of course, one can never find his true expense until he has worn out the article, which may be several years in the case of an automobile, or months in the case of sox or neckties. Keeping records of all one's purchases would consume a great deal of time and effort if carried on by each individual. For this reason impartial agencies are necessary; these we shall discuss later.

Even a guarantee is not entirely satisfactory. Even if one's money is refunded or if one is given a perfect article in replacement, adequate restitution has not been made. He has wasted a good deal of time and effort, and he has received incomplete satisfaction from the imperfect article.

(6) *Saving in Standardization.* In the case of most articles there is entirely too much duplication. Not only does this cause the customer confusion and raise the price because of the intense competi-

tion, but there is serious practical difficulty in general use and interchangeability of parts. Ten or fifteen years ago one was lucky to be able to plug an electric fan, vacuum cleaner, or lamp into the sockets of a friend's house. He found himself having to throw away a whole flashlight if the bulb burned out. He might have to wait for days for a small automobile repair part because each car and each model was built to entirely different specifications. Plumbers had to carry several times the necessary supplies to effect necessary repairs on unstandardized fittings.

Now many mechanical items run according to standard sizes and specifications. Any electric-light bulb will fit in almost any household socket; about the only exceptions are high-wattage bulbs for lighting large halls, low-voltage circuits, and for special purposes where damage might be done by indiscriminate use. Standard two-piece plugs will fit nearly any piece of equipment one wishes to use at the time. Nuts and bolts are made in regular sizes and threadings, so that one can easily obtain the necessary one for his car, motor, clothes-wringer, or furnace.

The advantages of standardization are not confined to accessibility. Fewer factories and machines will be needed to put out the articles, which means that better goods can be made available at lower prices. The customer will be able to obtain more satisfaction and have lower cost of upkeep.

The following six types of standards have been suggested by Chase and Schlink: (1) quality, such as fat content of milk, or specifications for cement or gasoline; (2) size and form, such as nuts and bolts; (3) length, mass, time, temperature; (4) ratings: horsepower, voltage, speed; (5) practice: details of construction; and (6) nomenclature. What is a "six-ply" tire, a "horsepower," a "twelve-ounce duck" tent; a "tenpenny" nail?

What are the social effects of such standardization? One of the most frequent complaints directed against our present civilization is that there is too much standardization; that we wear practically identical suits and shoes; that our amusements are similar; that there is no variety in foods. Thinkers who have gone beyond first impressions believe that this is an advantage rather than a drawback. No one has urged that women's styles be standardized, that we all spend our vacations in the same way, that we all eat the same fruit

for breakfast. But certain standardizations relieve us of the necessity of detailed thought on matters which are routine anyway, and enable us to devote the rest of our energies and money to the more variable and personal matters in life. If we wish oatmeal for breakfast, why have to worry about how much to use, how much water to put in the kettle, and how much salt to add? Why have to remember that a size six Smith shoe fits us, while if we buy a Brown shoe we have to get a seven? Why should we bother with the fact that our gasoline-tank holds ten American gallons, and only eight Canadian?

(7) *Testing Agencies.* One will naturally ask: A good idea, but how can I buy more scientifically, and how can I make sure I am getting my money's worth? Beyond a few simple things, one is dependent on outside information. We have already mentioned the use of carbon tetrachloride for cleaning. Even this is not always readily available. Many dentists say that an equal mixture of soda and salt equals or betters any tooth paste on the market, except for the scent and taste.

The government maintains its own testing laboratories, where it studies scientifically all things it considers purchasing. Any order will bulk very large, and most things in military service receive very severe wear. The Bureau of Standards has drawn up very rigid specifications, which are minimal standards all products must meet in order to retain the government's patronage. Food supplies, for example, must contain specified elements to a certain extent, and not contain injurious substances beyond a certain small percentage. Cloth must contain certain percentages of specific raw materials, and be able to withstand wear and other unfavorable conditions to certain degrees.

Unfortunately, these results are not available to civilians, and even if they were would not cover a large share of products used in ordinary life. Groups of citizens have attempted several times to get the federal government to make public the findings of the Bureau of Standards, but they have been balked by manufacturers' associations. Part of the reason may lie in our existing social and economic order, where business seems to be favored and has a large voice in governmental affairs, and where the policy of *laissez-faire* makes the customer take his chance. But a government which is

supposedly run "by the people, for the people" and which taxes and regulates us in many ways, should be interested in protecting the same people. Research on farm procedure has helped that group greatly in *producing* (perhaps too much; witness the surplus); why not the rest of us in consuming? There seems no reason, on grounds of squeamishness, for defending unscrupulous organizations when the great mass of citizens, the body politic, is thereby harmed.

A few states and cities follow the practice of the federal government in specification-buying, but unfortunately most of them still place their orders through favoritism. Where scientific methods have been used great savings have been effected, although again results are not available or useful to the average citizen. Large consumers, such as manufacturers or chain hotel owners, may be able to have samples tested in laboratories. Few ultimate consumers, however, have been able to obtain sufficient information to buy scientifically an important percentage of their purchases.

(8) *Consumer's Research* is the name of a confidential journal circulated among a large number of interested consumers throughout the country. For a reasonable annual subscription one receives bulletins giving the results of actual tests on commonly used articles such as automobiles, gasolines, oils, mechanical refrigerators, food brands, tooth pastes, razor blades, radios, household supplies, clothing, building materials, office supplies, fire-extinguishers, etc.

Since the service is confidential we must limit ourselves to pointing out the merits of their work and a few of their methods. On the basis of tests they give their subscribers the merits and demerits of leading makes of various items, usually grouped into "recommended," "intermediate," and "not recommended" classifications. They buy their samples on the open market, to insure random and stock selection, and give rigid tests on all phases which may affect value received. Reasons for the judgments are given, so that one is privileged to take the advice as he sees fit. Some of the criticisms cover such points as, too costly for value received, although of good grade; costs several times as much as preparations easily made at home or to be bought under standard (non-brand) names in any store; low efficiency for unit cost of operation; low trade-in value; breaks down after too few hours of service; absolutely ineffective (drugs or insect poisons); useful for only a few of the desirable

purposes of the item; artificial and dangerous preservatives used; corrodes metals with which it comes in contact; fails to be of uniform quality; does not live up to its advertised claims.

Consumer's Research has been criticized as being over-critical and cynical. On the surface this may seem true, but it is necessarily very critical for two chief reasons: first, a large share of products do not come up to expectation; and second, one can say little more about an article which does prove to be first class than that it fulfills the advertised claims. Publicity departments are not reticent in exploiting any good feature.

(9) *The Future*. There may be considerable difficulty in making facts and arguments, such as those we have put forward, known to the general public. Organizations such as *Consumer's Research* must have behind them large organizations of private individuals, always hard to muster, to supply the incentive and funds needed to carry on the necessarily laborious work which will achieve results enabling non-experts to improve their own buying habits materially. Results must in fairness be confined to those who pay for them. Government findings ought to be considered public property.

Newspaper publicity, the best way of disseminating information, is practically taboo, since the papers are supported and hence directed by their advertisers. When a newspaper does not even dare publish news which it would otherwise feature, because the individual involved happens to be an official of an advertising firm, how could we expect facts unfavorable to the product, the truthfulness, or the business policy of that same firm to receive an accurate report?

IX. OBLIGATIONS OF THE CUSTOMER

(1) *Treat the Clerk Decently*. Some shoppers forget that the clerk is another human being and take advantage of having the upper hand to show their ill-breeding. Be courteous and decent, and take the word of an experienced salesman that you will receive far more willing and eager service than if you are unpleasant.

(2) *Think before You Start*. In this respect men are, as a rule, much more satisfactory to deal with. They have a good idea of what they want, state their wants directly, find out specifications,

make their decision, and leave. While it is true that the salesman is there for your service and convenience, his duty and desire are to sell merchandise, not to answer foolish and pointless questions. Nor is he there to amuse the customer. Cases have actually occurred where women took a half-hour of a salesman's time, making him bring out practically the entire stock, and then left with such a comment as this tossed over the shoulder: "This was nice. I had to fill in a half-hour before meeting my friend at the theater."

(3) *Wait Your Turn Gracefully*. In a crowded store everyone cannot be waited on instantly. Have consideration for the other customers as well as for the clerks and don't go around shouting for attention out of your turn.

(4) *Pay due attention to the integrity of the firms* with which you deal—their habits of fair dealing with customers and employees. As a member of the community you are obligated not only to buy intelligently, but to patronize manufacturers and retailers who maintain a decent ethical standard in running their business.

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importance for us to formulate a clear conception of the relationships between the mind and the body.

(1) *Theories*. There have been four chief views suggested, two dualistic and two monistic. (A) *Psycho-physical parallelism*. The body and the mind are entirely separate entities. Neither is capable of affecting the other. If the two happen to be engaged in simultaneous activity, as thinking and performing the same action, it is said to be due to antecedent causes influencing both. (B) *Interactionism*. While the mind and the body are separate, they can and do affect each other. This is the common-sense view. We speak, for example, of mental and physical fatigues, yet we realize that fatigue resulting from activity in one sphere will influence the other. We think of raising our arm, and do it. (C) *Psychical monism*. The mind is the only reality. Physical objects and events, so called, exist only with and during sensory and mental activity. Their reality can never be proved apart from sensory processes. This view seems contrary to common sense, and is little accepted at present. (D) *Physical monism*. This theory is held by most of those who have confidence in science and who feel that supernaturalism is untenable. In one way or another everything is considered as physical. Even thought is wholly a matter of nervous activity. The mind represents the functioning of the most complex bodily organ, the brain, but this works in a way not qualitatively different from the way in which heart, lungs, or stomach work. There is nothing mysterious about the mind, soul, or consciousness.

(2) *General Observations*. Aside from all such theories, it is in practice evident that the mind controls the body in most daily events. One raises his hand to brush off a fly, reaches for a glass of water, or steps up from the street to a sidewalk. Physical disturbances follow mental upsets. Worry results in loss of appetite, indigestion, inability to sleep, and excessive fatigue. The action of the body on the mind is seen in several pathological states. In a severe fever the patient often becomes delirious. Alcohol and morphine likewise cause typical distortions of thought.

The old saying, "A sound mind in a sound body," has received definite confirmation. Buddha told how he had started practicing partial starvation and other forms of self-torment which have often been undertaken by religious enthusiasts in attempts to divorce the

body from worldly affairs. Buddha failed to come any nearer to the ultimate truth through this procedure; in fact, he found difficulty in thinking at all while in a weakened state. He then decided that the only way to think clearly was to have a well-nourished brain in a well-nourished body.

(3) *Intelligence and Physique.* Terman has definitely refuted the idea that a scholar is a man of inferior physique, and the converse assumption that a large man (an athlete, for example) is *ipso facto* stupid. He studied physical, intellectual, and personality traits of nearly a thousand "gifted children," which he defined as those who had an I.Q. of 140 or greater. One of the most striking findings was that these children averaged about two inches taller and about ten pounds heavier than children who were of the same ages and of average intelligence. Puberty occurred earlier, general physical development was greater, there was less illness and chronic poor health, and sleeping habits were better. In all significant ways this group, which was chosen solely because of its intellectual pre-eminence, showed physical characteristics in advance of the average group. This is certainly striking evidence in favor of the closeness of relationship between mental and physical traits.

(4) *Personality and Physique.* There have been a number of attempts to correlate structure with behavior characteristics. So far no correspondences have appeared between facial dimensions and personality traits. This looks rather bad for our theory of a close correspondence between the mind and the body. However, experts have not given up the pursuit, but have admitted that it is probably futile to seek agreement between complex mental functions and very simple structural measures. There have been some indications of late that there may be fruitful discoveries in the field of body chemistry as related to mental function. These are too embryonic as yet to permit evaluation.

A well-known study of correspondence between body build and personality type—in this case mental disorder—has been reported by Kretschmer. He classified patients into three general bodily builds, the asthenic, athletic, and pyknic. The asthenic person is tall and thin, long-legged, and narrow-chested. The athletic type can well be imagined from the name; he is symmetrically developed, muscular, with a large chest and a full trunk, although the ab-

domen is smaller than the chest. The pyknic build is that of the typical fat man—short legs, large waist, sloping shoulders, and practically no neck.

Kretschmer early noticed that certain clinical forms seemed to go with certain bodily builds, so made a distribution as quoted in Table 58. The dichotomy of abnormal forms is the classification made famous by Kraepelin. The detailed symptoms are described in Section V of this chapter.

The almost perfect correspondence of certain specific body builds with the two major clinical forms is really startling. The fact that the number of cases is fairly large and that there are admittedly

TABLE 58. CLASSIFICATION OF MANIC-DEPRESSIVE PATIENTS (CIRCULARS) AND DEMENTIA PRÆCOX PATIENTS (SCHIZOPHRENES) ACCORDING TO PHYSICAL TYPES

	Circular	Schizophrene
Asthenic.....	4	81
Athletic.....	3	31
Asthenico-athletic mixed.....	2	11
Pyknic.....	58	2
Pyknic mixed.....	14	3
Dysplastic.....	0	34
Deformed and uncatalogable...	4	13
Total.....	85	175

a few cases of divergence leads us to accept the results as valid. Several later investigations have confirmed these results. Though many others have failed to do so, there is probably some trend in the direction indicated.

We are puzzled, however, when we attempt to deduce broader implications from these facts. Can we apply these trends to normal humans as well as to clinical cases? The manic-depressive psychosis is often described as an exaggeration of extroversion, while dementia præcox shows introversion at its height. Should we expect, then, that all tall thin persons would be introverts? Would an employer insist on hiring no salesmen but those who are stocky, since these would seem to be extroverts? For some reason these hypotheses fail to work; there is a breakdown of trends on the more normal levels. Such a thing happens occasionally in scientific

research. It may mean either that our measuring instruments are not sufficiently accurate to discriminate less gross differences, or that abnormal cases operate under qualitatively different laws from the general run of people. In any case the suggestion for future investigation is very potent.

(5) *Implications.* The intention in this discussion of body-mind relations has been to show the closeness of the two to one another. While it is not possible to say that we have proved physical monism or interactionism, the body of evidence which is available would seem to suggest that one or the other view must be held. Just which is the ultimate truth is not of great practical importance to us at the present time. What concerns us is the fact that the two functions are *intimately bound up with each other*, whether as one or as two. The value of this assumption will appear when we discuss functional abnormalities and psychological treatment of medical patients.

III. COMMON CHARACTERISTICS OF ABNORMALITY

There are certain features which are present in all classes and degrees of mental abnormality. These are presented not only to assist in comprehending our subsequent discussion, but so that one may hold the proper attitude toward persons who are suffering from disorders as we meet them in our daily life.

(1) *Emotional Origin.* Abnormalities are practically always caused by some emotional conflict or disturbance. If this fact is overlooked it is difficult to appreciate why a person should suffer as he does, when the difficulty is so obviously irrational. The patient may even recognize this himself, but have trouble avoiding the emotion in spite of his attempted rational outlook. Normal individuals do much the same thing to a lesser extent. Most of us are a trifle uneasy in a "haunted house," though we disclaim a belief in "ghosts."

(2) *Conflict* may be found behind nearly every case of abnormality. One system of ideas comes into conflict with the rest of the mental contents and if the conflict cannot be resolved satisfactorily a serious emotional disturbance results. This may result in the formation of a logic-tight compartment, whereby one idea is kept from coming into contact with others. An example of such a con-

flict would be a person who was very much in love with another, but was prevented from marriage by family pressure, religious objections, or racial differences. If the conflict becomes too severe for both spheres of influence to remain in consciousness, one is forced out, or repressed, into the unconscious. We shall expand on this latter mechanism while discussing Psychoanalysis, in Section VII of this chapter.

(3) *No Intellectual Impairment.* The terms "cracked" and "cuckoo" often applied to insane persons would imply that thought was impaired. Except in advanced stages of certain diseases, this is not the case at all. If one visits an institution he can talk to most of the residents in exactly the same manner that he can talk to casual strangers whom he meets in any public place. There are only a few who act peculiarly enough so that one might suspect them if he met them anywhere else.

(4) *No Disorientation.* A large proportion of patients know just what is going on around them, are up on daily events, and can often discuss their own condition with doctors in a manner as rational as that in which the average person describes any physical ailment such as stomach trouble. The cartoon depictions of asylums as peopled by persons cutting out paper dolls or dressed like Napoleon are grossly exaggerated and apply even in small measure to only a small minority of the worst cases. Considering this fact, all sympathetic persons advise people not to visit an institution if they have only a morbid interest. The patients know that they are being gaped at, they understand why, and they are more than unusually sensitive. If you have any contact with persons suffering from abnormalities, treat them naturally, as if you suspected nothing. This is best for the patient.

(5) *Quantitative Divergence from Normal.* There are no such things as definite insanity or unqualified normality. No one could be found who is absolutely "normal" in every respect. If a man has a strong liking for golf, we should not consider him abnormal. But if he neglected his business and family to play all hours of the day, we should say that he was somewhat unbalanced. Dozens of people have some minor peculiarity for every one who has a disorder advanced enough to warrant institutionalization. Only those people whose disorders have progressed to such a stage that they

cannot get along in complex society go to asylums. There is not, and never can be, any definite border line marked off between sanity and insanity. In court trials where sanity is one of the questions we see equally eminent and honest psychiatrists disagreeing as to whether the defendant shows enough divergence from the normal to be considered definitely insane. Furthermore, the nature of the abnormality makes a difference. If a man wasted every day playing golf, it is a matter of only personal and family concern. But if just once a year he shows homicidal tendencies, he would have to be confined.

(6) *Predisposition in Personality Weakness.* In reading case histories one is impressed by the fact that the exciting causes are almost always inadequate, rationally considered. Very frequent causes of breakdown are death of a relative, disappointment in love, business failure, and some disgrace to the reputation. While these incidents are distressing, some of them happen to everybody at some time or another, and yet the great majority of people get through without serious consequences. This means that there is some weakness in the synthesis of the personality, and that breakdown results from an emotional upset which does not affect so seriously persons with more stable organization. This is similar to the high degree of susceptibility some people have to colds and other common ailments, while other people live in the same environments and are free of them.

(7) *Sheltered Environment Relieves Tension.* Because of this personality weakness some people break down following an emotional conflict. Generally they get better if the source of conflict is removed. But if they return to society, with the same problems and complexities that caused the original breakdown, they will suffer a recurrence. They are in the same position as an arrested tubercular case; as long as they rest and try to do nothing strenuous they are all right. As long as the abnormal person is furnished a room, clothes, three meals a day, and smoking-tobacco, he remains happy, contented, and normal. In some cases he may be able to return to normal living conditions, but often he breaks down and has to return again to the more sheltered existence. One wonders if the monastic life is not sought by people who, while technically

normal, find the troubles of a complex life a little too much for them.

IV. THE PRINCIPLE OF FUNCTIONAL AILMENTS

With strict medical interpretation, ailments are considered as organic. They have some physical or chemical cause, such as a lesion, break, infection, poison, or abnormality of cell growth and structure.

Evolution and its corollaries in geology and biology aided the theory of mechanism greatly. For a while it looked as if a mechanistic explanation would cover all phenomena. When certain facts balked investigators, they at first took the position that the theory was still correct, but that the technical means of discovery were so limited that we could not uncover the facts with the instruments and techniques available at the time. They were hopeful for the future.

Relative to abnormality, the theory suggested study of brain structure to find some lesion which might be held accountable for the disorder. Unfortunately, in the great majority of cases such study proved futile, and even when it was apparently successful in single cases nothing capable of general application was discovered.

This suggests a functional explanation. Abnormality results from malfunctioning, rather than from any physical defect which can be detected by chemical or microscopic analysis. It is comparable to an automobile every part of which is sound, but which is not perfectly adjusted, with the result that it is operating below perfect efficiency.

A very important discovery was that many cases of disorder presented symptoms which were incompatible with known organic facts. Paralyse and anæsthesias occurred in regions which are not consistently under the influence of particular nervous tracts. A well-known hysterical manifestation is that termed the "glove anæsthesia." The patient loses all feeling in his hand, the area so affected including the region which would be covered by a glove. If the proper nervous connections are traced one will see that this could not be caused by a definite organic disturbance such as cutting a nerve. Such phenomena are given a mental origin.

To show that a complete mechanistic explanation is not possible, McDougall stresses man's apparent purposive activity, his adaptability, and his thinking. We quote his exact words:

And functional disorders are commonly the expression of subconscious purposes, or of the failure and disharmony of conflicting purposes which may be wholly or in part subconscious. This fact has been increasingly recognized by all who study the neuroses, especially hysteria. But however little the conscious subject may be aware of the purposes at work within him, they are essentially of the type of mental activities. It is therefore through mental influences that functional disorders are brought about. They are the consequence of disharmony, conflict, or failure of mental or purposive adjustments. That is to say, they are essentially *psychogenic*. This is now commonly admitted of those disorders which are officially classed as functional—the hysteric, neurasthenic, and psychasthenic disorders. But it is just for this reason, just because they are so clearly the result of mental activities, mental conflicts, disharmonies and failures of mental or purposive adjustments, as well as because they do not commonly involve any discoverable lesion or structural defect, that they have been in the past so commonly neglected and regarded as unreal or imaginary.

Opinion on the functional and organic views is bound up with one's feelings about the mind-body problem. Just as these latter were pointed out to be at least highly interdependent, so the functional and organic bases of abnormality are interdependent. A functional disorder can cause organic upset, and an organic disturbance may create mental abnormalities. The two conditions may reinforce each other. If one has a predisposition toward nervousness, certain bodily functions may be stimulated; this in turn makes the victim even more excitable. Thus a vicious circle is established. It is recognized that there may be a disorder which is purely organic or purely functional, but it is hard to conceive of any serious disease within one sphere which does not have influence on the other.

These functional mechanisms, like all forms of abnormality, are means of solving critical emotional conflicts. They have a definite purpose behind them, conscious or unconscious. Some may serve merely as an escape from the conflict, while others may solve it

temporarily or permanently. Fainting in an embarrassing or fear-inspiring situation is a means of avoiding a solution of the problem and of shifting attention from the situation to the emergency one is creating. Even chronic illnesses have been traced to such motives. One such case in psychiatric literature is that of a woman whose only son was being married, which made her very unhappy at the thought of being left alone. She tried to be a good sport about it, but her desires were too strong, and shortly after the wedding she developed a hysterical paralysis of the lower limbs. The son and his wife had to move in with her. In this manner she acquired two people to wait on her rather than one, as formerly. As proof that the paralysis was purely functional, one day when she was left alone the house caught on fire and she walked out unassisted! During the war many soldiers developed paralyses, anæsthesias, and blindnesses because of intense fear. The motive was unconscious; it was not a question of malingering. They may have made every effort to be brave, but the situation was so distressing that the unconscious overcame deliberate intentions. When the conflict was removed, after the Armistice or when far from the front, cure was often rapid and complete.

This principle of functional disorder is all-important in abnormal psychology and psychiatry. We shall constantly refer to it in our discussion of abnormalities of all sorts, including psychoanalytic material. We shall also treat from the functional aspect certain problems of medicine which relate to psychology.

V. SOME MAJOR CLINICAL ABNORMALITIES

We shall treat here three major clinical forms of abnormality which are recognized by all psychiatrists: schizophrenia, or dementia præcox; manic-depressive psychosis, or circular insanity; and paranoia. Since there are many treatises on each of these, it is obvious that we can do little more than touch on their major symptoms. We shall devote more space to the minor abnormalities which one encounters more commonly in daily life.

(1) *Schizophrenia, or Dementia Præcox*. Literally these two terms mean "split mind" and "youthful (precocious) loss of mind." The former term is more in favor now, since it has been discovered that

not such a great proportion of cases occur during adolescence as had been thought.

The best single term to use in describing this disorder is "shut-in personality," or an exaggerated introversion. A poverty of emotions is often seen. The patient engages in little activity and pays little attention to his surroundings. Stereotyped movements or sentences are common. Occasional emotional outbursts occur for little or no reason; in such cases the emotion may be entirely inappropriate to the occasion.

There are four chief varieties of schizophrenia. First, dementia simplex, deterioration without hallucinations or delusions. In the second, hebephrenia, hallucinations and delusions are frequent; there are false ideas and loose associations, and even confusion of identity. It is this variety which has unwittingly been seized upon by funny-paper cartoonists to depict institutional scenes. Third is the catatonic form, which is generally characterized by extreme negativism. The patient may fall into a stupor and remain in a daze. In extreme cases he may not even rouse himself for food, sleep, or elimination. The muscles may be tense or may have "waxy flexibility." The fourth type is paranoid dementia præcox, which may be characterized by the same general deterioration which appears in the simplex stage, with the addition of various types of delusions, which are described below in connection with paranoia.

The various forms of schizophrenia are not as distinct as perhaps one might gather from the foregoing differential description. They are difficult to classify with certainty, and a patient may slide from one to another at any time.

No set cure will apply to all cases. It is suggested by White that it be symptomatic, that is, in terms of the particular cause and nature of the individual case. The closest general recommendation we may give is that new interests must be built up, so that the patient will turn his attention away from himself into more objective and constructive channels. The patient may have plenty of high-grade abilities, but while suffering from the disease will have no interest in them; so the problem is one of awakening enthusiasm rather than of motor or intellectual training. Unless this can be achieved a cure is impossible. For this reason many cases will always

remain institutional. Prognosis is not favorable in most long-established cases.

(2) *Manic-depressive Psychosis*. In contrast to schizophrenia, which is characterized by a poverty of emotions, the manic-depressive variety has too much emotion. The patient is normal some of the time, ascends to the heights of joy, only to descend without warning to the depths of despair. In just what order these stages will occur cannot be predicted. Either mania or depression may follow a period of normality, and these do not follow each other in any set order. Two or more attacks of mania, or of depression, may occur without the opposite phase appearing in the cycle at all.

During the manic stage the individual talks incessantly, rationally or irrationally, changes his mind frequently, is emotionally agitated, and often manifests psychomotor excitement. So violent and ceaseless are his activities that he may do himself damage through over-fatigue; having lost control of his emotions, he does not know when to stop. In the depressed periods he moves and acts slowly, is horribly gloomy, may exhibit poverty of thought and psychomotor retardation. This stage is often confused with dementia præcox, but it need not be, as the latter usually displays little emotion, while there is deep gloom in the depressed syndrome. Suicidal impulses usually have to be combated. There are occasional anomalies—excitement or agitation may appear during deep depression.

The immediate prognosis is somewhat better than for schizophrenia. The patient may have later attacks, but as a rule they are not progressively more frequent and more severe. The patient is more accessible for treatment. Cure is aided by resolving and removing the conflict underlying the emotional disturbance.

(3) *Paranoia* is characterized by systematized delusions. These occur in three general forms—reference, grandeur, and persecution. The delusion of reference is the most general. The patient assumes that all action around him takes place with reference to him. If two people are talking together across the street, they must be whispering about him. If some one laughs, it must be at his expense. Delusions of grandeur, as the name suggests, involve false ideas of position or power. In extreme cases the individual is so disoriented that he loses his sense of proportion and even his identity. A woman has been known to proclaim herself queen of all the civilized world

at the same time that she is on her hands and knees scrubbing the floor. In delusions of persecution the victim feels that others, usually unknown and powerful agents, are trying to take away from him that which rightfully belongs to him; for example, he should be king, but a powerful conspiracy prevents him from ascending the throne. Grandeur and persecution are often combined, as suggested in this case. This abnormality may take a dangerous twist if the victim begins to fear bodily injury. He suspects friends, relatives, and strangers of plotting against him. He may then resort to violence on the theory that he must hit first for self-protection. A less dangerous form of persecutory delusion is litigious paranoia. The individual starts lawsuits on the slightest provocation every time he feels himself to be the victim of an insult. Naturally these are rarely justified. The insults are either entirely imaginary or are in the nature of "kidding" which all of us receive, return in kind, and forget. Religious paranoias of various sorts are well known.

Sometimes paranoia is harmless. The victim does no harm to others, and the delusion may not even interfere with his own business. If his work is of such a nature that it does not require too much poise or concentration the delusion will do no damage, and may even be helpful in avoiding the reality of a humdrum existence. Only in certain types of persecutory paranoia is institutionalization necessary. In paranoia there is no mental *deterioration* and the delusions are *well systematized*; in these respects it differs from the much commoner disorder *paranoid dementia præcox*.

VI. BORDERLINE ABNORMAL SYMPTOMS

(1) *Neurasthenia* is a functional fatigue state. This quotation

The fundamental symptom of neurasthenia is fatigability, both mental and physical. With this fatigability there goes a condition of irritability—irritable weakness—and inability to concentrate the attention for any length of time. This attention disorder is often responsible for what appear to be amnesias. As a matter of fact little or no attention was paid to the event supposed to have been forgotten so that it never was adequately impressed in the first place.

from White shows its general nature. It is often attributed to over-

strain, mental or physical. This view may be true in part, but there is a good deal of evidence against its complete acceptability. In case a person has been working hard it is probably more the worry that accompanies the work than the severity of the work itself. Neurasthenia also occurs in persons who do not even do a normal amount of work, especially wealthy middle-aged women. They have nothing definite to do to keep them busy, so their attention turns to themselves. Worries and minor ailments are magnified and hypochondria sets in. Cure in such cases is activity rather than rest.

Neurasthenia may result from continuing a task too long; an example is a business man who has taken no vacation for several years. His work begins to get on his nerves, he does not sleep well, his appetite is poor and his eating very perfunctory, and he does not even enjoy spare time and recreational activities. A complete change is imperative. A camping or fishing trip, being out-of-doors most of the day, taking plenty of exercise, getting to bed early, eating simple foods, and keeping away from stock tickers and daily newspapers constitutes an ideal reconstruction program.

(2) *Psychasthenia* represents at the mental end of the scale conditions which at the physical end are found in neurasthenia. An emotional conflict lowers the psychological tension, which results in an inadequate reaction, and this in turn causes feelings of unreality and disorders of thought. Concentration is poor. Obsessions of various sorts occur. These are described in the next paragraph. Cure, according to White, is rather difficult, and consists mainly in getting at the source of conflict and reëducating the thought processes along more rational and saner lines.

Phobias, Obsessions, and Compulsions are the commoner expressions of psychasthenia. Various types of fear are included under this heading. Agoraphobia and claustrophobia are fears of open and closed places, respectively. Several types of compulsive "mania" occur. Kleptomania is an irresistible desire to take everything one sees, whether one needs it or not, and even if one has the money to purchase it in the usual way. Pyromania is an impulse to set fires for the sheer pleasure of it, without reason or malice. Every once in a while one of these individuals is detected in a city because of numerous fires of obvious incendiary origin within one district.

Compulsion neuroses lead their victims to carry out certain "meaningless" acts. A man may feel compelled to touch every lamp-post as he walks by it, to tap three times with his cane, to rearrange his table silver in a certain pattern, or to undress in a specific way. Tics are motor compulsions. Perhaps because of some real nervous disturbance the individual develops a slight twitch, which remains after the organic disorder has disappeared. Examples are shrugging of the shoulders, exaggerated eye-winking, and mouth grimaces. The latter often have no deep-seated cause and can be cured through the patient's own efforts, if he exerts himself to prevent their occurring for long enough for the tension to disappear.

(3) *Hysteria* is a very general term used to describe abnormalities resulting from emotional conflict or upset. Freud makes a great deal of this and regards it as a result of various forms of repression of the sex drive. The best single way to describe the hysterical condition is in terms of a general instability of behavior or failure of self-control. Uncontrolled and generally meaningless fits of laughter, crying, and anger form one type of hysteria. Hysterical paralyses and anaesthesias have already been mentioned. A general hysterical condition is found to a minor degree in a great many people. Since it creates no more than temporary unpleasantness, it is usually passed over and classed merely as irritability, bad temper, or a nasty disposition. However, since most people do not display these symptoms, since they interfere with the individual's own happiness as well as that of his friends, and since they are frequently minor manifestations of more serious disorders, we should study them sympathetically, to find their cause and to remedy the conflict.

Various forms of *anxiety states* resemble hysterical disorders. They usually result from fear, either a sudden shock or some long-time worry. An invalid's hypochondria, the fear some senile cases show lest they be starved to death, and excessive worry about finances or reputation are examples. As with other emotional upsets, they are largely or entirely irrational. Even where there is some basis, the worry is carried to such a point as to be ridiculous. In some cases there is not any definite worry, just a vague unpleasant tension, with no cause of which the patient is aware. Certain physical accompaniments which may be present are similar

to those in typical emotional states—cardiac and respiratory irregularities, profuse perspiration, trembling, irregular appetite, dizziness, and paræsthesias (extreme bodily sensitiveness).

(4) *Dissociation* is a general term applied to the breaking off of a part of the mental contents from the rest of the individual's consciousness; it is therefore a mechanism common to *many* kinds of disorder. As the psychiatrists explain it, the sequence is something like this. A distressing or unpleasant event occurs. Due perhaps to weakness or instability in the patient, the experience is not evaluated and forgotten, as it would be in normal individuals. The affective tone grows until it becomes more and more serious. The complex occupies more and more of the patient's thoughts and causes more and more emotional distress. Finally the tension becomes so great that the complex and normal mental balance are no longer compatible. An active process of dissociation then takes place. The affective content is split off from the rest of the mind, being repressed into the unconscious.

This dissociation may take various forms. Amnesia is one; the patient forgets incidents surrounding a certain topic or which took place in a certain temporal interval. Hysterical paralyses and anæsthesias are mechanisms used to solve the conflict. The solution is not entirely adequate; it gets rid of the emotional conflict, but leaves the patient in an incomplete condition for living.

Fugues and multiple personalities are very fascinating and spectacular forms of dissociation. The conflict becomes so severe that less drastic forms of solution are inadequate. The patient cannot continue to live under the same conditions as have produced the emotional disturbance from which he is suffering. Yet he is sincere in his intentions to do his duty, so his conscience will not allow him to leave the scene as long as he has normal control over himself. The unconscious then steps in and asserts its mastery. The result is a loss of identity and disappearance from the scene. An interesting fact is that the victim almost always goes to simpler surroundings. A banker who has always led a very honorable life may fail and worry so much about the disgrace that his mind snaps under the strain. He may be found doing manual-labor work in a distant small town, with a new name, and no memory at all of his previous

life. In a "fugue" there is a change to a new scene; in a "multiple personality" there may be two or more different "selves."

(5) *Stammering* is not very serious, although distressing to the person afflicted. It has been the subject of endless speculation in books and articles, and there have literally been dozens of theories put forth to explain stammering.

The theories seem to group themselves into three main classes. (1) Stammering is caused by faulty enunciation or breathing while speaking, and it may be corrected by instruction along these lines. (2) Nervousness or emotional conflict creates tension in the vocal cords, which interferes with normal speech. (3) Some chemical imbalance causes nervousness and tension.

The second theory seems to cover more facts than do the others, although, as in other topics of abnormal psychology, cases can be cited which seem to confirm every theory. Stammering is rarely cured by instruction in speaking and reading, and the writer is of the opinion that those cases which do result in a cure come because the individual has regained confidence in himself, which really verifies the second hypothesis. A purely physiological hypothesis does not explain the fact that the sufferer is better some days than others, is bothered one day by certain letters and another day by others, and is much worse in public than when reading aloud to himself or with intimate friends. As to the third theory, it has received some confirmation. Some stammerers have been found to have a deficiency in blood calcium or an over-supply of blood sugar. Yet some people with normal speech show these same symptoms.

A very interesting observation is the fact that no one stammers while singing. The wide variations in pitch flex the muscles of the vocal cords so much that the tension which causes the spasm does not arise. This suggests a cure in having the individual speak in a more musical fashion; that is, in less of a monotone. However, if the stammering is only an expression of nervousness, such a procedure would only cover up the symptoms, not effect a cure.

(6) *Day-dreaming* when carried to an extreme is a symptom of maladjustment. Sleeping dreams are uncontrollable, but one should be able to guide his thinking processes while awake. Imagination is an asset to creative thinking, but when it becomes devoid of

reality and takes on the aspect of wish fulfillment it is a different thing. It is usually evidence of a flight from reality on the part of some one who is unable to achieve what he desires. It is a mechanism to assist his ego. A person may have certain ambitions, but not have ability or energy sufficient to attain them; so he derives his needed satisfaction and pride from making himself the hero in an imaginary scene. It is in this and the hypnagogic states, the latter the drowsy condition just before going to sleep, that one conquers his enemies or wins his heart's desire. Such brooding is likely to appear, as we saw, in workers of certain personality types who hold monotonous jobs or are forced to work in unsatisfactory surroundings.

(7) *Somnambulism*, strictly, is sleep walking. The meaning is sometimes broadened to include a waking state in which the individual goes around in a daze. Both types are closely related to fugues, in that they represent flight from unresolved conflicts. Whether the occasional sleep-walking expedition of a normal individual is to be classed as an abnormal symptom is uncertain. It is clearly minor in character, yet it shows that there is some uneasiness of mind, as sleep is not as sound as it should be. But by definition it is abnormal, as few people do display this tendency.

(8) *Senility*. The familiar symptoms of senility are probably physical in origin, but since they affect function they demand our attention. The principal losses occur to the memory. The first to go are recent events. Later, memories farther and farther back disappear. In very advanced cases disorders of thought may appear. Melancholia sometimes occurs, caused probably by a realization that one's physical powers are deteriorating. Only a small proportion of people ever suffer definite senile disorders. Most people die of something else before the brain begins to weaken.

While certain biological effects of age are unavoidable, there are such striking individual differences that one comes to the conclusion that the individual himself can delay or prevent their onset. A person who takes care to keep himself in good physical condition, keeps alert to the changing problems of society, attempts to keep pliable, and does not give in to his years, can lead a much happier elderly life.

(9) *Epilepsy*. Most cases of this disease probably have purely

physical origins. Some cases reveal chemical or glandular disorders; others are due to brain lesion, infection, or tumor. It is usually accompanied by characteristic personality disturbances, both during and apart from the attacks. Immediately preceding an attack the patient is in an upset condition; in fact he may realize and predict the onset. During most of the seizure there is violent motor activity; activity is so intense that it is completely exhausting and he may do damage to himself or others. Between attacks he may be suspicious, irritable, morose, and hypochondriacal.

VII. PRINCIPLES OF PSYCHOANALYSIS

(1) *Definition.* Psychoanalysis is a branch of psychiatry. It is not, as is often supposed, something mysterious or entirely different from all other topics. It has its purpose, in common with the rest of psychiatry, in the study, explanation, and cure of functional disorders. It is set apart from other psychiatries in its insistence on the potency of certain instinctive forces, which, when thwarted or repressed, cause abnormality, and in its methods of discovering the source and cure of the disorder.

(2) *Mechanisms.* To sum up concisely the fundamental concepts of psychoanalysis we should say that abnormality is caused by the effects of repressing, into the unconscious, experiences or drives which are too painful to be kept in consciousness. After the material has been forced out of consciousness, however, it does not die out passively as do ordinary memories which are forgotten through the normal passage of time. Rather it remains potent even though it is no longer accessible to the individual's normal consciousness. It is kept from returning to consciousness by a mechanism called the censorship.

This censorship serves the same general functions as those appointed during a war to prevent critical information from getting to enemies. In this case the censorship keeps unpleasant material from getting into the patient's waking consciousness. In spite of this the emotional tone of the material is too strong for a complete repression to take place. The mental contents are like a kettle of boiling water over which one has placed the lid to prevent the steam from escaping into the room; the remedy is only temporary. Sooner

or later we are going to get a blow-off. This blow-off occurs in a direction different from that of the original force. The censorship operates in such a way that the original contents cannot return. But as the force cannot be held in complete check, *something* has to return. The result is disguised expression. The pressure is released in this way and the peace of mind is retained. The direction this indirect expression will take is not certain. We have mentioned a number of possible abnormalities which, according to psychoanalysis, result from repressions, namely amnesias, fugues, automatisms, multiple personalities, paralyzes, anæsthesias, hysterias, and invalidism.

(3) *Sources of Disorder.* One of the greatest bones of contention among psychiatrists is the actual cause of disorder. A distinctive fact is that while most psychiatrists hold no particular preconceptions, taking each case as it comes as a separate problem, psychoanalysts stick very closely to a special system. Freud, founder of psychoanalysis, is known by everyone as advocating the importance of sex. With Adler, the feeling of inferiority is held responsible for all neurosis; Rank traces the origin back to the birth trauma; Jung speaks of a non-sexual libido, which, if thwarted, causes trouble.

There is no denying the partial truth of each one of these theories. Cases can be cited to support each. But it seems unlikely that all disorders can be attributed to a single cause. Freud says, for example:

Psychoanalytic investigations trace back the symptoms of disease with really surprising regularity to impressions from the sexual life; and show us that the pathogenic wishes are of the nature of erotic impulse-components, and necessitate the assumption that to disturbances of the erotic sphere must be ascribed the greatest significance among the etiological factors of the disease. This holds for both sexes.

Freud has been seriously criticized for seeking sexual symptoms, especially in infancy and childhood. It is possibly true that more disorders result from sexual conflicts than from any other single cause, but it is doubtful if over a third of all abnormalities are due to this. The same is true with all other single explanations. It may also be possible that patients with characteristic types of disorder seek out experts who are known for treating that type, even

though their action may spring from the unconscious. From our knowledge of normal child psychology, Freud's theories of infantile sexuality seem grossly exaggerated.

(4) *Diagnosis*. We can find a suggestion as to the method of cure in our earlier discussion of the fundamentals of abnormality. Most ailments are recognized as emotional in origin. Now, how do we go about overcoming any emotional upset in daily life? By bringing it up to a rational level. Suppose we have inadvertently hurt some one's feelings and worry about it later, what do we do? Well, we go through some such process as this: We say that he is a forgiving individual, that he will understand that the insult was not intentional, that he will not attach much importance to it, that the minor character of the remark is not worth all that worry, that he would be a pretty sensitive person if he got excited over such a trivial incident, etc. If we cannot resolve the conflict by ourselves, we talk with a friend whose confidence we trust, and ask him to help us. He will be able to see the incident without emotion and in proportion to its true merit. The Catholic confessional seems to be just one step beyond this. Here one man helps a whole community out of its trouble. The purpose is theological and social rather than merely practical and individual, but the differences are not great. It is interesting to note that Oskar Pfister, who is regarded by many as the leading psychoanalytic practitioner in the world, is a minister.

If ordinary means are not adequate, a psychoanalyst will sometimes be necessary. The task is not easy, as the censorship and repression are very powerful. The difficulty is that dissociation and repression have taken place, so that the actual cause of the emotional conflict has been forced out of the patient's consciousness. It cannot even be identified when one does run across it. The task is like looking for a person whose name and description are unknown. Special techniques are necessary.

The immediate problem is that of circumventing the censorship and of identifying the conflict when one meets it. There are several methods of doing this.

(A) *Discussion* with the patient will work only in mild cases.

(B) *Hypnosis* was tried in the early days, but has been discarded. Not all patients are amenable to hypnosis, and material obtained through this artificial means of lowering the threshold of the

memory is usually not available to the patient's normal consciousness. It is better if it can be obtained while he is in a normal state.

(C) *Psychoanalysis*, the term now applied to the whole movement, was originally used to designate only the process of cure. As Freud uses the method, the subject is asked to give a sort of verbal autobiography, talking at random, including his thoughts, feelings, and desires, which are more important for this purpose than are the plain facts. The patient is received in a room which is more like a parlor than a doctor's office, so that he is set at his ease. The analyst listens to the patient's ramblings, and notes particularly any hesitations, unfinished statements, and gaps in the sequence of thought. Any gaps in memory or inhibitions show the existence of repressions. One may see that such a process is rather long. Analysis and cure often take months.

(D) *Association* is used by Jung to discover the nature of the complexes. A word is read to the subject and he is asked to reply as rapidly as possible with the first word that pops into his mind. Records are kept of the response words, the time consumed, and any evident emotional distress. Many of the stimulus words do not aim at any particular emotion; such are table, river, cabbage, and butter. Certain words are aimed at sex or love difficulties—man, woman, girl, baby, bed. Priest, sickness, spider, and soldier as stimulus words may uncover complexes in religious, health, fear, and military lines. Words referring to the same general topic are scattered throughout the list in random order, so that the subject is more or less taken by surprise and cannot anticipate. The list is flexible; words referring to any desired topic can be inserted at will. The analyst gets a clue as to the source of disturbance if he obtains unusual or slow responses to a number of words in the same field.

Some experts prefer to emphasize this method in the search for repressed material, as it consumes so little time. Others, however, feel that such a direct attack may warn the censorship and heighten the repression, making ultimate discovery that much more difficult. The method works, and so does Freud's. Perhaps each is appropriate for different analysts and for different types of patients.

(E) *Slips of the Tongue, Pen, and Other Mental Errors*. Several writers stress the importance of errors in the thought processes

which we ordinarily attribute to chance. Freud and Jones are particularly emphatic on this topic. They say that errors represent repressed wishes which are so strong that they force their way into action, directly or indirectly. A man who forgets his wife's birthday does not do so by chance alone; it really means that other conflicting interests prevent his remembering the occasion. One who forgets to mail a letter does so because it bears contents that are unpleasant—a check, bad news, an invitation to the mother-in-law to visit, etc. It seems doubtful if more than a small percentage of such errors really have the deep significance that is attributed to them.

(F) *Dreams* are extremely valuable to the analyst and are pounced upon with great eagerness. Up to the advent of psychoanalysis dreams had been regarded as largely random activities of association, but this school says that there are as definite cause-and-effect relationships in dreams as in other mental processes. Freud says that the dream represents the disguised fulfillment of a wish which has been repressed. The reason dreams are considered so valuable is that during sleep the censorship is not quite so alert as during waking, so that some material escapes from the unconscious and appears in the dream content.

However, even in the dream the material is not directly expressed. Freud makes a distinction between the manifest and latent contents of the dream. The manifest content is the way it actually appears to the dreamer; the way it would be if it were possible to photograph the images as they come and go. The latent content is the underlying meaning of the dream. The two are different because of the censor. Although the censor does let material escape into dream consciousness, it does not come out in its true form. There is still some repression, which makes the material come out in disguised form. The dream is explained by means of interpreting the symbols. It is assumed that there are certain standard symbols which represent common experiences and objects, and that these are alike for all persons.

Very complex systems of symbolism have been drawn up. We may mention some of the more common ones. Most of them, as might be expected, center around the sex organs and functions.

Any long and narrow object stands for the male organ. Examples are a telephone pole, a dagger, or a cane. The primary female organ is symbolized by objects which are open, hollowed out, and shallow, such as a box, shoe, pit, or tunnel. All complicated machinery stands in some way for the genitals. A large variety of acts symbolize desire for sexual relations. Climbing a staircase is a typical example; this symbol is easily understood when one considers the term "mounting" used by animal-breeders to denote that activity. A very interesting symbol is that dreaming of going down a corridor or street and turning to the right or left has ethical significance. In practically all of the more common European languages the same root or word stands for the right hand and also correct conduct; in some languages left, awkward, and improper have identical roots. The dream utilizes this double meaning as a disguised and rather far-fetched symbol.

To show how a typical dream interpretation is carried on, we quote the following extensive and complex dream as narrated by Freud.

A woman of thirty-seven dreamt that she was sitting in a grand-stand as though to watch some spectacle. A military band approached playing a gay martial air. It was at the head of a funeral which seemed to be that of a Mr. X; the casket rested on a draped gun carriage. She had a lively feeling of astonishment at the absurdity of making such an ado about the death of so insignificant a person. Behind followed the dead man's brother and one of his sisters, and behind them his other two sisters; they were incongruously dressed in a bright gay check. The brother advanced like a savage, dancing and waving his arms; on his back was a yucca tree with a number of young blossoms.

The true meaning, it is said, became clear after the patient had revealed all the thoughts brought into her mind by dwelling on the details of the dream. The figure of Mr. X veiled that of her husband. Both men promised much when they were young, but the hopes their friends had built on them had not been fulfilled. The one had ruined his health and career by his addiction to morphia, the other by his addiction to alcohol. Under the greatest stress of emotion the patient related that her husband's alcoholic habits had completely alienated her

wifely feeling for him, and that in his drunken moments he even inspired her with an intense physical loathing.

In her dream her repressed wish that he would die was realized by picturing the funeral of a third person whose career resembled that of her husband and who, like her husband, had one brother and three sisters. Further than this her almost savage contempt for her husband came to expression in the dream by reflecting how absurd it was that anyone should make an ado over such a nonentity, and by the gaiety that was shown at the funeral. It is noteworthy that no wife appeared in the dream, though Mr. X is married. In real life Mr. X is an indifferent acquaintance, but his brother had been engaged to be married to the patient and they were deeply attached to each other. Her parents had manoeuvred to bring about a misunderstanding between the two and at their instigation, in a fit of pique, she married her present husband, to her enduring regret. Mr. X's brother was furiously jealous at this and the pæan of joy he raised in the dream does not appear so incongruous when we relate it to the death of the patient's husband as it does in reference to his own brother's death. His exuberant movements and dancing like a savage reminded the patient of native ceremonies she had seen, particularly marriage ceremonies. The yucca tree proved to be a phallic symbol and the young blossoms represented offspring.

In the dream, therefore, the husband dies unregretted by anyone; she marries her lover and has many children.

While in one way the factor of disguise makes the psychoanalyst's task somewhat more difficult, it is not all to the bad. Since dreams appear far more "innocent" on the surface than they really are, the individual will have less inhibition against telling their contents. The writer recently heard a girl state positively that she never had any sex dreams, but that she did have one very disturbing recurrent dream. A man chased her with an upraised dagger, and in trying to escape she kept falling down. The Freudian interpretation was obvious. The dagger stood for the male sex organ. She ran away, a guise to satisfy her conscience, yet she fell down, not once but repeatedly, which prevented her from really escaping. In other words, she wished to be caught. The disguise permitted this dream to be narrated with perfect innocence. But whether the interpreta-

tion is correct is an open question, which could be answered only after a close study of the dreamer.

(5) *Cure.* Techniques of cure are discussed with far less adequacy than are other phases of psychoanalysis. This may be unavoidable, since each case presents its own problems and only partial generalization is possible. In essence, however, the task seems to consist in discovering the source of the conflict and in securing a rational outlook on the whole matter. Freud's original procedure, which he and Breuer worked out together, emphasized "abreaction"; if the patient can be made to *recall* and *relive* the original experience, the emotional tone will be purged and will disappear. While this has been somewhat modified since its first statement, the essence of it still holds true. Let us illustrate by one of the early cases of Freud and Breuer. We see that restoration to consciousness

There was in the summer a time of intense heat, and the patient had suffered very much from thirst; for, without any apparent reason, she had suddenly become unable to drink. She would take a glass of water in her hand, but as soon as it touched her lips she would push it away as though suffering from hydrophobia. Obviously for these few seconds she was in her absent state. She ate only fruit, melons, and the like, in order to relieve this tormenting thirst. When this had been going on about six weeks, she was talking one day in hypnosis about her English governess, whom she disliked, and finally told, with every sign of disgust, how she had come into the room of the governess, and how that lady's little dog, that she abhorred, had drunk out of a glass. Out of respect for the conventions the patient had remained silent. Now, after she had given energetic expression to her restrained anger, she asked for a drink, drank a large quantity of water without trouble, and woke from hypnosis with the glass at her lips. The symptom thereupon vanished permanently.

and a complete understanding of the whole matter helped to clear the trouble up.

It does not in every case, however. According to present psychoanalytic theory, the analysis is only possible because the patient is "fixated" on the operator. This "transference" is much like falling in love with him. Only by obtaining such complete confidence can the analyst obtain all the information that he desires. While this

technique may produce immediate results, it has been criticized on the ground that the fixation may prove dangerous. When it is broken it may produce an emotional shock, just like a sudden love disappointment, and the cure may be spoiled. The effects are intensified because the individual is already neurotic, so that any emotional disturbance affects him with that much greater intensity. The same criticism is advanced along another line. Since the patient is neurotic by predisposition, he may fall victim to the next conflict that comes across his pathway, no matter how complete the cure of the first conflict may have been.

VIII. PSYCHOLOGY IN HEALTH AND ILLNESS

Let us now examine some problems of physical welfare in the light of our discussion in the several preceding sections of this chapter. We shall not attempt to treat the organic aspects of disorders, but shall limit ourselves to the functional, psychological, and mental sides.

(1) *Suggestion* is such a general matter that it is an excellent one from which to make a start. It may be defined as a method of making some one do or say something without issuing a definite order or giving him the direct information that you desire him to respond in that way. The father who wishes to get rid of a noisy child and does so by observing with apparent casualness that there is a fire engine in front of a house on the next street is using indirect suggestion, and probably obtains better results than if he ordered him to go over there. Similarly, a person will obtain a far better offer if he drops a half-interested remark that he might look over a motor-boat or a summer cottage than if he announces flatly that he is in the market to purchase something.

In dealing with a sick person suggestion is usually far better than direct exhortation. The latter would involve discussion of the patient's condition with him. So it is better to encourage him subtly by one's general attitude and by remarks suggesting that he is improving satisfactorily.

In some cases direct urging may be necessary, as in persuading an individual to have his tonsils removed or to give up some bad habit. The conditions are different here; the individual is not seri-

ously ill, but may become worse gradually if the condition is not remedied. The doctor keeps at him day after day until he finally gives in.

(2) *The Attitude of the Patient* is of great importance in determining the speed of recovery. The "will to live" is spoken of by numbers of medical men and psychiatrists. A patient who is seriously ill has far greater chances for recovery if he is optimistic, really wants to live, and is fighting for that chance than if he has become discouraged and is no longer trying hard. Even in minor illnesses the rate of recovery is partially determined by desire to return to normal life. It takes a very serious illness to keep a college girl away from a Saturday-night formal dance, but a minor cold will lower her strength enough so that it becomes impossible to take an examination.

Often the doctor will have more trouble with the family of the patient than with the sufferer himself. While the doctor himself may be able to create the proper atmosphere and to conceal the patient's condition from him as he sees fit, others are not so well controlled. Irreparable damage may be done by a relative who breaks out into hysterics on the patient's bed. The visitor must be properly cautioned and perhaps even excluded. For the sake of the patient's strength the number of visitors should be limited.

(3) *The Bedside Manner of the Physician* has come in for a good deal of discussion and is a point on which young doctors are frequently addressed before they start practice. The medical profession has devoted a great deal of effort to building up and surrounding itself with prestige and mysteriousness. When a doctor diagnoses a case as "anterior poliomyelitis" or "coryza," when he could more easily have said "infantile paralysis" or "a cold," he greatly impresses the patient and his relatives. By itself this impression would not be important, but in doing so he gives an air of omniscience. The patient then says to himself, "A man who knows as much as that cannot help curing me." The cures wrought by specialists may often have this as a basis. The more learned or the more abstruse the specialist is, or the greater the distance he has come (and the greater his fee), the more good he will do. Being able to write prescriptions from memory is always an impressive

feat, but no better and perhaps a less accurate one than if he consulted a handbook.

The appearance of the physician is definitely calculated to enhance this doctor-patient relationship. Traditionally, the beard, gold-rimmed spectacles, long-tailed coat, and square-shaped satchel have stood for the medical man. He has given himself an elderly, respectable, and stable appearance which wins half his battles for him. An unfortunate consequence of this has been that the young doctor has had trouble in getting started in practice. Actually, having the benefit of more recent education and having been taught newer practices, he may be better qualified to cure patients than the older man, but his age is against him. At best he may get the reputation, "He is young, but he knows his stuff."

(4) *Sugar-coated Pills* containing no medicine are carried by almost all doctors to speed up the cure of neurotic patients. The illness may be genuine enough, but the diagnosis shows merely a general run-down condition, one for which rest and time alone are necessary. The patient may be of that class which has to dope itself up for every real or imaginary ailment. The patient wants action—drugs—from the doctor. So the doctor coöperates with him by giving him a neutral pill, either sugar-coated or horrible-tasting, the latter on the theory that the patient may believe that the worse it tastes the more good it will do him. The value of these devices is in proportion to the potency of suggestion and confidence on the part of the patient.

(5) *Respond to the Patient as a Person*. Since the illness may be helped along, and even started, by mental and emotional phenomena, it is apparent that cure will have to follow the same lines. The doctor must study the patient's personality as much as he studies the organic disturbance. A man once remarked, in speaking of a certain doctor: "I don't like him. He didn't treat me as a person. A month ago I had an infected toe, necessitating daily visits for about a week. Yet when I went in to see him last week because of a threatened attack of appendicitis, he acted as if he had never seen me before. I think that in the previous instance he had only seen a toe coming into the office, not me." If this individual had had a less specific ailment, and one which was complicated with emotional factors interacting with his disease—or had been of a more neurotic

disposition—it is easy to see how cure could have been considerably held up.

With some patients, who are level-headed and objective in outlook, the individual is better satisfied if the complete status of his disorder is made clear to him. Others, however, will be better off if kept in ignorance of the true nature of their disorder. They would be inclined to worry too much, and recovery would be that much handicapped.

(6) *Aiding Digestion.* While medical accounts of digestion refer chiefly to the chemical aspects of the process, we all realize that the general conditions surrounding eating will make a great deal of difference in the pleasure and beneficial effects of the meal. One is far better satisfied, as Moss remarks, with a meal which is served in a well-appointed, clean, and refined dining-room, with courteous waiters and a string ensemble playing, than in a “two-bit” lunch-room, with great noise and confusion, the table messy from the last customer, and a clatter of dishes.

One wonders whether the combination of dining and dancing is not rather bad practice. There is no doubt that soothing music, such as furnished by hotel string ensembles, is an aid to digestion. But the violence and speed of jazz music, and the physical activity of dancing, is a different matter. The only saving graces of this practice are the pleasure involved and the delays between courses. While one is not dancing, the nature of the music seems to speed up eating, in contrast to other types of music.

We can make a number of other suggestions so that one may derive the maximum benefit from eating. Rest is beneficial, both before and after a meal. Sleeping after a meal is often pathological, meaning only that the individual has eaten so much that he is dopy. Rest before eating, particularly after physical or mental work, including athletic exercise, is at least as valuable as that taken after. Several athletic trainers have obtained very favorable results by requiring all squad members to lie down a half hour before dinner.

(7) *Auto-suggestion.* This term has been made popular by Coué and his followers, and has been greatly overused. Coué recognized the fact that the patient himself must take up the suggestion before it can become effective, and he thought that the person might as

well initiate it himself as receive it second hand. Hence we hear the phrase "day by day, in every way, I am growing better and better." The patient must be thoroughly convinced of it before the doctrine will work. In a certain sense this process is removed from the class of pure suggestion, as suggestion normally is supposed to work through the unconscious and through the emotions rather than through the intellect. However, complete conviction is practically emotional, as an intellectual process would recognize the possibility of failure.

Faith cures come under the heading of auto-suggestion. In this country and in Europe there are a number of shrines where persons who are ailing in various ways go, pray, believe, and find themselves miraculously cured. Whether the true explanation is supernatural or not, the cure is just as real. A cure as sudden as this would seem to give proof that the disorder is functional in nature. It may once have had an organic or physiological basis. People have been known to limp or use crutches long after there is any necessity of favoring that member. If through strong faith or other emotion they are forced to use the leg, they discover that it is perfectly sound.

We might add that in some cases actual harm may result from a too-sudden transition from partial dependence to full function. A person who has suffered an injury or partial paralysis or who wears glasses may be able to operate without artificial aid for a short time, but if his enthusiasm carries him beyond the limits of good judgment he may over-strain the organ and set back its recovery.

(8) *Hypnosis as Anæsthetic.* Hypnosis is one of the most spectacular and also one of the most misunderstood topics in the field of psychology. It is nothing mysterious, and it is a perfectly legitimate practice, although of no great practical importance at the present time. It consists in narrowing the patient's attention by means of monotonous talk, sounds, and dim lights until he no longer receives any sensory impulses that are not given out or suggested by the operator. Then direct suggestion can render him insensitive to certain things. Under deep hypnosis and with suggestion a pin or a knife may be stuck into him without causing a flinch.

It is possible that hypnosis might at the present time be in fairly common use for minor operations if it had not been for the discovery of chemical anæsthetics. Hypnosis was just coming into some prominence in the 1840's, but just then chloroform was discovered. Ether soon followed, and lately great progress has been made with various sorts of local anæsthetics which permit even major abdominal operations while the patient retains consciousness. These latter have removed one of the drawbacks of general anæsthetics, in that after-effects are minimized, with corresponding acceleration of recovery.

Even apart from this it does not seem likely that hypnosis would be entirely serviceable for anæsthesia. Every patient is not capable of going under deep hypnosis, every physician will not make a perfect operator, and too severe pain may wake the patient up. It might be useful for lancing boils, treating infected fingers, setting broken fingers, or pulling teeth, but not for more serious ailments. Reports of major operations under hypnosis are scattered and rather uncertain.

(9) *Reëducation*. To avoid invalidism after certain types of illness reëducation is necessary. In some cases physical training is called for; in others the problem is emotional. Franz has done some very valuable and interesting work on the paralyses and aphasias which result from cerebral injury or hemorrhage. He thoroughly decries the practice of making an invalid out of a person so afflicted—pulling down the shades, talking in whispers, and not letting him do anything. Franz got his first suggestions as to proper treatment from studies on effects of cerebral operations on monkeys. If by removal of part of the brain one side of the body was paralyzed, no spontaneous recovery took place, but if he tied up the good arm and leg it was forced to use the injured members. Recovery occurred, perhaps through shifting of the function to some other part of the brain. The same principle has been applied to humans with much success. An important feature of this cure is that it must begin immediately. It may sound brutal to force the individual to exert himself shortly after his illness or injury, but it is more effective in the long run, so that it is really a favor to him. Careful exercise has similarly improved the condition following infantile paralysis.

IX. PSYCHOLOGICAL CONSIDERATION IN DENTISTRY

(1) *Treat the Whole Patient.* People act so differently when they have a toothache or are ill otherwise that treatment cannot be standardized. It is the person that is ill, not the organ. Dentists, as well as doctors, have been criticized because they did not recognize the social and personal obligations of their professions.

(2) *Be Obliging about Appointments.* If a person has a toothache he is in real agony. A week from tomorrow won't do; it must be fixed up now. Most appointments are made for an hour, but are usually finished a number of minutes early, so that a person who is suffering badly can be jammed in with far less inconvenience to the doctor than to the patient. This is not only decency, but good business. A dentist once told the writer that he had been forced to discharge an assistant because she had been so unobliging about taking care of hurry cases that his clientèle was gradually drifting over to other dentists.

(3) *Minimizing Pain.* Much serious dental trouble is caused by delays just because people are afraid of the pain from drilling. Therefore it is highly important to minimize it. However, it cannot be entirely eliminated. The so-called painless dentists often do an incomplete job of removing the decay, so store up more trouble for the future just to save a little pain now. Beware of a guarantee of no pain; it is not possible to make good such a promise.

Most of the time anticipation is worse than reality. When the dentist tells one that the next drilling will hurt a little, the pain suffered is usually less than when a tender spot is hit unexpectedly. If such warning is given frankly, the patient will be more relaxed at other times, knowing that nothing seriously painful will occur.

Drilling and grinding are at the best very nerve-racking. The longer it continues the more tense the person becomes. Tension will be reduced if the appointment is made short, say only a half-hour. This will necessitate the patient's coming twice as often, but will lessen his nervous strain, and will still allow the dentist to accomplish the same amount of work during the week. During the period each grinding session should last the smallest time consistent with accomplishing anything. The dentist can let the patient rest

by distributing less painful operations and getting his instruments ready.

(4) *Good-will Features*. The doctor or dentist can take a number of hints from certain rules on salesmanship. The visitor should be greeted as soon as possible after he enters the waiting-room. If he wishes to make an appointment or to receive emergency treatment he will not be forced to wait in boredom indefinitely before he finds when he can be taken care of. The patient's future welfare should be given first consideration in treating the patient. Some dentists will go a long way toward spoiling a tooth to save themselves a little trouble at the present time. Like unscrupulousness in business, such treatment does not pay in the long run. For permanent success a professional man is dependent on a steady clientèle and a reputation for squareness in his community.

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of the law, we must point out that there are a number of fields with which psychology has no particular contact. While all law is to regulate conduct, much of it does so in a purely technical way. There is little that psychology can contribute to drawing up a contract or will, establishing patent rights, ascertaining facts in relation to bankruptcy, property, or taxation questions, or employee compensation. Most of the fields with which psychology does deal center about criminality and court procedures. As such they are rather spectacular, and are apt to be misleading as to their importance. Many lawyers never appear in court; they deal with more technical problems, or prefer to settle disputes more amicably.

II. THE LAW AS A REGULATOR OF BEHAVIOR

Let us cite a few examples to show how our daily lives are affected by ordinances which have been drawn up to allow the maximum number of persons to have the greatest amount of freedom.

Traffic regulations constitute an ever-present example. By means of stop signs and traffic lights we are forced to stop and go in accordance with definite regulations. We must recognize that they have a positive as well as a negative influence. We may proceed along an arterial highway at a fair rate of speed with confidence that no one will dart out from a side street and hit us. While it may be annoying to have to stop when debouching from a side street, one more than makes up for this lost time after he has come onto the thoroughfare. Actually, a higher average speed can be maintained with well-planned lights and stop signs than if there were no regulations, not to mention lessened confusion, tension, and fewer accidents.

Rights of patent and copyright enable a man to embark on large scale business operations without fear of loss of a heavy investment. When a man has spent a great deal of effort and money in research and has devised a new device or process it would be very discouraging if anyone could copy it and profit equally. Business would be conducted far differently if there were no protection of priority.

An injunction can be issued if it is suspected that a certain indi-

vidual is likely to resort to unfair practices which may interfere with one's normal business or conduct of life. Men have had injunctions sworn out to prevent labor leaders from persuading the workers to strike, thus damaging their business; to keep another man from constructing a building for which he believes himself entitled to receive the contract; or to prevent some one from making a nuisance, such as keeping cattle or running a bowling-alley in a residential district. While the main function of an injunction seems to be to act as a deterrent, the possibility of using it enables a man to conduct his business in a normal, trusting, and confident way, knowing that legal machinery exists by which distinctly unfair practices can be restrained.

Partnerships and other contracts regulate behavior in another way. For maximum general fairness it is necessary that certain situations be anticipated and ways of settling them be prescribed in advance. One who may be tempted to cheat his partner is deterred by the specifications of the contract and by the penalties attached to violations. Certain other contracts, such as life insurance, determine one's actions for a long period of time.

Control of future behavior is the purpose of a will. In case a person dies without leaving a will, the law provides just how various relatives shall share in the estate, but it is seldom that one wishes exactly that disposition to be made. He has certain non-relatives whom he wishes to benefit; certain relatives have meant more to him than others of equally close rank, and there are possibly certain ones whom he would prefer not to share in the fruits of his life's work.

III. WHO IS THE CRIMINAL?

(1) *Problem.* Is there a definite criminal type? This is a branch of the large question of personality types, a problem which we have raised several times in connection with various topics. So far in every case the answer has been negative, although at the same time we have named traits which are particularly valuable for certain vocations and others which are of no especial consequence. The variations in every case have been quantitative—differences of degree rather than of kind.

(2) *Criminal Types*. Galton was one of the first to suggest the idea of types. An interesting approach was through the method of composite portraiture. On the same photographic plate exposures were made of a number of men "undergoing severe sentences for murder and other crimes connected with violence"; another was a composite photograph of thieves. The two plates do differ; the men guilty of violent crimes have large, square, heavy, villainous faces, while those convicted of burglary are the type we refer to as "rat-faced." However, since Galton had only eight and four cases, respectively, it is extremely doubtful whether the trend is general.

Myerson specifically denies that there is any general criminal type, or even any tendency for a certain crime to be committed by one type of individual. There are dozens of motives for murder, robbery, or any other crime, and each may occur under vastly different situations. He cites one robbery in which a brilliant college graduate, a high-school graduate, a mechanic, and a feeble-minded man all took part.

(3) *Physique*. Lombroso, an Italian who founded the science of criminal anthropology, tried to correlate criminality with anthropometry. He got his start by noticing that sailors who were tattooed, particularly when such marks were indecent, caused more trouble than their mates who were more conservative in somatic decoration. He wondered if other physical signs might indicate asocial tendencies. One may readily see that tattooing is merely the expression of previously formed personality; but other bodily characteristics might be related to definite criminal tendencies. Lombroso claimed that the criminal was a throw-back, an individual with certain animal characteristics. Some traits which he suggested were: prominent lower jaws, high pointed crown, prominent ridges above the eyes, enormous ears, woolly hair, etc.

This doctrine breaks down when large numbers of cases are investigated. Very handsome criminals are found; almost as many honest persons have certain of the characteristics named above. These latter were said to have potentially criminal natures which were held in check by favorable environments; there is no way of proving this. It becomes evident, then, that positive findings, if any, must come from behavior—intelligence, personality, environment, etc.—rather than from structure.

(4) *Intelligence*. It has been suggested that criminals must be inferior to the average of the population for two reasons: they do not discriminate between right and wrong, and they do not earn their own living in a normal way. These hypotheses cannot be accepted until the major premise has been proven. Easy as the task appears, there is an initial difficulty in the way of obtaining figures. We are not getting an unselected sampling of criminals, but averages of those who are caught. We might as well test business men who have failed and take that average as typical.

Among juvenile delinquents and unmarried mothers there are disproportionate numbers of deficient mentalities. In the latter one may see a definite cause-and-effect relationship existing. Those who have illicit relations may not be below average, but those who meet with unfortunate results in so doing are the ones who are less alert.

Studies on adults made in reformatories and prisons usually show a lower average than that in the results of the Army Alpha test, which is considered the best sampling of the general male population. This does not mean that there is a clear-cut separation between the two groups. At least three-quarters of each distribution overlaps with the other, but among the convicts there are fewer high scores and more low scores. Murchison, after an extensive study, comes to the conclusion that there is no real difference between a criminal population and the general run of people. There may exist some differences among those committing various types of crime. One would expect a forger or large scale swindler to be rather bright, while a petty thief would probably be dull.

(5) *Heredity* was formerly blamed for all sorts of evils. We now realize that most traits which are common to a number of members of a family are more likely acquired through environmental contact than handed down through the germ plasm.

The history of the famous Kallikak family has been cited countless times to prove the contentions of both hereditarians and environmentalists. For readers who are not familiar with this striking study, we shall sum it up in a few sentences. During the Revolutionary War a soldier had illicit relations with a feeble-minded barmaid, and from this union there has descended a family line rife with degeneracy, feeble-mindedness, criminality, alcoholism, and prostitution. At least two-thirds of the descendants of this line

appear to have been deficient in one or more ways. After the war this soldier married a normal girl, and that line includes reputable and prosperous citizens of all types, and practically none who were of low class in any respect. Goddard, who conducted the original study, attributed all this to heredity, but lately the trend of opinion has been in the other direction.

(6) *Environment.* One may notice that we could not even discuss heredity briefly in the last few paragraphs without referring to the other major influence—environment. If one is brought up in surroundings which are rife with crime, where he has little chance to acquire a good education and to take a constructive place in society, and where he is not given recognition, criminality is likely to ensue. All the environmental influences which may cause criminal tendencies are too numerous to discuss here, so we will content ourselves with mentioning a few typical instances.

Let us refer again to the Kallikak family. The first of the unfavorable line, being illegitimate and probably mentally deficient, would be forced to associate with his equals in intellectual, social, and economic status. His children would be of the same type. About the only deleterious hereditary influence is toward a lower intelligence, but there are numerous adverse environmental forces which would account for the present status of the family.

In large cities it has been found that certain areas contribute far greater proportions of delinquents than do other districts. Shaw has made a very intensive study from juvenile court records of what he terms "Delinquency Areas" in Chicago. It was observed early that cases did not come equally from all sections of the city, but that some neighborhoods seemed to contribute far more than their expected share of cases. Other neighborhoods were relatively free from trouble. There were found to be three main high delinquency areas, showing very high concentrations: the Loop district, the steel-mill district near the southern city limits, and the neighborhood of the slaughter-houses. Nearly 30 per cent of children from the Loop district have court records, 15 per cent from somewhat farther out, while only 1 to 2 per cent from the suburbs have gotten into such trouble. While it is true that better-class families live in the more choice residential districts, such wide dif-

ferences can only be accounted for on the basis of unfavorable domestic and neighborhood environments.

One of the most important of all environmental factors is the influence of gangs on juvenile delinquency. The gangs may be either juvenile or adult. The juvenile gangs will usually have older boys as leaders, and the younger members are forced to do the routine work and are often the ones who get caught. Adult gangs often make deliberate use of boys, who can spy and do errands for them with less danger of arousing suspicion. Dope rings quite commonly make use of this practice. Naturally the boys become more and more immersed in crime themselves; so the border-line cases become hardened criminals.

Several studies which have been made on newsboys have shown that their environment is especially conducive to delinquency. The following incident related by a newsboy who was thirteen at the time, but later came to college, is very illustrative. His post was near a railroad station. Frequently men approached him in regard to obtaining liquor or women. He turned over such business to a certain taxi-driver, who in return would call him when a passenger wished a paper. One day, after such an inquiry, the driver returned and regaled him with all the details about how he had gotten a woman and driven the cab out into the country, where the two of them had held up the passenger and forced him to walk back into the city, after which the driver had taken advantage of the situation with the prostitute. His casual, even boastful, tale greatly upset this impressionable boy of thirteen, as one might readily imagine.

Raubenheimer found that the word associations of newsboys resembled very closely those of juvenile delinquents. Presumably by being on the streets they had acquired the language of the "gutter." While we are now rather skeptical about the old idea that the boy who steals pennies from his mother's purse or apples from a peddler's cart will end up by being hanged for murder, we do realize that unfavorable influences increase by that much the chances for an anti-social career.

Broken homes have been said to contribute more than their expected share of delinquents. By a broken home we mean one in which both parents are not living in a normal happy relationship; it includes those where one parent is deceased or where a separation

or divorce has taken place. To get the best bringing up a child needs the contributing influence of both parents and a home to which he likes to come. If there is friction or if one parent is missing he will lose something.

It should be clearly understood that these and other conditions do not necessitate a criminal career. Far from it. Rather it means that unfavorable surroundings increase the probability of the boy or girl falling into bad ways. By far the majority of people lead an honest life, no matter if they come from the worst city slums and have relatives and associates of the worst order. Likewise, habitual miscreants may spring from families of the most excellent background and environmental status. But the percentage of the latter is far less than of the former. No single, or even half-dozen, causes can be laid down to account for all criminality. Like mental and physical ailments, each case must be diagnosed and treated by itself.

(7) *Social Customs* account for a certain small share of law-breaking. During the reign of the Eighteenth Amendment, now apparently in process of becoming defunct, millions of people who were very particular about the rest of their modes of living violated prohibition laws without the slightest qualms of conscience. The law went against what they had always done and believed, and they felt it an infringement on their personal liberties. Similarly, in partial defense of the Sicilian habit of taking the law into their own hands to gain revenge, we might point out that they have done so for generations and see nothing wrong in it. While such violators may be criminals technically, they are merely following long-established habits.

(8) *Race*. This is a very fascinating topic, and one on which there have been countless speculations. Claimed differences almost always vanish when subjected to controlled measurement.

There are at least two prevalent suppositions in regard to race and crime propensity. We notice that a large share of the bootlegging gangs in our large cities are made up of southern Italians and Sicilians. When frustrated they tend to settle their differences by extremely violent means. Sociologists feel that this generality of behavior does not come from any innate racial trait, but rather from their traditions, which favor harboring grudges and settling them in dramatic ways. They have more flighty temperaments, it is

true, than the comparatively phlegmatic Teutonic and Scandinavian races. But at the same time we do not hear much of Frenchmen, Spaniards, Greeks, or Hebrews in these connections.

The Negro is sometimes said to be a natural criminal, being particularly prone to crimes of sex and personal violence. Negro populations of states and cities furnish several times their quota of criminals. Yet we can see a few fallacies if we examine the situation a little more closely. To start with, are we sure that he obtains perfect justice? Usually poorer and unable to obtain the best counsel, and always downtrodden, he is partially convicted before the trial starts. The recent Scottsboro case is an instance of this. The case has not been completed yet; so we cannot quote final facts and decisions, but for our purposes enough has occurred to illustrate our point. There seemed to be considerable doubt as to whether the defendants were guilty of any crime, and if so just what crime. No Negro jurors were allowed, great difficulty was experienced in obtaining suitable counsel from that region, and at the second trial the prosecution appealed to local prejudice against the Northern counsel brought in. At the second trial, in spite of the serious doubt, the death penalty was pronounced on the first man tried; this pends later appeal.

(9) *Age*. As with several other topics, the best we can do is to point out certain trends, and conclude only that the probabilities are greater for an anti-social career to start at certain ages and for certain types of crime to be characteristic of specific age periods. No age is immune to any type of offense. It is probably true that the greatest share of offenders get their start before twenty years of age. This is particularly true of petty thievery and automobile stealing. On the other hand, embezzlement, extortion, and confidence games are usually perpetrated by middle-aged men. We see in Table 59 that all but one of five leading offenses committed by young men have to do with taking property of others.

Practically, this demonstrates the importance of correct guidance in early youth. There is an old Jesuit doctrine to the effect that if they can train the child for the first seven years of his life they will trust his subsequent behavior. This age may be extended upward to take in the years culminating in coming of legal age, and they are very appropriate psychologically. The longer the indi-

TABLE 59. PERCENTAGE OF INDIVIDUALS UNDER 21 AMONG THOSE ARRESTED FOR

Automobile theft	45.8
Burglary	38.8
Robbery	27.8
Rape	26.7
Larceny	26.4

vidual is guided along socially approved lines the less likely he is to land in eventual trouble.

(10) *Sex.* The number of men who are discovered criminals is many times that of women. Girls are less exposed to the conditions that lead to gangs. Because of differences in physical strength, women are rarely involved in crimes of violence or involving physical exertion and bravery. Murders which they commit are by pistol or poison, rather than by blackjack or while in a hold-up. Women are convicted for prostitution and for involving others. Sometimes they are receivers of stolen goods.

We might point out that there is serious difficulty in obtaining a conviction against a woman, owing to customs and attitudes. A clever lawyer can almost always get a pretty woman out of a murder charge, and the jury can be depended upon to give her the benefit of what doubt may exist and, if conviction is necessary, to give her a minimal sentence.

(11) *Insanity* has been claimed by some writers as a potent source of criminality. This undoubtedly has been greatly exaggerated. Dementia præcox and paranoia are responsible for a few crimes, but not any large number. Feeble-mindedness complicated with a psychosis causes a number of misdeeds. Crimes against the person seem to be committed by insane individuals more than any other class of crime. There may be a certain degree of suggestion in the classification of criminals; one who is looking for symptoms of abnormality may be able to find them and exaggerate their importance as causing criminality.

IV. JUVENILE DELINQUENCY

Sociologists and others interested in behavior problems have recently devoted a great deal of study to the sources and causes of

criminality in adolescent boys and girls. It is impossible to say at just what age the majority of criminals get their start. Records cannot be complete, since early minor offenses are usually pardoned, meet only rebukes, are not called to the attention of authorities at all, or are not detected for a number of years. It seems likely, however, that if the individual can be brought to maturity with a sound outlook toward life and society his chances will be vastly greater of staying straight.

We have already referred in the last section to a number of forces which increase the probability of criminality. Let us emphasize at the outset, to forestall any possible misunderstanding, that we are speaking only of *probability*, not of certain causes or irresistible forces. Burt sums this up when he says:

To find an external influence of this kind (evil companions) at work without some inner predisposing factor is far from usual; it is as rare as a seed sprouting on bare rock with no receptive soil to nourish it. Against contagion of whatever sort, the strong mind, like the healthy body, is generally immune. . . . The victims are almost always those who, temperamentally or otherwise, are already disposed to anti-social conduct; and the cinema can do little more than feed and fan the latent spark.

Just what is this fertile ground which is necessary for an evil influence to fall on is somewhat too subtle for our present knowledge of personality to define.

Let us give a concrete example of how this works. It has been reported in several studies that juvenile delinquency is preponderant among boys whose fathers are in occupations generally classed as inferior. But when Slawson attempted to reduce this to single figures the correlations ran from barely above zero to slight positive figures. Even these minute trends disappeared when several complicating factors were ruled out. The same tendencies appeared when various other environmental influences, such as intelligence, parental status, etc., were studied. There are "good and bad neighborhoods"; but it is hard to tell how much should be attributed to each separate aspect of a "bad" neighborhood.

This means, then, that for the present remedial work on juvenile delinquency will have to be done by the *case method*. Each case

will have to be analyzed and adjusted by itself, not by reference to previously obtained statistics. There are, however, certain forces which we may point out as fairly common.

One very broad cause is lack of ability for self-expression. This may result from a variety of causes, fairly common ones being extreme poverty, drab neighborhood, and uncongenial home surroundings. The child looks for opportunities to lead a more colorful existence and to escape from the unpleasantness of his surroundings. He may start out by simple truancy from school and from the home; then get into gambling, begging, and petty thievery. More serious forms of the same errors may ensue as he grows older. One of the worst consequents is that the excitement and novelty of the irregular life practically spoil the individual for regular work. He finds it too confining and monotonous, and the money is earned too slowly and with too much difficulty in comparison with that obtained by thievery, hold-ups, or swindling. This makes the task of rehabilitation extremely difficult, even if abstractly the delinquent realizes the benefits of going straight.

On the other hand, to reiterate that there is no absolute need that an individual from a limited environment should go astray, let us point out that the majority do not. They may find self-expression in more approved and orthodox activities, such as sports, social organizations, intensive reading, music or art, or hobbies of various sorts.

To illustrate the growth of delinquency let us present a very brief summary of some of the salient features of a fascinating and illuminating case study which has been contributed by Shaw, entitled *The Jack Roller*.

The boy, called Stanley in the biography, was born of Polish parentage in a very poor neighborhood in Chicago. His mother died when he was four, and his father married a year later a widow with several children of her own. She proved to be unsympathetic and favored her own children over her husband's previous offspring. The father showed little outward affection for his children, and was a heavy drinker. So young Stanley began to run away from home at about six years of age, staying away for weeks at a time, begging and sleeping on doorsteps. He haunted the West Madison Street district, with its bright lights, saloons, and flop-houses. In

these escapades he first encountered police authorities, who merely returned him home.

Soon he began petty thievery and gambling. He met some older boys—although even these were pre-adolescents—and genuinely admired their experiences, general toughness, and casualness in breaking the laws of society. This is a common attitude; pride is taken in breaking laws rather than in living an upright life. Most of the stories are undoubtedly lies, or grossly exaggerated, but they inspire similar stories, and probably deeds to match.

At nine years and nine months Stanley was sent to a reform school. Instead of being reformed, he emerged bitter against society and a real criminal. His life then became one of drifting, thieving, and gambling. One or two jobs which he got he left very quickly, because the work was monotonous and because his superior gave him orders. Both these characteristics are evident throughout his whole early life. He constantly had a chip on his shoulder, always considered the other man in the wrong, was unwilling to compromise, and would not do what others suggested.

These traits seem to agree with Burt's hypothesis, as they appear to be largely innate. Even after reform had become complete, his success was in salesmanship, which is a varied activity, largely done by oneself, and without much supervision. In answer to those who would attribute Stanley's downfall entirely to the home conflict, we might point out that his own brothers and sisters kept straight and that one of his stepbrothers, who was favored at home (such as that was), participated in gang activities. Both the fertile soil and the appropriate environment were present to bring about delinquency; possibly neither by itself would have had that result.

As he came into later adolescence he fell into the more serious crime of "jack-rolling." This consisted in robbing drunks who had passed out in the gutter, or holding them up while reeling along the street, or even enticing homosexuals into a room and then holding them up with the aid of accomplices. He was careless enough, after one of these episodes, to wear a pair of trousers he had stolen, with the result that he spent the next year in prison—a real prison this time, not a boys' reformatory. The ironical thing was that his pride made him lie about his real age, saying he was

eighteen, when he was really just under sixteen. The truth would have saved him a great deal of hardship.

When he came out his attitude seemed to have changed. The food and conditions were so unpleasant that finally punishment seemed to have made some impression on him. He did get into two or three bits of trouble, such as quitting monotonous jobs and getting into fights (it never occurred to him, by his own statement, that there was any other way of settling a disagreement), but at least he did not encounter police authorities.

His final cure seems to have started when he more or less accidentally got a job in a hospital feeding experimental animals. He first had contact with people who as a group were educated and refined, and felt ashamed of his appearance, vocabulary, and manners. He saw that toughness was a liability, rather than an asset. He also fell in love with a girl at the hospital and tried to develop himself to be worthy of her. To make the story end right, he has gone straight ever since, they are married and have a fine home and child.

Several times previously he had seemed on the verge of mending his ways, but the incentive to adopt a more routine, ordinary, and safer existence was apparently not quite strong enough. He had been taken into two or three homes, found more congenial surroundings with a married sister, and once fell in love with a girl in another city. But the lure of the West Madison Street district had proved too much, although one could see suggestions of hope at intervals. The incentive that could change his habits had to be a powerful one.

V. CRIME DETECTION

The whole purpose of a criminal-court proceeding, as well as the efforts of the police, detectives, and others who are outside of the formal court-room situation, is to discover the guilty person and the degree of guilt in any sort of irregularity. Since this is largely a matter of human behavior, there are a number of ways in which psychological principles and information can assist in solving the problem.

(1) *Scientific Methods*. Many of these belong strictly to physical science, so will be mentioned here only briefly.

(A) *Fingerprints* found on objects at the scene of a crime and identified with those of a certain individual prove conclusively that he was at least on the premises. By means of a system of symbols any prints obtained can be compared with those on record in police headquarters all over the country. If a person with a previous record leaves fingerprints his identity can be quickly learned.

Footprints on turf, soft ground, or mud can help identify a suspect. Not only is the length and width of the shoe involved, but if the print is clear enough one can tell the state of wear, identify the kind of heel, see the condition of nails, etc. Further, the length of stride and the manner of putting down the weight during the step can be checked. This latter, we observe, is really behavior, and more than a structural characteristic.

(B) *Bullet Identification* is made possible by the fact that each gun barrel leaves very different microscopic traces on the soft lead which goes through it. The marks are photographed, enlarged, and compared with those on a bullet which is fired from the same gun barrel into oiled sawdust.

(C) *Handwriting* is distinctly behavior, and to an expert is as individual as one's fingerprints or his face. Attempted disguise does not fool the expert. Not only is the slope of the line characteristic, but the way one makes his letters, crosses his *r*'s, dots his *i*'s, whether the top of the *r* is flat or more like an *i* without the dot, etc.

A typewriter has characteristics which are almost as individual as human handwriting. The older it is the more differences will appear. Certain keys may be slightly out of line, certain letters may be somewhat imperfectly formed, impression may be uneven, and the carriage may space irregularly.

(D) *A Few Other Purely Physical Methods* may be enumerated without further comment, inasmuch as they have no relation to behavior: detecting where a man has been from dust on his shoes, the contents of his pocket, or even the wax in his ear; discovering origin of object from analysis of wood or metal; comparing samples of blood; partial description of person from microscopic examination of a single hair.

(2) *Study of Possible Motives*. Crimes do not happen by chance.

Beyond a very few committed by a degenerate, murders (for example) are generally done for revenge, through fear of being detected in something else, during robbery, or in the heat of passion. If one can deduce why the crime was committed, the possible list of suspects will be reduced to a very few or even to one. If a man is murdered while alone and his valuables are not touched, but some papers are missing, we may be sure that neither morality nor robbery was an issue, but that quite probably the stolen papers contained some embarrassing information which was of such vital importance that even murder would be done to obtain possession of them.

Moss gives a few details about a double murder. A man had been shot while in company of a woman not his wife. The man had been shot just once, and after death his hands had been folded gently across his breast, while the woman had been shot four times and her face had been stamped on after death. The question then is: who could have been so angry at both that he (or she) would do such a deed, at the same time retaining a certain affection for the man, but harboring a very harsh grudge against the woman? Obviously there could not be very many persons who would have all these feelings, probably only one.

The most puzzling cases are those in which the motive cannot be ascertained or in which the motive is so general that thousands of people could be involved. If the man who is shot holds dozens of mortgages or is president of a large bank which has just failed, the possible suspects are very numerous. In a kidnapping case almost anyone who needs money badly, or any organized gang which operates along swindling lines, may be responsible.

It might be added that to determine a motive a good deal must be known about the habits and recent history of the victim. If a stranger in town or a recluse meets a violent end, there is little information from which to start work in tracing the responsible party.

(3) *Modus Operandi*. This technical term means literally "method of doing (things)." Handwork, like the personality, of an individual is often identifiable. Just as a connoisseur can tell whether a painting in dispute is a genuine Rubens or Rembrandt, or a musician can

discriminate by only a few chords music by Wagner or Beethoven, so can a crime expert spot the work of a certain individual.

A murder in northern Wisconsin a number of years ago was solved partly by these means. A bomb sent through the mail had killed one person and badly injured a second. Examination of the remnants of the metal revealed a small piece which had been used as a trigger in the mechanism of the bomb. When measured this was found to have a 22-degree angle. The premises of a certain suspect were examined, and among his various farm machines were found a number of metal pieces with exactly this same angle. He was an expert mechanic, and had seemed to favor this particular angle in his work. This stood out almost as clearly as if he had placed his trade mark on the work.

One can tell from a piece of carpentry whether an experienced worker or an awkward amateur built it. Sailors will tend to tie certain knots. By any such evidence the list of suspects may be further limited.

A very interesting way of detecting guilt occurred in a recent murder and robbery case. Around the scene numerous matches, all chewed in the same way, were found, apparently done by the culprit while in a state of tension. The suspect toward whom suspicion pointed was brought in for questioning and seated at a table where some matches had been carelessly thrown. During the strain of the interrogation he picked up some of these and chewed them exactly as those found at the scene had been chewed.

An impostor of nobility was located in New York when he bought his favorite tobacco, a very unusual and expensive brand.

In a Southern-plantation murder case suspicion was directed toward a certain degenerate living in a near-by cabin. One of the most damning bits of evidence was the fact that he was known to have washed his shirt the day the murder was committed. He was of such filthy habits that it seemed very likely that washing would only have been resorted to in order to remove something, probably blood stains in this case. One may draw his own moral from this episode.

Discovery of stolen goods on a person pretty well pins the guilt on him. The next problem is to identify their origin; it may not be easy in the case of common articles. One robbery was solved by the

very unusual way in which the original owner had squeezed tubes of tooth paste and cold cream. In this case the *modus operandi* was on the part of the offended person rather than of the thief. Of course the guilty person would have to be suspected on other grounds before such a solution could be effected.

It is said that robbers, swindlers, and murderers operate in certain specific ways. If a house is robbed in such and such a way, or if a confidence game is handled in one specific manner, it is said to bear the earmarks of a certain man's work. This assumes that the individual has already been detected in a sufficient number of crimes so that generalization may be made.

(4) *Measures of Emotion.* For centuries it has been believed that a guilty person will have some emotional disturbance. In India the "ordeal of rice" was used; various suspects were forced to chew a mouthful of dry rice; if they could spit it out moist it was assumed that their conscience was clear, for it allowed normal salivary flow. Until recently no direct means of measuring emotional disturbances was devised.

During emotion there are several physiological manifestations. Breathing may become more rapid, and a sudden direct accusation will make one catch his breath momentarily. The heart-rate exhibits the same general symptoms—rapidity and irregularity. The pressure at systole and diastole may be raised. Finally, if the subject is attempting deception, word reaction-time may be slowed up.

Larson, Keeler, Darrow, and others have conducted considerable research, both theoretical and practical, on this subject. The present apparatus takes the heart-record from a sphygmomanometer, which uses an inflated rubber bladder pressing against the artery on the inside of the upper arm. Rate and nature of the beat can be read. The breathing record is taken by means of a pneumograph, which is a flexible tube strapped tightly around the chest. As one breathes it expands and contracts, which changes the air pressure within a tube communicating with a drum. A pen pivoted across this drum makes records as the head of the drum goes in and out with pressure changes. Records are made by light flowing pens on a glossy paper which is moving slowly. A time line, which makes a slight jump every second, permits quantitative comparisons to be made.

The method is used in connection with a question-answer tech-

nique, somewhat similar to that of the Free Association test. The suspect is asked a number of questions of no particular significance, then suddenly is presented with one about which he will have knowledge if he is guilty. A large list of questions may be made up before questioning the subject. It is assumed that he will show evidence of emotional disturbance if a touchy spot is hit.

The present writer can quote a personal experience with this "lie-detector." While Mr. Keeler was conducting some of his initial investigations with the apparatus, he asked me to serve as subject in a dummy experiment. I was shown ten cards, and asked to select one, keeping my choice to myself. The experimenter then displayed them to me one at a time, asking me to deny in each case that that was the proper card. In spite of the fact that I knew the apparatus, understood the situation, and was not bothered by a particularly guilty conscience, the card I had chosen was correctly identified. The heart rate in particular had been somewhat accelerated throughout the first part of the test, had gradually risen with increasing tension, and had dropped immediately after the critical card had gone by, when there was no longer any tension or need for denial. One may imagine how much more response there would be in a really crucial situation.

Before such a test can be accepted as valid, there are at least two important questions which must be answered. First, the frequent objection is raised that anyone who is subjected to police scrutiny will be emotionally excited, and so the test will not differentiate an innocent from a guilty person. While this is true in some measure, the innocent person does not become unduly excited at the critical questions, for he does not know which questions are critical. The interpretations come from comparing the various parts of the subject's record, especially for the critical *versus* the indifferent questions. A second question is whether an experienced person or one who has good self-control can defeat the instrument.

Larson has given direct refutation to this argument in several cases. In one case two confidence men were shown by their disturbed records to be guilty, in spite of the fact that they showed no facial change of expression, maintaining the traditional "poker face," and of course were accustomed to deceiving people and "looking natural" while doing it. In a second case a medical student

was found guilty, in spite of the fact that he understood the nature of the physiological processes involved, and thought that he could deceive the instrument.

We quote two cases from Larson. They illustrate not only the general methods, but also the way in which additional unexpected information is often gained from routine testing.

Case 28. *Fake Hold-up*. A young man of twenty-three came to the police with a story of being held, bound, and gagged by two masked men while his employer's money was taken away from him. According to routine procedure, he was tested as to the veracity of his story with the result that his record showed disturbances and seemed indicative of deception. He later confessed that he had gambled and lost the money and was afraid to tell the truth.

Case 31. *Burglary*. One evening the officer on the waterfront beat discovered a mulatto in the act of jimmying the back door of a drug store. The burglar was using a two-foot crowbar as a jimmy and on being apprehended attempted to strike the officer with it.

After the suspect had been fingerprinted and searched, it was learned that he was out on probation for burglary. He consistently denied any further burglaries and readily submitted to a deception test. He exhibited marked nervousness and was questioned regarding other possible burglaries. Whenever he was questioned on these points the record exhibited marked disturbances. He was especially upset in reference to a question concerning drug stores.

As a result of the test it was decided that he was responsible for more than he had confessed, and naturally it was thought that he might have robbed some drug store. The officer and the inspector were told that in the opinion of the examiner he was lying. The inspector was successful in learning of a drug store in a neighboring town that had been burglarized. Here a number of pennies had been stolen from the register and the suspect had an unusual number of pennies when apprehended. He finally admitted that he had committed this burglary and thus enabled us to check the record.

Throughout the test the subject exhibited marked fear symptoms such as tremors, peculiar inflection of the voice, etc.

An important fact is that the record takes a drop after tension is

released, especially after a confession. This reminds one somewhat of psychoanalysis, which claims that normality is restored after a repressed emotion has been brought to the surface. The suspect is often run through the same list of questions a second time, following confession. He then answers them practically calmly, and his emotional record is equally steady. Through this procedure and that of using many neutral questions we are able to compare the suspect's record under various degrees of excitement.

Analysis of *word-reactions* is similar to that in psychiatric practice. Where the normal reaction is held back, it is often detected by a very unusual response, repetition of the stimulus word for the purpose of gaining time although ostensibly because it was not clearly heard, slow time of response, or uniformly long reply time which the subject uses so that his answers to critical questions will not be incriminatingly slow. Crosland found that "guilty" subjects were slower in replies to all sorts of words, the significant, semi-significant, post-significant, as well as on purely neutral questions. "Guilt-revealing" replies were given two or three times as often by guilty as by perfectly innocent subjects. They also proved far more variable. They showed a guilty conscience in several incidental ways—more nervous, anxious about the test results after completion of examinations, and failing to look the experimenter in the eye.

How are these records used practically? As yet these methods are still in the research stage, although they have assisted in several hundred cases. Several times the court has refused to admit testimony obtained in this way, since its advocates will not in honesty claim 100 per cent success or reliability for it. This is rather an anomaly, as no court would claim that all evidence laid before it is absolutely and completely true. If this were so there would be no disputes; all cases would be cut and dried after the facts had been stated.

One of the chief merits of this physiological apparatus is the effect it has on the person being quizzed. He feels that he is up against machinery and cannot hope to beat it. Regardless of his words and the expression of his face he can feel his heart going a little faster than normal, and he becomes more and more tense. Often confessions are obtained during or between trials. It is chiefly

used during preliminary questioning, not during formal trial. Several innocent persons have been helped out of their embarrassment by voluntarily submitting to a test and letting their records speak for them. If a person refuses to take a test or if he tries to defeat its purpose by holding his breath or damaging the apparatus, it would seem that he has something he wants to conceal.

(5) *Drugs.* Efforts have been made to obtain the truth by means of certain drugs, which have been popularly termed "truth serum." The theory of using such drugs is that the individual is put into a state where he can answer questions rationally, but where his powers of inhibition are more or less paralyzed. To tell a lie again and again, yet keep the story consistent, calls for the keenest alertness and memory. A drug such as scopolamin will shorten memory and largely cloud the consciousness; upon waking the person does not know what happened. (It was first used to induce twilight sleep in obstetrical work.) Alcohol will give a devil-may-care attitude, and the subject is apt to "spill the beans." Sodium amyto1 has been used with some success.

References for this chapter appear at the end of Chapter XXIV.

cepted only if the witness actually saw the document in question being signed or if he had seen enough of the writing in the past—in letters, ledgers, checks, etc.—so that the identification could have a sound basis.

(B) *Incidental Memory.* There is a great deal going on around one at any given moment, and he cannot pay full attention to everything. If attention for a particular incident has not been deliberate, memory will be that much less certain. Exciting and spectacular events attract one's attention, so memory may be better (with exceptions as noted below) than for more ordinary events. A railroad ticket agent may be called in to testify whether he sold a certain individual, who was escaping, a ticket on a certain day. Just what chance would a man in a busy station have to notice all patrons?

(C) *Excitement.* In case of a rapid moving, violent, and dramatic incident one's observation and memory are not to be trusted as well as if he had a chance to witness it under more quiet conditions. It is again a question of the original observation rather than of memory. The writer has been interested for a number of years in following newspaper accounts of hold-ups from which the participants fled in an automobile. Only once, in those which have come to our notice, has an eye witness had the presence of mind to note the license number. The same may be true in an accident. The excitement so divides one's attention that he misses many details, the knowledge of which would be very valuable later.

(D) *Expert Opinion.* In certain technical matters the witness must be shown to be competent to judge what he has observed before his statements can be given much weight. For example, to identify the make and model of a speeding automobile one must be very familiar with cars, but if there is time to inspect in a leisurely way, the observation of an amateur may be adequate. The testimony of an expert who is not an eye witness may be sought in reference to such matters as diseases and mental disorders, and in many engineering and chemical problems. In general the practice is to call in an expert only when the jury is not sufficiently informed to form their own judgment, while a layman is usually required to stick to statements of observed fact only.

The necessary qualifications of an expert witness were the subject

of argument in an old case (41 N.H. 54). The charge was of "injuring, by immoderately driving, a horse, hired from the plaintiff by the defendant. . . . The defendant excepted, on the ground that the witness was not an expert." These three questions were placed, and had to be answered favorably before the opinion could be accepted: (1) Is the subject concerning which he is to testify one upon which the opinion of an expert can be received? (2) What are the qualifications necessary to entitle a witness to testify as an expert? (3) Has the witness those qualifications? The last one, in particular, must be decided by the court for any given trial, on any given subject, and for each individual.

(E) *Discrimination*. Under the same general line very interesting questions arise with relation to identifying individuals, especially if they are of different race and character from those with which the witness is familiar. The problem is summed up very neatly in these words of a judge in passing on a recent case.

The crux of this situation appears to be whether this defendant was actually the person who committed the holdup. We have a number of witnesses. Whether the white witnesses actually identified him, or only saw a Negro is uncertain. Those of a different race may be unable to differentiate as finely as they can among their own kind, unless they have had considerable experience. It is said that cattle-owners can tell one sheep from another, a task which is impossible for the rest of us. But we also have two Negro witnesses who are certain that they identified this man, so the testimony seems too strong to admit of further doubt.

(2) *Memory*. If we assume that perception, observation, and original learning were satisfactory, the next problem is the accuracy of memory with the passage of time. Witnesses are subjected to direct and cross questioning of a very detailed nature, often after lapse of months, or even of years. Psychologists are very suspicious about the accuracy of such testimony for a number of reasons.

(A) *Lapse of Time*. From a large body of experiments we may be permitted to draw a few generalizations concerning the course of forgetting with the lapse of time. (i) The longer the time the less we should expect an individual to remember. (ii) Minor details will slip more than major events. (iii) Apart from the confusion

involved, striking events should be remembered better than those which are more colorless in character. (iv) The less deliberate the attention the less reliable will one's account be. (v) As a general rule what is remembered is usually accurate. There is little new of an erroneous nature added; the loss is usually of events which were once actually observed.

Considering the facts we have seen in the last few pages, some of the questions asked witnesses in the Jester case are positively hair-raising. We shall only touch on some of the high-lights of this case, which is quoted in detail by Swift. In the early frontier days in Missouri, Jester and his partner set out. Later Jester arrived all alone, claiming his partner had gotten homesick and gone East, selling out his outfit. Murder was suspected, so Jester was arrested, but escaped, and was not brought to trial for thirty years. Several supposed eye witnesses testified, under the following conditions. Two women, who had been girls of twelve and fourteen at the time, and who were riding into a blinding snowstorm, gave a detailed description of Jester and his wagon. A boy of six, now thirty-six, stated that he and his father saw a body floating downstream in the spring freshets, and gave detailed information about its character and clothes. Just how much genuine memory could exist after thirty years, especially considering the fact that the witnesses were children? And why had they not reported the facts earlier?

(B) *Typification* often takes place with the lapse of time. Right after the incident, such as a hold-up, the account might be more accurate, but later the tendency is to describe in terms of what one thinks might have taken place. A hold-up always seems to be committed by a large, swarthy, villainous-looking man with two pistols; he then leaves at a tremendous rate of speed in a large car with the shades pulled down and a machine-gun poked out of the rear window. Anyone who causes an automobile accident is accused, by the occupants of the other car, of driving with the utmost recklessness. The movies have been accused of helping along this phenomenon of typification.

For this reason, and because of the loss of memory with time, it is important to get an immediate statement, in writing if possible.

This gets the facts when they are fresh, before typification or suggestion can enter, and will crystallize the individual's story.

(C) *Exaggeration of the Personal Angle.* People like to tell stories, and the more vivid they are the better attention they can get from listeners. Telling in the first person also has better effect. So accuracy may be sacrificed for the sake of dramatic interest.

A couple of months ago I was out driving with my aunt, when we came upon a car which had tipped over. About half a dozen other cars had arrived on the scene before us. This fact, since it was not a much-traveled road, and the fact that the occupants of that car had been taken to a cottage about two hundred yards away, made me positive that the accident must have happened at least ten minutes previously.

I noticed in several tellings of the story that my aunt got gradually nearer and nearer to the accident itself, until about the fifth time she reported that we had been following just behind the car and had seen it tip over, spilling the occupants out over the road.

(D) *Suggestion.* Since court action is usually from a week to several months after the incident, it is very difficult to keep suggestion out. A man may have a vague idea of the description of the individual, but after several other people have stated that they were sure that the suspect was the man who performed the act, his judgment then becomes certain. The newspapers greatly influence not only opinions, but judgments of actual fact. It is probable that a witness or semi-witness, being rather immediately concerned with the case, would pay even more than average attention to journalistic accounts.

Disputes have arisen over the admissibility of testimony the recollection of which has been assisted by reference to written material. In 56 Vermont 426 it was ruled that a witness could use notes both to help his memory to a state of completeness and also those which he may fail to remember at all, but in whose accuracy he has confidence. This was concurred in in 68 Conn. 1. The latter type of note would presumably include such things as checks, the writing of which one cannot be expected to remember long afterward, but which one presumes to be accurate and to have been written with due care. Evidence from a ship's log has been accepted, although

the witness was not the man who kept it. He was sure, however, that the man who wrote it was highly accurate, as he himself read it occasionally. This means that it is assumed that such objective documents do not contain suggestion.

(E) *Prejudice*. In matters involving judgment or opinion, one must take into account possible prejudice on the part of the witnesses. In assigning responsibility a passenger riding in an automobile which is involved in an accident will naturally tend to favor the driver, being a relative or host. Each witness will swear that his driver did all he could to avoid the collision, and that the other was negligent and proceeding at an undue rate of speed.

Likewise, if a person stands to profit by the outcome of the case, such as settling a will or testifying in defense of a relative, his testimony will be that much less accurate. Errors in memory may be conscious, or they may be unconscious and involve no deliberate dishonesty at all. Persons on different sides of a question tend to interpret the same objective facts in different ways.

Dying statements have come in for considerable discussion. One of the best opinions seems to be that a person knowing his condition would have no motive for deception; in fact, there would be every motive for telling the truth. Even in cases of severe hatred, perhaps this feeling would be tempered by the situation and a vague fear of the unknown. Naturally, we could not accept testimony if the person were delirious or otherwise mentally abnormal.

(F) *Capriciousness of Memory*. We cannot lay down sure and certain laws of memory, and possibly never will be able to. It does surprising things. For no apparent reason we may recall a very minor incident which occurred in childhood, and yet forget a certain very important recent bit of information which should be remembered. Practically, this means that each bit of testimony must be sifted and weighed by itself, on its own merits. We can only suggest certain general conditions which may qualify or disqualify a witness.

(3) *Capabilities of Various Classes of Witnesses*. (A) The testimony of children, particularly under twelve, is under grave suspicion and often is given no weight at all. It is assumed that a child is too suggestible and that his judgment is too immature to give reliable evidence. In one case on record (159 U. S. 523) an appeal

was made largely because a boy of five and a half years had been permitted to testify. As it happened, the original court had not gone into it blindly, but had tested him to some extent, as follows:

The boy, in reply to questions put to him on his *voir dire*, said, among other things, that he knew the difference between the truth and a lie; that if he told a lie, the bad man would get him; and that he was going to tell the truth. When further asked what they would do with him in court if he told a lie, he replied that they would put him in jail. He also said that his mother had told him that morning to "tell no lie," and in response to a question as to what the clerk said to him when he held up his hand, he answered, "Don't you tell no story." Other questions were asked as to his residence, his relationship to the deceased, and as to whether he had ever been to school, to which latter inquiry he responded in the negative.

It seemed from his replies that he understood clearly the distinction between truth and falsity, and that he was capable of clearly answering direct questions, even though possibly in an immature manner. Another boy of the same age might have been entirely unsuitable as a witness.

(B) It has been asserted that the testimony of a woman is less reliable than a man's, because she thinks less logically, is more inclined to become emotionally upset in trying circumstances, tends to dramatize the story more, and does not answer cross-questioning as precisely. But regardless of personal opinions, and regardless of the distress a woman's circumstantiation may cause an attorney, there is no genuine evidence that facts reported are any less accurate than those of male witnesses.

(C) Feeble-minded and insane individuals have been refused the right to give evidence. Concerning the insane, from what we know of functional disorders we would say that their reports while in a calm state should be as good as those of a normal person, except possibly that of a paranoiac or other delusional case concerning something related to his disorder. We have a court decision in 96 Alabama 310 to back this up.

One's infirmity may be such as to render it expedient to place him under guardianship, and even to subject him to personal restraints, and yet he may be fully competent to under-

stand the nature of an oath, to observe facts correctly, and to relate them intelligently and truly. A sweeping rule of disqualification which excludes such a person as a witness would be arbitrary and unsupported by sound reason. The true reason for not admitting the testimony of a person *non compos mentis* in any case is because his malady involved such a want or impairment of faculty that events are not correctly impressed on his mind, or are not retained in his memory, or that he does not understand his responsibility as a witness. When the reason for the exclusion of the witness does not exist, he should be permitted to testify.

(D) Finally, a question as to the admissibility of testimony given by a person previously convicted of a crime has arisen. The Massachusetts law specifies that "the conviction of a witness may be shown to affect his credibility." Note the word *may*. In general a criminal may be less trustworthy than a perfectly law-abiding individual, but there is no necessity that every criminal is *ipso facto* a liar.

(E) It seems to the writer that every bit of possible evidence should be heard, no matter from what source it comes. It is hard enough to get sufficient evidence without discarding some of that which is available. Its reliability can be estimated after it has been heard. Most of what is offered by any individual, no matter what his class or mental state, will usually be correct.

VII. PSYCHOLOGY IN THE COURT-ROOM

(1) *Problems.* The law is not cut and dried. Human behavior cannot be anticipated completely. When a supposed wrong has been committed and the circumstances do not conform to any existing rules, a court procedure may become necessary. This means that opinion will enter, and where opinion figures there is excellent chance for the use of psychological principles. Apart from technical legal considerations there are two things which each party attempts to do—establish certain facts favorable to itself, and bring the opinion of the judge and jury around to its side.

Osborn points out in this paragraph the necessity of preparing the trial very carefully:

A trial at law is simply a competition in persuasion. It is a contest where many influences are brought to bear to persuade a judge or a jury to take certain action. Law is administered through the minds, the consciences, the emotions, and the prejudices of men. It is the task of the attorney to consider all these matters and endeavor to discover and utilize all the various influences that have a bearing on the problem. If he learns the law, but fails to give attention to something else that causes defeat, his unsupported technical knowledge is of but little value to a client.

(2) *Selecting the Jury.* The first duty in a trial is to select a jury, twelve persons agreeable to both sides. The court tries to discover if there are any initial prejudices—e.g., refusal to award capital punishment in a first-degree murder case, or a preformed opinion of guilt or innocence. Each attorney is allowed to question the potential jurymen. Each hopes to have included certain persons who are somewhat favorable to his side. The court tries to preserve impartiality, although in some cases this is practically impossible. If a Negro is being tried, Negroes are usually kept off the jury, which is manifestly unfair. Yet a member of a minority race would be partial himself. In such a case no jury could be entirely impartial.

(3) *Bringing Out Testimony.* Earlier in this chapter we studied the relative degrees of accuracy of different types of witness and testimony. In the trial not only the bare facts, but the manner in which they are presented, are of importance. A witness is usually presented by one side or the other. Accordingly, he is usually instructed, or at least reviewed, in the attorney's office before the trial, and is pretty well aware of the questions which are to be put to him. His statements are brought out in such a way that he himself and his judgment seem to be of the highest class. To substantiate his character and competence as a witness, questions about his residence, family, place of employment, and citizenship in the city will be asked, not that they have any bearing on the trial, but to give the jury such confidence in him that the critical points he reports will be given full credence. When he is given to the other side for cross-questioning, every effort is made to discredit him, or if that cannot be done, sly innuendos suggest distrust to the jury.

Very detailed questions which no one could answer positively will be asked to show that the witness was unobservant or had a poor memory, which tends to make his other statements seem of doubtful accuracy.

The form of the question has come in for some discussion. Here are eight ways listed by Burt and Gaskill (following Muscio's technique) in which a question may be asked.

- Did you see a ---?
- Did you see the ---?
- Didn't you see a ---?
- Didn't you see the ---?
- Was there a ---?
- Wasn't there a ---?
- Was the house green?
- Was the house green or white?

One may see that each increases in positiveness and suggestibility. The last on the list is sometimes used in an attempt to demonstrate incompetence on the part of the witness by asking for a description of something which was not there. If one is asked whether a man's mustache is neat or shaggy, suggestion will make it difficult to remember that he had none at all. Burt and Gaskill experimented with these various types of questions and found that the negative contained powerful suggestion, but that there was little difference between the definite and the indefinite article.

(4) *Setting the Stage*. Sympathy plays a large part in securing a favorable verdict, and is not overlooked by a clever lawyer. In a personal-injury suit the plaintiff will be brought in on a cot or in a wheelchair, with entrance often timed for dramatic effect. After the verdict the injured person may be able to navigate under his own power, as he no longer has incentive for complete invalidism. To quote from Moss, "The aged mother of the defendant, wearing a black bonnet, with a shawl draped over her bent shoulders, sits sobbing in the court-room, apparently broken by grief. The wife and small children of the defendant are brought into the court-room looking the picture of woe, and are used effectively to produce a sympathetic feeling in the minds of the jury." A case is cited of two men who killed a railroad detective when they were caught robbing a freight-car. The single man was convicted, while the

married man was acquitted, in spite of the obvious fact that the evidence against both was the same.

(5) *Pleading the Case.* In the court-room we hear far more emotion than law. Since, as we pointed out, the law is not all-inclusive, the purpose of each side is to bring the opinion of the judge and jury to think that its position has better support in existing law and precedent than that of the other side.

The following is an approximation of the opening sentences of a speech by an attorney representing a furniture-dealer. The gist of the case was that the dealer had refused to accept a carload of furniture, because (he claimed) it was much lower in quality than the samples from which he had ordered, and because much of it had been broken in transit through careless packing. So much for the setting; we shall not attempt to evaluate the merits of the case.

Ladies and gentlemen of the jury. I shall not quote the direct law which applies to such cases as this. The learned judge on the bench could do that much more adequately than I. [Flattery to His Honor.] Rather I shall ask you to consider the broader aspects, and see wherein my client would be shamefully mistreated if forced to pay.

Ladies and gentlemen, you are all residents of this city. So is the defendant. [Obviously an appeal to local prejudice will be made.] The manufacturer from another state is trying to force this man to pay for a poor grade of furniture, much of which is defective. Suppose he were forced to accept it. Unless he shoulders a huge loss, he will be forced to sell it to your fellow citizens, your friends, or even yourselves.

Here are a few excerpts from an oration by the prosecuting attorney in a trial concerning a death resulting from a drunken debauchery.

. . . There sits an old man [the father of the dead girl] burdened with years, listening with us of the prosecution counsel day after day as the doctors for state and defense unfold the story of the terrible injuries inflicted on his poor daughter's body before this defendant left her dead. Let me paint a picture of her, an auburn-haired child twelve years ago on her father's farm, the baby of the family, playing innocently around the homestead at — and now, because of the brutal expression of

the passion of this beast here on trial [shouting this] that girl's body lies under the sod of a rural cemetery, in peace at last, I hope. Are you jurymen going to permit such a crime to happen, turn this beast loose, and in effect tell others of his kind to go forth and do likewise?

For the defense, the attorney said in part:

Put him in the chair; he won't care after that; he'll be dead. But his mother, that noble woman sobbing there on the front bench—the mother who took in washings to bring that boy up—she will cry bitter tears. It might have happened to anyone—to your own sons, jurymen.

And so on. Not a word of law expressed; merely irrelevant sentimental appeals on both sides. The contest is one of histrionics, not legal scholarship.

VIII. LEGAL RESPONSIBILITY

When a crime has been committed, the guilty person found, and the charge proved, some sort of a sentence must be passed. This may range all the way from a warning or a suspended sentence, through a small fine, to jail sentences of various durations, and even to capital punishment. On what basis are these various degrees of punishment meted out?

English and American law is based on the assumption that a person does most of his acts voluntarily, or through free will, and that he is punishable with this as a basis. It is assumed that when he commits a crime he has intended to do so, and he should be punished in proportion to the consequences and intent of the act.

If for some reason he does not have normal free will, he cannot be dealt with as can other criminals. He is considered no more responsible or punishable for his deeds than is an outsider, a friend, or a relative. There are various circumstances under which freedom of the will, legally interpreted, does not operate: (1) insanity; (2) emotional stress, often termed temporary insanity; (3) obsessions and fixed ideas; (4) drug effects, providing the individual did not take the drug willingly and knowing its possible effects; (5) feeble-mindedness; (6) youth; (7) senility; (8) coercion, as being forced at the point of a pistol to set a house on fire; and (9) peculiar

mental states, such as sleep, somnambulism (See 78 Kentucky 183), or hypnosis.

We may state the theory by quoting the opinion of a judge in a case of defense through insanity.

In order to commit a crime a person must have intelligence and capacity enough to have a criminal intent and purpose; and if his reason and mental powers are either so deficient that he has no will, no conscience or controlling mental power, or if through the overwhelming violence of mental disease his intellectual power is for the time being obliterated, he is not a responsible moral agent and is not punishable for criminal acts.

The situation has been summed up by saying that for criminality to exist these conditions must be fulfilled: (1) competent age; (2) some degree of sanity; (3) freedom from overpowering coercion; and (4) a punishable state of mind—*i.e.*, some blameworthy form of intentionality. It is accordingly considered that we have no right to punish anyone who cannot discriminate right from wrong or who cannot control himself even though he may be aware of the penalty for disobedience.

This is in distinct disagreement with present scientific concepts, particularly behavioristic psychology, which tries to leave out such mysterious hypotheses as free will and to include as much as possible under determinism. It is postulated that man's behavior is the result of his innate constitution, his body of past experiences, and the present stimuli operating on him. It is not concerned with the voluntary aspects; only the result counts. Applied specifically to law, it means that we do not care so much whether the murderer is in "normal" control of himself or not, as whether he did the act, and whether he is *likely to repeat the act under similar circumstances*.

The writer has always been thoroughly in disagreement with laws which grant leniency to persons who were said to be abnormal or incompetent in one way or another. If we still believed the purpose of punishment to be *revenge*, the theory would come closer to holding water. But the chief purpose of laws and penalties seems to be to protect society. With this major objective in mind, pardoning or giving a joke sentence to an insane person is indefensible.

If society is unwilling to protect itself through state hospitals, the offender must be put in a penal institution.

Probably the worst feature of this defense is that it is used as a last resort, merely to escape punishment, whether the defense is appropriate or not. Alienists are brought in and give evidence that the culprit is suffering from some sort of mental disorder. He is not held punishable in the ordinary sense, but is remanded to an institution. If he has enough money, he goes to a private sanitarium, which is more like a country club. After a few months, when public resentment has died out, he gets the same doctors to swear that he has returned to normality, and he is released. The Thaw case is a shining example of this.

Judgment of insanity is a very difficult matter, and one which should be done by unbiased experts. It is ordinarily the custom for the defendant and the state each to bring in its own alienists, with resultant conflicting testimonies. The question is left up to the jury to decide. What chance has a lay jury to sift properly the evidence presented in technical terms by a number of psychiatrists? To get around this difficulty Massachusetts has passed the Briggs law, which allows the court to appoint a neutral board to render a final decision.

The legal code has been criticized because it has not differentiated between the various types and degrees of insanity. While legal authorities will admit that the law has been built up by accretion and precedent, and has not modified itself in accordance with the development of learning in other fields, the situation is perhaps not so complex as the criticism might suggest. First, insanity is accepted as a defense plea only in murder charges. Lately it has been urged in some other matters, particularly kleptomania. There is no psychological reason why it should not extend all the way down the scale; free will and legal responsibility should operate for all misdemeanors. Secondly, the only critical question is whether the defendant at the moment of the crime was able to realize what he was doing. This makes it apparent that a man may be suffering from a very serious abnormality and still control himself in regard to personal violence, while another may have only one minor symptom, as a delusion of persecution, and yet be legally insane. A definite diagnosis, into dementia præcox, paranoia, etc., is not neces-

sary for court purposes, although it may be necessary for the experts in forming an opinion as to criminal responsibility.

Another difficulty in accepting mental incompetence as a plea is that, from what we know of insanities, there is serious danger of recurrence. Given a new emotional strain and circumstances which excite the individual, a new crime might be committed. There are a number of cases of this nature on record. Feeble-mindedness is, of course, permanently incurable.

It seems more likely that a normal person who commits his first crime can be reformed and made a good citizen with proper handling. His lack of orientation may have been due to unfavorable environment, bad companions, poor upbringing, failure to acquire an appreciation of right and wrong, or a very trying situation. He may not be inherently vicious in any way and may normally have full control over himself. It always seemed to the writer that there was *less* reason for removing from society such an individual.

We might ask the question whether anyone who commits a serious crime is entirely normal. This question cannot be answered, and any complete discussion of it would call for more space than we can devote. If it is a crime of passion, say assault or rape, he obviously has not normal control over his emotions. The person who under the stress of the moment becomes temporarily insane (this would include mere fits of anger) is normal at other times. Therefore he cannot be kept out of society as can one who is more or less permanently insane, and yet he cannot be prosecuted for his crime. So we have a victim, and perhaps a family, left without means of support, and there is nothing we can do about it. It is not so much that we crave revenge as that this possibility of escape (plea of insanity) is open to abuse. There is serious danger in allowing such a person normal contacts, as he is likely to fly off the handle again.

If the offense is deliberate, such as swindling, embezzlement, or racketeering, his purposes are so consistently anti-social over a long period of time that a very good argument for abnormality, at least poor balance, could be built up.

The following caution was given to the jury by the judge in an insanity plea by a man who shot a policeman while resisting arrest for robbery (95 N. J. L. 145):

. . . But I also charge you that in dealing with such a contention you ought to use great caution not to give immunity to persons who commit crime when they are merely morally depraved. You should discriminate between conditions of the mind merely blunted by familiarity with wickedness and yet capable of forming a specific intent to take life and carry it out as stated, and such a prostration or condition of faculties as renders a man incapable of forming intent and carrying it out.

Another caution is observed in 37 Kansas 369, by the following judgment in an appeal case. Here we see that the defendant was apparently capable of exercising good judgment, for self-protection at least, even if not in accordance with social propriety; so he must be considered fundamentally responsible.

. . . The evidence showed that the defendant had become enamored with Mrs. Godfrey, the wife of his business partner; that she later discouraged his attentions; that the defendant then became moody and morose; and that on the day of the shooting, having been repulsed by her, after a stormy interview with Mr. Godfrey, the defendant approached the Godfrey house armed with a shotgun. On being confronted with Mr. Godfrey, the defendant fired two shots into the house in Mrs. Godfrey's direction, and then fled, pursued by a large number of persons who were in the vicinity. One Smith was in the lead and gaining upon the defendant. After two vain efforts to stop his pursuers by threats to shoot, the defendant turned and fired at Smith, who died a few minutes later.

The verdict of the jury ought not to be disturbed. There is much in the testimony showing design and intelligent efforts to accomplish it. His consciousness of guilt, his fear and efforts to escape after committing the felony at Godfrey's house, his coolness and deliberation in three times halting his pursuer, and in firing the fatal shot, and his subsequent recollection of all that occurred during his flight and capture, made an exceedingly strong case showing responsibility, and it is difficult to see how the jury could have reached a different result.

As a matter of fact *much civil and some criminal law seems to go against the principle of choice and freedom of the will*. Often it is the act which is considered, rather than the state of mind of the individual who performs it. If a motorist goes past a red light and

hits another which is proceeding legally he is guilty of negligence whether he intended to slip through, was not paying attention, or was drunk. In the last named case he might not have his usual voluntary control over himself, although it might be said that he partook of the alcohol of his free will and knew the consequences of over-indulgence. A habitual drunkard has weaker resistance, but often he is punished more rather than less for acts done in this condition. Negligence is only defined as the failure to be as careful as a cautious person would be.

Similarly, a man who commits a hold-up with a pistol is guilty of using a dangerous weapon, even if he claims that it was empty or that he did not intend to shoot under any circumstances. The point is that the victim would act as if he would be shot if he did not comply literally with orders, because many persons have been shot in similar situations. He will allow the robbery to go on differently from what he would if an unarmed person came in and demanded that the contents of the cash register be handed over to him. In such cases it is the result, the objective facts, that count, not whatever intent there may have been. Intent is practically impossible to prove. We have only the individual's statement, and cannot go back of that, although we may surmise from the train of evidence what he intended to do.

Knowledge of probable results is often construed as intent. If I drive around a corner at fifty miles an hour, knowing that others who have been so grossly negligent have become involved in accidents, it is assumed that I at least partially intend to cause an accident or to wreck my car; or, to state it the other way, I am not taking pains to avoid a mishap.

IX. THEORIES AND PRACTICES OF PUNISHMENT

(1) *Theories.* For a law to be more than a recommendation there must be some penalty attached to failure to observe it. Just what penalty to fix is the next question. This depends to a large extent on the theory of punishment one holds.

(A) *Revenge* is the oldest theory, and is the one expressed in the laws of Moses in the words "An eye for an eye, and a tooth for a tooth." It implied that an injury called for like and equal reprisal.

This theory is no longer held. It is too crude, and leaves out many extenuating circumstances which should be taken care of by individual punishment.

(B) *Protection of Society*. This is the view which is most generally held at the present time, and seems to be the best theory. As previously suggested, laws are provided so that the maximum number of people may enjoy the greatest amount of freedom. If one could not trust his person or property without having to be constantly on the lookout, life would be very strenuous and unhappy. If certain people menace this happiness, efforts are made to keep them from normal social freedom. The more severe the crime the longer one is kept out. It is assumed also that this punishment will be so unpleasant that it will deter him from repeating the offense. Knowledge of penalties will keep the majority of normal individuals from breaking the law.

(C) *Reform of the Individual*. This is the cry of some reformers. The child is made to behave better by spanking him; the older person is reformed by fine or incarceration. This theory is behind the shortening of the sentence for good behavior. It is assumed that one has reformed sufficiently to be ready to live a law-abiding life, and that it would be an injustice to keep him confined any longer. This provides an incentive for early reform.

Before reform can be made a major objective of imprisonment there must be a number of changes made in institutional practices. Rather than being reformed, many individuals come out from the first sentence with a greater knowledge of crime and a bitter attitude toward society. A first offender may be mixed in with recidivists who have committed most of the offenses in the book. Present methods of punishment often make the criminal definitely *more* likely to commit crime.

(2) *Punishment as a Deterrent*. The penalties attached to criminal offenses and torts were not established with the expectation that the laws will necessarily be broken. They are made very severe, many times the value of the crime, if that can be estimated, with the hope that people will be deterred from violations. Is it worth stealing a watch if you may be put in jail, forced to pay a heavy fine, and become an object of social disgrace?

It is probable that in the main such threats do deter the majority

of people from committing an offense. All of us might steal now and then, refuse to pay our bills, or violate traffic ordinances, if we did not realize that the penalty risked is too severe for the advantages derived. But no penalty will entirely eliminate crime. Once in England sheep-stealing was punishable by death, but it still occurred. In our own West, horse-stealing met with hanging, because of the almost certain death to a man left without his means of transportation, but violations were not stopped. Murder is not less frequent in states having death penalties than in others which refuse to allow this extreme form of punishment. This suggests again our question of whether a person who commits a serious crime can be normal. It does not seem reasonable that a person with normal balance would commit murder, knowing the penalty if convicted.

Probably the critical point in prevention of crime is in the certainty of detection. Regardless of the threatened penalty, it will not deter everyone as long as the chances of detection and conviction are slim. England has a much smaller ratio of murders than occur in this country, and this is accounted for on the basis of speedy detection and greater certainty of justice. Here less than one-tenth of murders are followed by any real penalty. Even where the apparently guilty person is caught, justice is impeded by all sorts of technicalities, witnesses are bribed and intimidated, newspapers confuse testimony of the best witnesses after months of waiting, insanity is used as a last-resort excuse, and misguided sympathy gets people excused for the most brutal crimes. It is particularly unfortunate that the technicalities which were originally introduced to protect innocent people are warped to defeat the intent of justice.

The threat of sudden and drastic payment for crimes will act as a serious deterrent. It was reported that in Texas a pretty effective stop of bank hold-ups was made by posting a sizable bounty for the capture of a bandit, with double reward for a dead one. This gave an incentive to every citizen to help the law, and gave no sympathy. But one chance in twenty of ultimate punishment is no deterrent.

(3) *Modified Sentences.* Different sentences may be given to each individual who commits the same crime, in accordance with the conditions. While such a procedure can only be carried out within limits, as the law tries to be fairly definite and to prescribe penalties

for specific offenses, the jury and judge are given a certain leeway. The same crime may carry a penalty of one to fifteen dollars, or from one to ten years, or may call for either a fine or a jail sentence, or both, at the discretion of the judge.

Probation and suspended sentences may be given to a first offender who has a good record otherwise and seems likely to go straight in the future. A prison sentence might do more harm than good, will create a blot in the individual's history, and may not be necessary. The prisoner is not released without obligation or responsibility. The sentence hangs over his head, but will not be passed if he behaves himself for a year. If he does not, the judgment becomes effective immediately. He may have to report to the judge once a month, to show that he is living a constructive life and that he is remaining within the jurisdiction of the court. The theory is excellent, if applied systematically, but is open to abuses. The perpetrator of one of the most ghastly murders in recent years was found to have been out on parole for a minor offense in a city over a thousand miles away. He had not reported for months and no attempt had been made to check up on his delinquency. If he had been traced two lives might have been saved—his own and that of his victim.

Juvenile offenders are treated differently from adults. They are not considered criminals in any sense, since they are not supposed to be old enough to have criminal intent. There is no formal accusation, testimony, or jury trial. If convicted, they are not sent to prison, but to a reform school, if any confinement seems necessary. Probation avoids definite sentence, but keeps a check on the juvenile.

(4) *Future of Discharged Convict.* One of the greatest reasons for avoiding and modifying sentences in deserving cases is that a prison record places a serious and ineradicable blot on a man's history. While stories that the police hound a man who has made one slip are greatly exaggerated, it is true that a person is handicapped economically and socially. The damage increases as one goes up the scale of occupations. A professional man, one in public service, or a store-owner might as well leave his home town and start anew elsewhere. A bank employee could not return to his occupation if he were convicted of embezzlement or many other offenses. Possibly a college professor would be worse off than any-

one else. He is known to the whole faculty of one or more universities. A single offense would become quickly known all over the country, and he would have no chance of employment anywhere. His years of training and experience would all be wiped out at one blow.

We do not mean that offenses should be pardoned just because of the later hardship on the individual. He should think of all the consequences before taking a chance. But the present tendency is not to inflict a disproportionate punishment in a case which does not seem to be serious and which probably will not be repeated.

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at an advantage, because he can handle himself more gracefully. Practically all the best divers are below the average in height, although to have the musculature to control the whole body they are very well built as a group.

These points are only true in the long run; there are so many exceptions among leading competitors that to list them would take pages. For example, the three men chosen to represent the United States in sprint races in the Olympics of 1932 were of widely different builds. Tolan was short and stocky; Metcalf tall and heavy, like a football man; and Simpson was slightly above average height, and slender. Of the two best tennis-players in the world at the present time, Vines and Cochet, one is tall and very slim, and one is short and of average build. All in all, we would say that while certain builds aid success in sports, there are so many exceptions that this factor would seem to be of less importance than functional abilities.

(2) *Motor Coördination.* The coördination and grace of an excellent athlete are beautiful to watch. One of the greatest differences between major league baseball and that of amateurs is the sureness and ease with which difficult fielding plays are made. An expert golfer with an easy swing hits the ball fifty yards farther than the rest of us can achieve with a mighty swat. Speed skaters amaze one with the ease with which they cover the ice with great rapidity.

This coördination does not seem to be due entirely to practice, either. Many of us can play golf or tennis for years without achieving more than a fair degree of skill, yet we often see boys under twenty who compare favorably with national champions. Then, too, there are some all-around athletes who seem to be able to pick up a new sport very readily and show good form from the outset.

It would seem that first-rate athletes have some fundamental ability which the rest of us do not possess. Accordingly, the writer decided to experiment to see if any differences in motor coördination could be measured. With the aid of Mr. Marvin Steen and Mr. John F. Poser, themselves leading athletes as well as psychology students, a series of experiments was conducted over a period of two years on many athletes from nearly all the sport teams at the

University of Wisconsin. We tested nearly a hundred athletes from six teams, the number in each group being given in Table 63. The results are compared with those of college men who were not on any athletic team, although some of them may have had a fair degree of skill in one or more sports.

The apparatus employed was the Seashore Motor Skills Unit, the following five tests being used: pursuit rotor, spool-packing, serial discriminator, crank drill, and speed of tapping. The battery is completely described by Seashore, but we shall give a brief outline of the nature of each task for more immediate understanding. We made a few minor departures from the procedures which Seashore recommends, but these changes concerned the length and number of trials, rather than the use of the apparatus.

(1) *Pursuit Rotor*. This consists in following with a loose-hinged pointer a small target rotating near the periphery of a phonograph turntable. An automatic electric counter records contacts, perfect performance scoring ten contacts each revolution. Twenty revolutions constitute a trial.

(2) *Spool-packing*. Two spools are taken up at a time, one with each hand, and placed end to end in a tray; another pair is put just above these, and so on until the tray is filled with six pairs. The experimenter then slides the tray along, which dumps it, and automatically by this operation brings another tray into position, so that the subject may pack the next pair of spools without the slightest break in movement. Five trayfuls make up one trial, time being the score considered.

(3) *Serial Discriminator*. A number, 1 to 4, appears at a window; the subject presses the appropriate finger, which brings another number into view; pressing the correct key in turn moves this on and presents the next digit, and so on until a revolution is completed, which involves one hundred choice reactions.

(4) *Crank Drill*. The number of revolutions done on a crank drill in ten seconds was recorded by a Veeder counter.

(5) *Speed of Tapping*. The number of taps on a telegraph key done in five seconds.

The results of these studies are given in Tables 60 to 63. We might point out that in Tables 61 and 62 a low score is desirable,

since the measure is the number of seconds to do a certain task, while in the other performances a high score shows quality, as the task is to see how many items one can do within definite time limits.

MOTOR COÖRDINATION OF ATHLETES AND NON-ATHLETES

TABLE 60. PURSUIT ROTOR

	Trial	1	2	3	4	5
Basketball.....	27.1	36.4	47.8	53.6	63.5	
Football.....	17.1	24.7	32.7	39.6	50.3	
Baseball.....	28.9	38.4	47.8	54.5	62.5	
Track.....	19.4	24.6	32.1	38.8	40.4	
Crew.....	14.4	25.6	34.6	37.4	45.1	
Gym.....	18.0	30.0	37.5	47.7	70.7	
Average of athletes.....	22.7	28.4	40.4	46.8	55.4	
All-around athletes.....	39.4	52.9	60.3	66.8	76.3	
Non-athletes.....	17.6	22.5	30.6	32.3	38.0	

TABLE 61. SPOOL-PACKING

	1	2	3	4	5
Basketball.....	68.4	62.8	62.1	61.9	60.5
Football.....	66.1	62.0	60.7	58.5	55.8
Baseball.....	66.5	63.1	60.3	59.5	57.5
Track.....	64.8	59.5	57.0	56.9	55.8
Crew.....	71.1	63.0	62.2	58.7	57.2
Gym.....	67.3	61.4	57.5	56.7	53.1
Average of athletes.....	66.9	62.0	60.3	59.3	57.4
All-around athletes.....	68.3	60.2	60.9	59.0	57.5
Non-athletes.....	68.2	62.8	60.1	58.5	56.2

TABLE 62. SERIAL DISCRIMETER

	1	2	3	4	5
Basketball.....	67.4	63.8	63.6	61.5	61.0
Football.....	68.8	66.9	63.7	61.9	59.0
Baseball.....	69.9	66.5	64.6	62.8	60.9
Track.....	68.7	67.5	66.6	63.4	61.2
Crew.....	71.1	66.2	64.8	62.5	60.5
Gym.....	60.5	57.2	55.0	55.2	53.4
Average of athletes.....	68.4	65.6	64.1	62.0	60.2
All-around athletes.....	69.3	67.0	66.1	55.8	63.5
Non-athletes.....	74.2	70.7	68.7	68.6	66.0

TABLE 63. CRANK DRILL AND TAPPING

	Crank Drill	Tapping	Size of Group
Basketball.....	199.5	39.2	24
Football.....	200.1	40.2	19
Baseball.....	195.1	39.7	19
Track.....	201.9	39.1	16
Crew.....	198.2	40.9	5
Gym.....	207.7	45.0	4
Average of athletes ..	199.4	39.9	87
All-around athletes ..	195.7	40.3	10
Non-athletes.....	188.7	40.7	30

We see that athletes are definitely superior over non-athletes. The gymnasts surpass the other athletes, although since there were only four letter men in the school at the time we cannot be entirely sure. Their tasks are such that they have to have complete control of all parts of their bodies, as in their contests they are scored on grace as well as ability to do certain stunts.

The test on which the athletes as a group seemed to stand out most was the pursuit rotor, which calls for the type of eye-hand coordination used in going after a moving object, as in basketball and baseball. It is interesting to note that men in these two sports do far better than average on this test.

We were particularly interested to test track men, since their skill lies in their legs rather than in their arms. Our tests only measure manual skill. We omitted men who used their hands, such as shot-putters and pole-vaulters, and also those who compete in events demanding nimbleness, such as high jump and hurdles, confining ourselves entirely to those who run in flat races. Their task is purely repetitive in nature. We see that track men were the poorest of all athletic groups, except in the serial discriminator; no hypothesis can be advanced to account for their good performance on this test.

Crew men are not much above the non-athletes, but again their task is not such as to demand great dexterity. They use hands, arms, and back. The act is, like track, mechanical—in fact, the more repetitive and mechanized the better from the coach's standpoint.

We made particular effort to secure some subjects who had won two or more letters and might be considered all-around athletes.

Their performance on the pursuit rotor is outstandingly good; on the other tests they are at least as proficient as athletes on single teams; and in no test were they poor.

II. REACTION TIME

It is clear that speed in starting is very important in track, swimming, and other racing events. In contact games the man who gets started first has his opponent at a disadvantage. In football the slow starting man will be knocked partially off balance and will be unable to recover until too late. If a boxer can land a blow or two before his opponent can lead he will have him on the defensive and perhaps can continue landing blows for a number of seconds before the adversary recovers.

Quickness in deciding direction of movement, a more complex procedure than simple speed of starting, is also important. Examples of this type of movement are fielding a baseball, intercepting a forward pass or breaking up a running play in football, and decision of where to throw a basketball immediately after receiving it. These situations possibly bear some resemblance to the serial discriminator test.

The slight time necessary to make a reaction, particularly when choice is involved, is used practically in forward passing in football. One of the fundamental principles of receiving a pass is for the end to run in one direction, suddenly wheel, and sprint at top speed in another. With such a well-timed attack, interception is very difficult.

Team coordination is essential in football, hockey, crew, and in some situations in other sports. The football line especially must start as a unit to drive their opponents in the desired direction. Since there are individual differences in reaction time, a smooth start would not be possible unless the men could anticipate the signals. In this connection an amusing story is told of a large, slow-moving tackle playing for a small Western college. He was so slow that finally the coach hit upon the idea of having him start one signal ahead of the rest. The scheme worked so well that one time a newspaper story gave him credit for being exceptionally fast starting for such a large man!

A study of reaction time of starting in football men was conducted by Miles at Stanford. He tested all squad members during spring practice. He modified the usual laboratory set-up, which calls for pressing a telegraph key while sitting in a chair, to a situation more closely resembling the task on the playing-field. Seven men, in a line as in a game, placed their heads against hinged boards. When the signal was given they all lunged forward, the movements of the board loosing golf balls which fell on a moving piece of paper, making dents where they hit. An eighth ball dropped just as the signal was given. The paper was wrapped around a cylinder which revolved once a second. When all reactions had been made the paper was cut from the cylinder and the distances between the stimulus mark and those of the responses measured. If the distance was half the circumference of the paper the reaction time was half a second, etc.

These scores were compared with independent rankings of the general all-around efficiency of each man as estimated by the coaches. The correspondence is remarkable. The original squad of eighty-seven men had an average of 389σ (thousandths of a second). When the group had been cut to fifty-five men in the fall, the survivors had an average of 382σ , showing some selection. The eleven men who started the two major games averaged 353σ , which is just at the 75th percentile of the whole squad. One of the coaches observed, "It took me two years to decide on those selections, but you apparently got a line on some of the men in twenty minutes." Miles recognizes that he was only measuring one phase of football skill, but the correspondence between speed of starting and total value to the team is so high that reaction time, and perhaps other related speed functions, seem to contribute very materially to success. Individual records agree very well with these mass figures. For example, the two best guards were among the fastest three of eleven candidates; the two best tackles measured were faster than any of their substitutes; and the two best ends were first and third in speed of starting.

Miles and Graves report a study of various methods of signalling and their relative efficiencies. This study is perhaps outdated at present, due to the almost universal use of the huddle, but we may summarize the major findings. Unison of starting is far

better achieved with anticipatory signals, giving the offensive side a definite advantage. Calling numbers at the rate of 100 a minute gave faster reaction than 40, 60, or 120. Failure to call signals rhythmically slows up starting time.

One of the earliest findings in reaction-time measurement has especial application to starting a race. One may adopt either a sensory or motor set. In the motor set one focuses attention on the act of starting and what he will do as soon as he starts. The sensory set is one of listening for the gun. This latter is approximately a tenth of a second slower, since one has to perform more neural activity. He listens for the sound, then has to initiate the action, while the man who uses the motor set is only thinking of the act. We see what is probably a demonstration of these two sets in a track race when the pistol fails to fire. Some of the men start on the slight stimulus of the hammer clicking on the cap, while others hold their mark. They may congratulate themselves that they are steadier than the others, but as a matter of fact they are probably of the sensory type, and when the race does start they are likely to be a little slow off the mark. A tenth of a second does not seem very much—and it is not in terms of daily life, such as catching a street car—but in a fast hundred-yard-dash it means one yard, which is greater than the winning margin in most high-class meets, and in an out-door race on a small track the faster starters will get to the corner first, which gives a tremendous advantage.

Another means of obtaining a fast start is to be relaxed when the gun fires. When one changes from one form of muscular action to another, the muscles have to relax temporarily while they make the shift. The time lost can be saved if one starts relaxed. To quote a specific example, the writer assisted the captain of the swimming team in the university a few years ago to get a quicker start. It could be seen, while he was waiting for the pistol to be fired, that the muscles in his arms, shoulders, and back were very tense, and that he had to relax, then make the necessary movements. As a result he was always off the mark a fraction of a second late. He had a fine dive, so that he came up about on even terms with the others. Just coming up even was not satisfactory; he really should have been able to start swimming after the dive a few feet ahead of the others. By getting him away from the wasteful

muscular tension, we were able to give him a start which furnished him an advantage of about three or four feet, meaning perhaps a fifth of a second, which is very important in a short sprint race.

III. VISUAL PHENOMENA IN ATHLETICS

(1) *Use of Peripheral Vision.* In several sports one has to keep track of two things at once—the ball or its equivalent, and the opponents. In basketball, for example, one dribbles up the floor, watches for a team-mate to pass to, and takes care that an opponent does not take the ball away. One can take care of the human element best if he does not have to pay too strict attention to the ball. Good players are able to dribble the ball automatically, without looking directly at it, while they advance up the floor. They can keep track of it by watching out of the corner of the eye. In hockey the same thing is true; the man can stick-handle the puck, seeing it only indirectly, while he dodges the defensive players. A football man may catch a punt while watching indirectly the men who will try to tackle him as they come down the field. Owing to the shape of the football and its irregular flight, it is suggested in this game that one watch the ball and pay indirect attention to the players.

(2) *Color Zones of the Retina.* Colors are not perceived equally well by all parts of the retina, which is that part of the eye corresponding to the film or plate in a camera. Only in the very center are red and green seen; over a larger share of the retina blue and yellow are visible; while the outer parts are sensitive only to black, white, and intermediate grays. Practically, it means that one must be careful not to attempt to perform acts requiring discrimination beyond these sensory possibilities.

Griffith relates an instance where a basketball game was lost by a team because of ignorance of this principle. Its passing game was built on deception, where men looked in one direction and passed in another, hoping thus to catch the opponents off guard. In this particular game the jerseys of the opponents were of so nearly the same shade that in indirect vision many passes were thrown to them instead of to a team-mate.

From physiological facts and incidents like this we may give a

few recommendations. It might be a good idea for a team to have two sets of jerseys, one white and the other of whatever color is preferred. If the opponents are found to be wearing jerseys somewhat near in shade or hue to one's regular equipment, the alternative shirt may be worn for that game, white against color, or color against white. Striped jerseys are unusually perceptible. They can be seen on the outermost zones of the retina, are exceptionally visible while in motion, and would be in no danger of being confused with any solid-colored shirt.

(3) *Color-blindness* of any player should be discovered and he should understand his limitations. It is not serious in athletics, except under the same general conditions as those spoken of in the last paragraph. The use of striped jerseys, provided the opponents wear a plain color, will completely obviate this sensory deficiency.

IV. MORALE AND SUGGESTION

(1) *Confidence*. This is closely allied to auto-suggestion. If one has confidence that he will win, he has far better than an average chance, assuming that he and his opponent are of the same general ability. Doubt or fear of the consequences are not incidental. They divide the attention and set up mental conflict, which in turn reflects itself in muscular tension. Tension will prevent smooth co-ordinated activity, such as is necessary in a tennis or golf stroke. The man who wins is the one who can relax and keep his form in a pinch.

The best possible mental attitude for players or teams is to feel that they can win, but that it will be a battle calling for their utmost efforts. Thus they will not loaf for a second. And they will not have the disquieting feeling that, while they might be doing well just now, it will only be a question of time before the other man or team gets the best of them.

In track, tennis, and similar sports of individual competition confidence is an element which often makes the difference between winning and losing when contestants are evenly matched. A few years ago three rival universities had mile runners of practically equal ability. Yet in the dual meets one always came in second, letting either of the other two beat him. All of the races were

of the same type—the men were on even terms for the first three and a half laps, put on about equal sprints, but just before the finish this one man would fade out just enough to be beaten by a few feet. From the fact that he was a good miler and made fine times in other races it did not seem to be any lack of courage or endurance on his part. It seemed more likely that he felt that in a pinch the other men were just a shade better than he. And so it turned out. The men were so evenly matched that, on a purely physiological basis, slight differences in physical condition on the days of their various races should have made them able, so to speak, to take turns in winning.

Another instance of the same thing was seen in a prep-school meet between intense rivals. A very fast and widely known sprinter was put in the quarter-mile also for this big meet. Since he had to run the 220-yard dash afterward, he ran the 440 just fast enough to win, which he did in 54 seconds. The interesting fact was that there were three other boys in the race who had done consistently better than that time. They knew that they could not win from this fast man, so were beaten in slow time. They went into the race with no hope of getting better than second place.

(2) *Discouraging the Opponent.* To win, one can aid his cause not only by having confidence in himself, but by making the opponent feel that he has met his master. Tilden speaks of the great advantage secured by returning an apparently ungettable shot in tennis. A person puts over a ball which seems far out of reach, only to find his opponent returning it harder than it is sent. Having done his best and still losing the point, he is in a fair way to become discouraged. Such a shot may have been partly luck—that is, one which could not be made more than once in ten times—and it may have been made only at the expense of great energy, but the point may be worth ten ordinary ones in its psychological effect. Similarly, a marvelous recovery shot out of the rough, a long putt, or beating a team's best pitcher in the first game of a series, has great effect.

We quote an incident related in a recent popular article by Bill Cunningham, concerning Walter Hagen, not only a golfer of exceptional ability, but a master of confidence and strategy.

It was the opening day of the National Open at Olympia Fields outside Chicago in 1928. Everybody knew that Hagen was entered, but nobody had seen him. The locker-room of the club was filled with the famous, the near-famous, and the ambitious unheard-ofs. As the scheduled hour for Hagen's tee-off approached with no sight or word of him reported, the place began to buzz—possibly he meant to default.

But just then a long, low, underslung motor purred up to the door. It had a chauffeur and a footman up in front, and possibly a couple of side-boys hooked on somewhere. The footman alighted and opened the gleaming door, whereupon, impeccably dressed, with cane and lemon-yellow gloves, the great Hagen emerged, a perfect picture of Bond Street elegance and nonchalance. He strode into the locker-room, looked all around with a big, broad smile, and said, in warm greeting: "Hello, boys! The next Open champion has just arrived. Which one of you mugs will be second?"

As it happened, Johnny Farrell won that particular tournament, but Hagen's grandiose entry knocked half the field out of it before they even got out of the locker-room!

In track races it is far more effective to pass a man at a good rate of speed, rather than barely crawl by. If one does the latter the opponent feels that he can keep up by increasing his own speed only slightly, but if he is passed very rapidly he thinks that he cannot hope to match the speed. It helps also to run easily and hold one's breathing down, so that it does not look as if too strenuous an effort were being put forth. In long-distance races, where the pace is a bit more leisurely, some runners add to the discouragement of men they pass by calling out, "Better get a bicycle if you expect to keep up with me," or if a man passes them they say, "That sprint won't last long, buddy." It is said that one of the greatest sprinters of a decade ago had the disconcerting habit of shaking hands with the other contestants just before the start and wishing them luck. About then they were glad to settle for second. A famous golfer observes to his adversary, after a few poor shots, "They just won't go right today, will they?" This sounds sympathetic, but really suggests the idea that the poor playing will last over the whole round.

In thus using practical psychology one should be careful to dis-

tinguish between fair and unsportsman-like practices. Some of the last few examples are on the border line of bad taste. Winning should not be put above everything, but one should strive to do one's best and let the decision come out as it may. If one has used his head and body well, no one can demand more.

(3) *Tension*. As we have pointed out in several earlier chapters, fatigue from tension, worry, and strain add decidedly to that caused by physical exertion alone. Coaches often have a serious problem confronting them to keep their men from worrying so much that they are below their real ability when it comes to the actual competition. This is the reason we sometimes see, in important contests, very poor tennis, golf, high jumping, and similar performances which call for great poise and precision. The athlete is unable to relax and keep normal control over his muscles, so does much more poorly than in practice.

An instructive story is told about how the manager of a team in a world's series a number of years ago relieved his team of tension. It is always a strain to play in such an affair, and this series had lasted so long that both teams were playing rather poor ball. They were tied up at three games apiece, with everything depending on the next day's game. The manager called all the players out to his home that evening, presumably for a conference. As they arrived he met each at the door with a bottle of beer, and told them to join the party. They had an evening of jollity and relaxation, with orders not to mention the game of the next day. They won the final game, 7-0. While this is a single instance and there is no guarantee that they might not have done as well anyway, experts noticed a distinct change of form, the pitching, fielding, and batting performance being outstanding.

It always seemed to the writer that it was a mistake to surround big games with so many artificialities. College football teams are the worst offenders. If a big game is out of town they will be cheered when leaving, having thought nothing but football all week; and everything emphasizes the importance of the occasion and the grim necessity of winning. If the game is at home, the team may be isolated at a country hotel, with guards to keep away visitors. Having no one but themselves to talk to, the tension naturally keeps increasing. It is no wonder that some teams crack or give a per-

formance far below their usual level. It is one thing to be serious and determined, but another to act as if the fate of the world depended upon one game.

We might add that one should learn to accept a few tough breaks or poor plays without getting upset over it. Some are bound to come every day, and if one frets over them he will only increase the likelihood of more coming. Vines and Jones are said to be champions over others of nearly their ability largely because they have mastered their tempers.

V. STRATEGY IN DIFFERENT SPORTS

(1) *Tennis* affords an excellent chance for the use of psychology, since one man is pitted directly against another, with no one else to help or hinder him, and with no other variable, such as par in golf, to worry about. The whole score depends on the relative performances of the two competitors.

Before discussing strategy too seriously we must point out that one must have accurate motor control before he can plan much of an offensive in any game. If one plans to play to an opponent's weak backhand, he must be able to place the ball hard on that side of the court. If you think he is weak on overheads and you plan to lob him to death, you must be able to toss the ball well into the air and deep, or the strategy will be of no avail. We shall not make any effort to discuss the mechanical aspects of the various games; that belongs too strictly to the field of coaching.

The first thing in planning is to take advantage of your opponent's weaknesses. As Tilden points out, this is not at all unsportsman-like, but good headwork on your part. Tennis is made up of all kinds of shots, and a person's game is that much poorer if he lacks some of them. To play deliberately to his strength is to lessen one's chances of winning. Examples of weakness are a poor backhand, inability to hit a high-bounding serve, erratic hitting while running, weakness on low-bounding chop strokes, and dislike for net play.

Along with this one's game must have some variation. One cannot play every single shot to a weak backhand, although it is probably not too much to play two-thirds or even three-fourths of the

routine drives to such a weakness. Several may come back, but the opponent will finally miss. If too many *identical* shots are played the opponent gets practice on those, and he can move over on the court and take some of them on his forehand, but if there is a variation he cannot protect a weakness too much, or a passing shot may be driven by his normally strong side. Some players make a practice of sending several shots in succession to one side, then crossing one to the other, hoping that the opponent will be off balance and that his muscular set will be such that the unexpected shot will be made poorly or weakly. Similarly, change of pace or bound on drive or serve will keep the opposing player from getting too completely set for a shot.

As to general plan of play, one must usually continue a style of game that is winning and change one that is losing. If it is winning you can do no better; if you change, it may give the opponent just what he wanted, as well as entailing some risk to your own shots. But if a game is already losing it stands to reason that it will continue to lose, unless one feels that he is just barely off form and will hit his stride any moment. There is nothing to be gained by continuing a losing game, and everything to be gained by trying a change of tactics.

So far we have been speaking only of offensive play. There are a number of suggestions on defensive strategy. The most important is to *anticipate* the opponent's shot. If one is off somewhat to the side of the court it is logical to expect the opponent's return to be aimed for the largest vacant space. One will accordingly start running that way even before the ball is hit, so as to be able to get set better for the shot than if one had to hit it on the dead run.

In return, one's opponent may take advantage of this obvious defensive strategy and *re-anticipate*. This means that one guesses where the opponent will attempt to cover up and place the ball somewhere else. This usually means that the ball is placed in the narrower rather than the larger opening. If the receiver has already started running to cover the large opening his momentum will hinder his turning about quickly enough to make a save.

Tilden advocates playing to the score (as in contract bridge). One cannot hope to win every point, and cannot play at top speed during the whole of the match. He should make exceptional efforts,

however, to win certain critical points and games. With the score 30-all, for example, the man who wins the next point has a great advantage, as he will need only one for the game, while the opponent must take three. With the score 30-love, the man on the short end must win the next point to have more than a very slight mathematical chance of getting the game. Games are usually won by the man serving, and it costs quite a bit of effort to break service. Tilden suggests that particular effort be made to do this with the score 3-all or 4-all. A lead of a game late in the set is very difficult to overcome. If one holds his own service, he needs to break through only once to win the set.

(2) *Football*. Strategy in this game is largely centered about the correct choosing of one's own plays and anticipating or diagnosing quickly the opponent's.

In choosing offensive plays there are a number of things to take into consideration: what plays have been working well, in general and against that team; what the defense might expect; what will leave the other team in a position open to subsequent attack; and technical features such as score, period, and position on the field.

The first two considerations have to be balanced against each other. It is well to keep up a winning game, or a winning play, as in tennis. But the defense will be expecting that, can plan accordingly, and can mass their secondary defense. For this reason surprise is of value. Most surprise plays call for a forward or lateral pass. They must come by surprise, as they are not very difficult to stop if one is expecting them. If a team is in the opponent's territory and has gained little ground for two plays, a pass play on third down is so orthodox that the defense can deliberately weaken its formation against running plays. The backfield men can play wide and back, the center may be pulled out of the line, and even the ends can fade when the ball is snapped, putting seven men in a position to stop the pass. Inasmuch as it would have to go through the air ten or more yards there will be fair time to intercept or knock it down.

For reasons like these departure from the orthodox may be extremely effective. Last fall the writer saw a team which had made about thirty yards in five or six running plays suddenly pass on first down and score a touchdown from the thirty-yard line, just

because a running play seemed so much the logical thing to do that the secondary defense was drawn in close. This is a gamble, of course, since the team is put in a bad position if the play does not work.

Defensive strategy demands close observation of the opponents, knowing what they have done in the past and observing them as they line up and act now. Their past habits, as ascertained by scouts in previous games, give one some clues for anticipation, but one must diagnose the particular play quickly by the formation and the way the play starts. Many players give away by minor movements the direction the play will take or the fact that they are to receive the ball rather than run interference. Griffith lists a number of such minor bits of behavior which he has observed. (a) A quarterback always turned his head slightly to the left if the left half was to receive the ball and to the right if the right half-back was to get it. (b) A center moved the position of his hands on the ball just before he snapped it. (c) A fullback curled his fingers in a certain way if he was to run with the ball, and a different way if he was to run interference. (d) A pitcher threw a fast ball with one motion, a drop with a second, and an outcurve with still a third. An alert defensive player will notice these small habits, even though they are usually unknown to the individual making them, and he will utilize them to break up the play before it is well started. It may not be possible to discover much in a single game, such as is played by football teams, but in the course of a league baseball season, where teams meet each other many times, players have to be careful not to give their intentions away. Pitchers particularly have to learn to throw all kinds of balls with practically the same motion, the curve being determined by the final twist of the wrist.

Ability to size up plays rapidly after they have started is a considerable defensive asset, especially to the ends and the backfield men who are playing close to the line. Often when a man is thrown for a serious loss it is because some one on the defense sized up the play so quickly that he could leave his position and go right to the center of action. This defense is risky, and it may rebound. A reverse play may send a man through the hole one has left or a pass over the head of a backfield man who has rushed up to

the line of scrimmage. The purpose of such plays is to deceive the defense into running in one direction, only to find that the ball has gone another. A forward pass will start out ostensibly as an end run; then the ball is passed suddenly into open territory.

(3) *Hockey*. We have already mentioned the use of indirect vision in carrying the puck. Apart from this our major concern with this sport is in the psychology of dodging a man and preventing him from dodging around you. To dodge, one must either be far faster or must "outsmart" the other man; the latter is usually necessary. The way to do this is to feint, pretending that you are going to pass him on the right, then swerve and pass him on the left, taking advantage of his temporary momentum in the wrong direction. One can dribble the puck a foot or two in the wrong direction, lean the body, and look that way, and then suddenly shift the way one intends to go. After a man has been caught once or twice in this manner, he may "get wise"; then one can actually go the same way one looks, which really amounts to deception in this stage. One cannot expect to fool the opponent every time.

Alert defense men say that the way they tell which way a man is going to dodge, in hockey, football, or basketball, is to watch his legs. Regardless of his eyes or arms, his legs are what furnish the locomotion, and they must be the first to respond to the decision. If one can meet the man before he has time to dodge, and either stop him or hook the puck away from him, the play is obviously stopped.

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Chapter XXVI

PERSONAL PHYSICAL EFFICIENCY

I. INTRODUCTION

IN THIS chapter we wish to give evidence and suggestions on several matters of physical efficiency which one encounters in daily life. We shall not attempt to make an exhaustive survey of any of the topics considered, but shall give evidence from one or two good experiments on most of them. Also we shall not attempt to preach from a moral or ethical standpoint, but shall confine ourselves to individual problems of personal health alone. By being fit one can live a much happier life and can accomplish much more. A rich man who has ruined his health by overindulging various physical desires can no longer genuinely enjoy life. The poor man who is healthy and has a good appetite is to be envied far more. It is from this standpoint that we intend to treat our arguments and facts. We shall also point out the fallacies of a number of popular superstitions which have grown up around this topic.

II. FATIGUE

We have already discussed the problems of fatigue, as particularly related to industry, in Chapter XIII, so shall only review some of the points which may be applied to daily life.

Fatigue is natural, and follows muscular exertion. If one is not at all tired at the end of the day, he cannot have accomplished much of a constructive nature. A moderate amount of fatigue is a sign that one has done some real work, as well as an aid to the appetite and a means of inducing sleep. As we pointed out in regard to industrial labor, a man should expect to give enough of his energies so that he is somewhat tired at the end of the day, yet he

should not be expected to have to work so hard that he cannot derive some enjoyment from the hours after work.

However, this idea does not extend into an assumption that the more tired a person is the better. Efficiency and enjoyment of work can be increased by reducing unnecessary fatigue. There are two general ways by which it may be reduced. First, by preparing for work through obtaining adequate sleep, by exercising to build up energy, and by moderation in diet and use of drugs one can equip himself to work longer and more effectively. These points will be discussed in the succeeding sections of this chapter. Secondly, fatigue may be lessened by following certain principles of work and rest while working.

(1) Energy will be conserved by eliminating useless movements. (2) Rest periods will delay one's becoming tired. Since fatigue accumulates at a rate more than proportional to the length of work, it is advised that one rest for short periods frequently, rather than take fewer and longer pauses. (3) Change of work will to some extent relieve fatigue, as it calls into play different muscles, and relieves the boredom of doing a single task uninterruptedly. (4) Rest is necessary to recuperate from heavy work, as severe fatigue spreads around the body. One can demonstrate this by trying to chin himself after running a half mile or so. (5) The more complete the rest the more satisfactory it will be. Lying down in quiet, without even reading or speaking, is most effective.

III. EXERCISE

One whose work calls for heavy labor or a good deal of walking does not need to worry much about exercise. But if he is engaged in sedentary office work or in light hand work, such as tending a machine or acting as chauffeur, provision should be made for exercise. Animals and primitive man live very active lives, and there has been no evolutionary change which might suggest that we can be relieved of the necessity of some physical exertion. A few people seem to be able to get along without any systematic exercise, but most of us feel better for taking regular workouts.

It must be admitted that the case for exercise has not been finally proven. The average span of life of athletes is a few years more

than average, but their physiques are better to start with, and the figures do not prove that exercise is the causative factor. Too much or too long continued exercise may be actually harmful. For the sake of the present, exercise may be beneficial in promoting better efficiency, even if over the same number of years.

First, it gives a good appetite, which is a sign and an aid to health. Secondly, it keeps elimination more regular. Thirdly, working up a sweat keeps the skin fresh and the pores open. It has been contended that a halfhour of exercise three times a week would save women a great deal of trouble and expense in keeping the skin appearing well. A fourth advantage is that in many sports one is out-of-doors and absorbing air and sunshine. It seems better to choose this type of sport when possible, although many people are compelled to take their exercise in the evening in indoor gymnasiums. A fifth merit of exercise, and one which many people consider the greatest point in its favor, is that one gets complete relaxation from business activities. If one remains in his office or home he may not be able to forget his routine cares and worries. For this reason a game, like tennis or golf, is preferable over calisthenics.

With many people exercise is taken for its own sake, so no urging is necessary. However, they may have to be advised not to overdo. One who has to work hard and finds that he has only a certain amount of energy to use, no matter how strong he may be, has to restrict his sports to, say, one hour three times a week. It is particularly advised that men who are confined to their offices during the week be careful not to overdo over the week-end. They may feel that they should take full advantage of such free time as they have to crowd in as much as possible, and play thirty-six holes of golf on Sunday. Medical authorities say that this does more harm than good; they should play eighteen holes at the most.

IV. RELAXATION

We have previously pointed out that one of the greatest causes of run-down conditions is worry and strain, rather than the work itself. The business man will be less tired at the end of a day, week, or year of work if he can conduct his interviews and other

affairs in a calm relaxed fashion than if he keeps himself in a constant state of tension and excitement. Tense effort may make it appear to him and others around him that he is more conscientious about his work than if he goes about his tasks in less strenuous fashion. But of what use is a man in a sanitarium or one who is so nervous that he cannot think calmly and with a level head? Just as tension and nervousness destroy the smoothness of a golf swing or the accuracy of typewriting, so they lower the efficiency of any other type of work.

While there are many superstitions as to what causes a long or short life, it can be demonstrated fairly conclusively that continuous tension does take years off a person's life. This is particularly true in the case of men in high public and business offices. It is unfortunate that in our present social organization a man has to live many years before he is considered to have accumulated sufficient wisdom to be intrusted with the fate of a large corporation or with national affairs. So he gets crushing responsibilities piled on his head at a time when physiologically he should begin to take things easier. The sudden death of Calvin Coolidge, who was younger than most of our recent Presidents and was supposed to be more relaxed than most, the death in office of Harding, the complete breakdown of Wilson, and the comparatively early death of Theodore Roosevelt have all called our attention to what amounts almost to a death sentence on the man to whom we give our highest elective honor. Even Hoover, at present our only living ex-President, has said that he wanted to do nothing for months to come, a very uncharacteristic statement from a man who has worked hard and practically without vacation all his life. In contrast there are now living the widows of half a dozen Presidents. Dozens of prominent men, leaders in business, have died suddenly in the last decade.

A partial solution of the problem lies in removing routine tasks such as signing letters, interviewing persons on matters which could be handled by subordinates, giving speeches to and being photographed with all sorts of organizations, and similar things which take up time and energy and prevent the man's getting relaxation and rest in the hours which might be saved.

The rest is up to the man himself. The chief strain comes from

major tasks, of course, and these cannot be shifted from his shoulders. He will have to learn to take such rest as he can, perform his work with as little fuss as possible, and perhaps develop a sense of humor. We might suggest that the world can get along reasonably satisfactorily without the guiding hand of any single individual. A man should not take himself too seriously. If he must, then he may remind himself that his system can stand only so much, and that twenty years of good work is worth far more than five of supreme effort, followed by collapse.

Ability to play is a great asset. Several theories have been advanced as to its purpose and functions. First, it has been suggested that it is an expression of surplus energy. This is probably more true of animals and children than of adults. Secondly, it has been called a preparation for future activities. Purpose and result seem to be interchanged here; while play may make the child strong and healthy, it is far-fetched to say that this is the cause of it. A third theory, and the one which applies best to adults, is that it furnishes relaxation. It is enjoyable for its own sake and because it enables one to escape the more serious considerations of daily life. As such it is refreshing in a way that nothing else can be. One can return to his work feeling much better and more enthusiastic. Many people consider a certain amount of time spent in play a valuable investment. For example, they feel that they can actually accomplish more, day after day, by working eight hours and playing tennis or bridge two, than by attempting to work all ten hours.

V. SLEEP

The function of sleep is to enable a person to restore the energy he has consumed during the day. Just as rest is the only perfect relief from work, so is sleep the ultimate means of recovering the energy one has used in working and living. The rate of metabolism is very low, in fact only about a third of that used in lying awake, even when absolutely quiet. Although some people have deplored sleep as a waste of time, this fact would seem to give a final answer.

All in all, the writer feels that sleep is the most important single necessity for health. If one is half asleep most of the day, he will

not have the vigor he should, will not be alert, and cannot do good work. One may be up late a night or two and not suffer any particular harm, but continued loss of sleep will prevent good work and good feeling. If one is trying to live a fairly well-regulated life, sleep seems to be the place to start. Many people watch their diet, limit tobacco consumption, are careful about drinking coffee, and take alcohol sparingly, yet pay no attention to getting to bed in proper season. Yet it seems, although we cannot prove this by figures, that loss of an hour's sleep is more serious than any ordinary use of cigarettes, coffee, or alcohol.

Several experiments have been conducted on the effects of loss of sleep, involving staying awake continuously for periods of two to four days. Strangely enough, the results have been much slighter than we might expect, for reasons which we shall bring out. Laslett, in one experiment, kept subjects awake for seventy-two hours. The greatest measured losses were about 40 per cent increase in bodily sway and 25 per cent loss on the intelligence test. Sensory tests showed no deficiency, although some subjects suffered a few hallucinations toward the end of the period. One of the most striking observations, however, was that several subjects fainted at the conclusion of a test, and that much more than ordinary effort and concentration had to be put forth to attain the same results as when in a normal condition. Much more serious losses might have been detected if the tests used had been of extreme difficulty or if they continued over a longer period of time. Applied practically, this would mean that one might be able to get through a short examination after studying half the night, but that if he had to work two or more hours the weakened physical condition would reflect itself in earlier fatigue and poorer work.

In another experiment Laslett reduced the sleep of several subjects by forty per cent (say from eight to five hours) on five successive nights, and compared the performances with those of the same individuals on the four days previous to the test. There was loss in all sorts of motor and intellectual functions, such as code translation, addition, accuracy in following a swinging pendulum, bodily sway while standing, and intelligence. The loss ranged from a few per cent in simple tests to 15 in the intelligence examination. Blood pressure and pulse rate were also affected, showing some real

physiological influences. One night of normal sleep seemed to permit total recovery.

There is a possibility that sleep might be reduced slightly, say from an average of eight to seven hours a night. No test has ever been conducted over a period of months on a slight reduction of sleep. Also there are wide individual variations in the total amounts of sleep required by different individuals. Many seem to need eight, while others apparently thrive on six. However, many people who claim they can get along with little sleep at night are found to get in some during the afternoon.

In addition to the length of sleep, there has been some discussion as to when it should be taken. The statement that "one hour of sleep before midnight is worth two after" has been given considerable publicity. It has been founded, probably, on the fact that a person does sleep more soundly, in terms of the amount of noise required to wake him up, during the first couple of hours after going to sleep. There is no evidence to show that this would not be true no matter at what hour a person went to bed. If that popular saying is at all true it is most likely because of conditions in the external environment at various times. If one gets to bed after midnight he usually has to get up the same hour as usual, so that much sleep is lost. Even if he does not have to get up early he may be awakened by the light, noise, and warmth, particularly in the summer months. Sleep from nine to five would include the greatest number of hours of darkness, but society seems to be getting farther and farther away from these limits, advancing the hour at both ends.

VI. DIET

There are two chief aspects of diet—quantity and quality. The first refers to the amount eaten, the second to the types of food making up that amount.

Vitamins, a qualitative aspect of diet, have lately come in for a great deal of publicity, both of the scientific and of the advertising type. At least half a dozen vitamins, capable of producing different effects, have been isolated. They prevent rickets, scurvy, beriberi, etc. In general they are found in fresh fruits and vegetables,

milk, eggs, and cod-liver oil. Utter lack of a vitamin will cause characteristic disorders of the bones and other tissues. A number of foods have been put on the market which are claimed to carry naturally or by synthetic processes vitamin-bearing substances. Spinach, tomato juice, violet-ray treated cereals, and cod-liver oil are prominent examples. Certain minerals also seem to be necessary.

In spite of these discoveries, level-headed authorities are skeptical about the necessity of watching and balancing one's diet as carefully as all that. The average individual derives all he needs of vitamins and other qualitatively necessary materials (salts, iodine, etc.) from his normal diet. All these are present in many, not just a few, foods. Exceptions are young children; pregnant mothers; individuals with thyroid or calcium deficiency, anemia; or persons living in desert or arctic environments where food supplies are very limited. Such persons may need special items. Apart from these cases it is making a mountain out of a molehill to feel that one is endangering his health if he lets a day go by without eating fresh fruit, or a salad, or a yeast cake, or tomato juice, or cod-liver oil. Animals have been found to thrive best when presented with a variety of foods and allowed to do their own choosing. Possibly our desire for one item of diet today and another tomorrow is a reflection of chemical needs.

Quantitative dietary deficiencies are more spectacular than practical in importance. Very few people actually get too little to eat; in fact, most of us probably eat nearly twice as much as we really need. For freak exhibition purposes several individuals have gone for thirty or more days without eating, without serious results. Water is necessary for life, however; a person cannot live more than ten or twelve days without replacing liquid in his tissues. During starvation there is considerable loss of weight and the individual is careful not to expend too much physical energy, but his sensory, motor, and intellectual abilities seem to remain up to normal.

During the war, Benedict, Miles, Roth, and Smith conducted a very interesting experiment on the effects of prolonged restricted diet. A group of college men were maintained at a weight 10 per cent below normal for the majority of a school year. They were carefully tested on physiological and mental functions at regular

intervals. The results were compared with the same measures made on fellow students who were left up to normal in weight. In general, the low-diet group did not suffer at all seriously. In most tests, they were about equal to the normals, although in some cases they were a little below. Their physical energy may have been reduced somewhat, as they felt that they had a little less reserve than usual, and their pulse rate was more affected by exercise and took longer to return to normal. Yet some of them were able to make athletic teams, which showed that the loss could not have been especially serious. An interesting fact was that they had less tendency to be drowsy in classes immediately after lunch, since their meal was so much lighter. A most startling fact was that after the test was over practically every man gained a great deal of weight, coming to a level well above his former figure. Apparently the system had become so efficient in caring for the reduced amount of foodstuffs that a return to normal quantities was accompanied not only by recovery, but progress to a higher level. One example was the captain of the cross-country team who became so heavy that he could no longer make the team.

A few words might be said about regulation of diet from a common-sense hygiene standpoint. The most important two precepts are to avoid overeating and too fast eating. If one is young and taking plenty of exercise he can take care of minor faults, but as one approaches middle age he has to become more careful. The diet on which a farmer can thrive would kill a sedentary business man. If there happen to be certain items which disagree with one, one can soon learn these and profit by experience.

VII. CAFFEINE

The great majority of people drink coffee for breakfast and many also have it at dinner and even at other times. The same general ingredients are found also in tea, coca-cola, and other popular drinks. Along with its use there have grown up a number of popular superstitions concerning its supposed effects. Just what damage may be done is kept woefully indefinite. It is said to harm growing children; but just why is not explained. It is also said to affect sleep.

Physiologically it operates as a slight nervous and circulatory stim-

ulant. This is true only of moderate quantities; in larger doses caffeine becomes a depressant. This peculiar effect is also characteristic of a number of drugs. The blood pressure is slightly raised; this may account for the inability to go to sleep suffered by some people following its consumption, since complete relaxation will not come about. Due to this same effect, fatigue seems diminished, although this is not a true physiological fact.

The most thorough and well-controlled study of caffeine has been conducted by Hollingworth. Your attention is called especially to the care with which he planned his experiment. Instead of giving coffee in the usual way he administered caffeine syrup in capsules. Thus he could tell exactly how much he was giving, which would be impossible to control with the usual percolation method, and the subject could not tell whether he was getting a large or small dose, or even a capsule full of some neutral substance. With any drug there is a good deal of suggestion. People have been known to develop severe headaches if they missed their morning coffee, but get through the day in fine shape after drinking a substitute which contains practically no caffeine, without knowing that it was not real coffee. To control his experiment further, Hollingworth gave the doses at exactly the same hours every day, did not allow the use of any caffeine-containing beverages at other times, made the subjects observe regular eating and sleeping habits, and had his tests thoroughly standardized and administered by expert experimenters. Testing was carried on over a period of forty days.

We present a summary of the results in Table 64. The plus and minus signs mean a gain or loss, respectively, and the double signs represent a more pronounced change in performance. None of the tests showed very serious changes, most of the variations from normal being only from 1 or 2 to 5 per cent. We may, therefore, interpret the results as negative. What divergences there are are small and may be more or less accidental, due to fluctuations in performance on the part of single subjects.

Sleep disturbances were very slight with small doses, but somewhat greater with larger quantities of caffeine, particularly when taken near bedtime. The effects varied inversely with body weight, which is another general point about drug influences. Caffeine effects did not seem to vary with regularity of the habit; non-drinkers

failed to suffer any more than habitual users, which showed that there is no particular habituation to this drug.

TABLE 64. GENERAL RESULTS OF HOLLINGWORTH'S CAFFEINE EXPERIMENT (SIXTEEN SUBJECTS)

Test	Effects			Duration of Effects
	Small	Medium	Large Dose	
Tapping	+	+	+	2-4 hours
Three hole	+	=	-	3-4
Typewriting (one subject)				Results show
Speed	+	=	-	only in total
Errors	Fewer for all doses			day's work.
Color-naming	+	+	+	3-4
Opposites	+	+	+	Next day
Calculation	+	+	+	Next day
Discrimination reaction time	-	=	+	Next day
Cancellation	-	?	+	No data
Resistance to size-weight illusion	No changes			
Steadiness	?	Unsteadiness		3-4

VIII. NICOTINE

This is another subject on which there is a good deal of prevalent superstition. Smoking is supposed to stunt the growth, shorten the wind (in athletes), damage muscular control, shorten the life, and even lead to criminality and immorality. Just where these ideas got started is uncertain.

It has been found that many honor students in schools and colleges are non-smokers, that the best athletes do not smoke, and that a greater percentage of juvenile delinquents smoke than the average for boys and girls of the same ages. But such correlations do not necessarily prove causation. The situation is more likely explained in another manner. Since there is a prejudice among moralists against smoking, rules against the use of tobacco are laid down along with others on dietary and daily-habit lines. These latter may have some foundation. Now, those who violate one

rule will usually defy authority to the extent of breaking others as well. Poorer performance, then, will be due to loss of sleep, poor eating habits, and other causes of physical inefficiency rather than to tobacco as a sole cause. There is no evidence to show that tobacco-smoking alone would harm people who followed good health principles in other respects.

It has not even been proved that athletes are harmed to the slightest degree by use of nicotine. The British take training far less seriously than do Americans, yet their results seem to be about as good. Newspapers reported that one Englishman stepped to the mark in the finals of an Olympic 800-meter championship, laid down his pipe, won the race, and broke the world's record. But the same man was undoubtedly clean-living in other respects.

Hull has contributed a very ingenious and careful experiment on one phase of nicotine use. He studied, as he states in his introduction, the effects of smoking a pipe for twenty minutes, an hour and a half after a meal, without inhalation, the effects being traced for an hour and forty-five minutes after smoking. Attention is called to Hull's modesty in thus outlining his purposes; he does not claim to solve the whole tobacco question, nor even to settle the whole of one phase of it.

Nine smokers and nine non-smokers were tested for three-hour periods daily for eighteen days. They took three consecutive puffs in rapid succession every twenty seconds, while blindfolded, the experimenter holding the pipe. Hull used a very clever means of eliminating suggestion by having a control dose. Inside a pipe identical with that used in smoking the real tobacco he placed a plaster core, which could be soaked with water and which was heated by an electric coil. Thus the subject took in only warm moist air. To provide the proper "atmosphere" (tobacco odor) the experimenter smoked in the room, although he did not blow any toward the subject. Only once did anyone suspect that he was not getting the real thing. The rest were fooled completely, and one person even sat blowing smoke rings in the air while puffing on the dummy pipe.

The most marked results were an increase of about six heart-beats per minute, and a marked increase in muscular tremor. The heart rate was still accelerated almost two hours after smoking,

but muscular steadiness had returned to normal in an hour and a half. In reaction time, learning nonsense syllables, and cancellation there were no appreciable differences. The figures for the two groups never varied by more than a few per cent, and what fluctuations there were did not lie consistently in one direction. In some tests the results were more marked in the case of non-smokers, but even here the variations were not consistent.

A possible drawback to more sweeping generalizations from these results is that the effects of inhalation were not measured. Most cigarette-smokers seem to inhale, although fewer who use pipe or cigars attempt to do so. It may be that one who does not inhale does not really absorb much, and that inhaling might bring out definite effects. This is an unsolved question. But certainly we can say that under ordinary conditions smoking has not been shown to do any real harm.

IX. ALCOHOL

Interest in this drug probably surpasses that for all others taken together, because of the dramatic and even disastrous effects following its immoderate consumption. Unlike caffeine and nicotine, it is impossible to deny its effects on motor, intellectual, and emotional functions.

Actually, alcohol is a depressant rather than a stimulant. The apparently stimulating effects really represent a double inhibition. Normally one exercises some restraint over hilarity and conversation, but alcohol inhibits this inhibition, with the result that social occasions are enhanced in their spontaneity. The enhancement is only in quantity, however; one who remains sober realizes that the conversation is only taken as brilliant because the others are in no condition to judge its superficiality. The fact that a tired person may pep himself up for the evening by a cocktail is not contradictory; he is only covering up the fatigue just as aspirin may relieve a headache but not remove its cause.

Alcoholic effects are not, as seems to be assumed in private conversation where quantities are the only variable mentioned, simply proportional to the amount taken in. There are a number of other complicating factors. The chief is the weight of the individual.

The effects appear when alcohol gets into the blood stream, and are proportional to the percentage concentration in the blood. This would mean that with other conditions equal, a person weighing two hundred pounds should be able to drink $20/13$ the amount of one weighing one hundred and thirty. Another important phase is the amount of food on the stomach. If taken with or just after a meal the effects are spread out and minimized, but if before a meal effects may come almost immediately. Fatigue and poor physical condition will accelerate and intensify effects, sometimes tremendously. Habituation seems to take place; steady drinkers can absorb more than abstainers or occasional users.

Accuracy falls off far more than does speed, according to an experiment by Miles. He tested a number of young men, all of whom were experienced stenographers, with carefully controlled doses of diluted pure alcohol. Their speed in copying material fell off only a few per cent, but errors increased as much as 72 per cent following a heavy dose. At the end of three hours there had been some recovery, but alcohol could be detected in the blood as late as six or eight hours after intake.

There has been considerable debate as to how concentrated a dose will have to be to cause noticeable results. This has very pertinent application to legalization of the lighter liquors, such as beer and wine. A test was conducted on the effects of 3.2 per cent on a number of motor and mental functions. College men, all moderate drinkers, were given five bottles of beer at twenty minute intervals, with nine tests administered during each period. Control groups were given equal amounts of near-beer of the same brand, and were tested simultaneously with the experimental groups. This kept conditions as nearly identical and controlled as seems possible in what might be termed a practical situation. In spite of the rather large amount of beer, in terms of usual social consumption, there were absolutely no differences in performances, as we see in Table 65. We should not expect any to appear on the first test, which is a sort of control test for both groups, as it is made before any effects could possibly appear; but if any were to appear they should be evident progressively on the later measures. The differences, always slight, that do appear show up even on the first trial, show-

ing slight superiorities on the part of one group in certain functions, rather than an effect of the beer.

TABLE 65. PERFORMANCES AFTER BEER AND NEAR-BEER

Test	Group	Trial				
		1	2	3	4	5
Dynamometer	Beer	59.0	58.5	59.3	59.7	59.3
	Near-beer	54.0	56.5	56.0	58.9	58.2
Tapping	Beer	35.2	36.6	37.0	37.6	37.7
	Near-beer	36.8	39.2	38.6	37.6	39.0
Steadiness, time	Beer	28.3	32.4	28.1	28.1	26.0
	Near-beer	31.7	30.6	27.3	24.5	26.9
Steadiness, errors	Beer	16.8	12.9	13.5	11.2	12.6
	Near-beer	17.5	14.2	12.8	11.7	11.8
Spool-packing	Beer	40.2	35.8	36.5	35.7	34.5
	Near-beer	43.7	39.0	36.0	36.2	35.2
Color-naming	Beer	28.3	26.7	26.3	25.7	27.1
	Near-beer	24.5	23.2	23.6	22.9	22.4
Card-sorting	Beer	45.7	44.5	41.7	41.8	42.6
	Near-beer	45.5	42.1	40.7	40.4	39.2
Hidden words	Beer	7.4	9.8	11.4	9.7	7.7
	Near-beer	7.2	8.3	11.6	7.3	7.0
Multiplication	Beer	6.2	5.3	5.4	4.8	5.4
	Near-beer	5.4	4.9	5.2	4.3	5.7
Code substitution	Beer	18.2	25.2	24.3	28.6	30.8
	Near-beer	15.2	23.9	23.4	27.4	34.7

From this we would say that 3.2 per cent beer, even when taken in fair quantities, has no seriously deleterious effects. The tests were chosen as being rather sensitive, and if no results came from them, certainly none would appear in daily life, such as wrecking a car, beating up the wife, or accosting innocent ladies, stock arguments of sentimental prohibitionists regarding all liquor.

We can, of course, not deny the influence of heavier concentrations, when one has gone to an extreme. Perhaps the worst effect is that on the judgment. Many of the serious automobile accidents caused through intoxication are due to the individual's driving

much faster and taking more chances while in that condition. Even though he may still be able to handle a car, as far as motor control alone is concerned, his poor judgment leads to indiscretion which gets him into predicaments from which he could not extricate himself even when sober.

When partially intoxicated one does not realize his limitations. Miles cites the case of a shorthand expert who swore that his pencil fairly flew over the paper. But when his work was checked over it was found that he had been slightly slower than usual and had made far more errors. We also have the common observation of seeing a person well "up in his cups" who protests vehemently that he isn't showing the slightest effects.

X. TEMPERATURE AND VENTILATION

Mark Twain once remarked that we have been talking about the weather for thousands of years, but very little had been done about it. There are certain aspects of it, however, which have been subjected to some control.

(1) *Temperature*. We are able to keep the temperature in houses and places of work up to a desired figure, and recent developments in air conditioning suggest that within a few years office buildings and even homes will hold summer heat down to more comfortable levels. Seventy is supposed to be the most desirable temperature for the average person, but the range within which people can work efficiently varies greatly. Suffering in summer and winter extremes is as much a product of the imagination and the fun of complaining as it is genuinely physiological. There seems to be no reason why healthy persons should not be able to work at any level between fifty and ninety. It might be recommended that one work in the coolest temperature which one can stand with comfort, as this will keep one alert and will allow more strenuous and prolonged work without exhaustion.

(2) *Humidity* can make a great deal of difference in the effects of the same objective temperature. A dry heat of one hundred may not seem as bad as eighty-five with great humidity. Evaporation from the surface of the skin is not possible at maximum humidity, and this is what causes the suffering. There is little that can be

done about excessive humidity, especially when the condition is general. In factories it might be possible to reduce it by carrying off vapors as they are produced. It is a simple matter to add a little moisture to the atmosphere when it is too dry. This may be done in homes, especially during the winter when the air is dry and precipitation is in solid form. It is especially prevalent with hot-air furnaces. Pans of water placed on radiators will give better air to breathe, and will prevent undue dryness of the skin.

(3) *Ventilation*. Fresh air is another commonly accepted necessity for health, and the demand for it has perhaps been somewhat exaggerated. It is ideal if one can have windows open or fresh air brought in from the outside by circulating systems. But it is not always possible, for example in moving-picture theaters. But it has been found that circulation of the air, rather than freshness alone, is really the critical matter in ventilation. If the air can be kept moving about, and the ceiling is not too low or the crowd too great, there will be no difficulty. Also, plenty of fresh air is constantly coming in through cracks and even through the semi-porous walls of brick or plaster. So a fan, if open windows are not possible, will really solve both problems, by keeping new supplies of fresh air in circulation.

XI. REGULATION OF HABITS

We have tried to preserve a common-sense attitude in our discussion of the various topics which bear on health. In most cases we have found that popular—and sentimental—opinion greatly exaggerates the importance of avoiding or of including certain items. Coffee and tobacco have no material effects, except possibly when they are taken in excess. Under usual conditions diet is satisfactory, without careful study and deliberate attempts to include varied items. People have lived to tremendous ages in spite of (or maybe because of) excessive use of all sorts of “harmful” things. Others who were models of physical-hygiene virtue have died at an early age.

With alcohol the situation is a bit more complex. We cannot deny that intake of considerable quantities can cause serious temporary

disturbances. In a few cases prolonged excesses will lead to delirium tremens and other mental and physical disorders, although these occur with far less frequency than fanatics would have us believe. But we cannot detect any serious damage, temporary or permanent, resulting from small quantities of any liquor, or even from rather large amounts of the less powerful beverages. In fact, statistics reported by Pearl have shown that moderate drinkers actually live somewhat longer than total abstainers, although heavy drinkers do die a bit earlier than expectation. Why moderate use and longer life should go together (and there seem to be cases enough so that the figures cannot be considered accidental) is an open question. Perhaps those who claim health-giving properties for beer should seize on these facts with as much avidity as temperance advocates would take those on the heavy and steady drinkers.

	Males	Females
Total abstainers	60.05	58.49 years
Moderate and occasional	61.04	61.70
Heavy and steady	55.37	47.50

Clendening sums up this situation very adequately when he rather humorously makes this statement: "I am not trying to furnish any material for propaganda in either direction. If a man resolves to abstain from alcohol, and even if he is passionate in his belief that that is the best thing for him and his labour, I am prepared to applaud and avoid him." In other words, a little drink does no harm and often promotes good fellowship. One who does not wish it is not compelled to take it, but he has no factual grounds to prevent other people from living their own lives as they see fit.

What, then, should we do? Does it make no difference at all? While we cannot back this up by statistics, it seems that we cannot improve on the advice of the Greek philosopher who said, "Nothing to excess." This would apply to work, fatigue, exercise, sleep habits, coffee, nicotine, and alcohol. One can overdo on any of these. At the same time moderate abuses, or perhaps preferably termed uses, seem to do not the slightest harm. One may smoke, drink coffee, and drink beer about as much as he wishes; he can stay up late *occasionally*, and not necessarily exercise every day, and still keep in excellent shape for purposes of everyday working

life. Marked irregularities, particularly loss of sleep, may result in a general run-down condition.

It may appear that even this general advice is not supported by the facts, since we can quote so many exceptions. It seems possible that these are just that—exceptions. Most of us have to exercise certain restraints to keep fit. That is all we can say.

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Chapter XXVII

EFFICIENCY OF STUDY

I. INTRODUCTION

By THE time one has come to college he has had twelve years of practice in studying. According to the law of frequency one would suppose that his study habits would be practically perfect. But none of us would make such an extravagant claim for himself. The majority of students go about their work in a pretty haphazard manner.

The mere fact that one is passing all of his courses does not prove that study habits are satisfactory. We suggest that the following classes of students can profit by following the recommendations given in this chapter. (1) Those who are passing now, but wish to make better grades. (2) Mediocre students, who are having trouble getting by and who want to make more satisfactory records. (3) Students of poorer promise, who cannot succeed in college work unless they carry on with the most complete efficiency. (4) Persons who wish to spend the least amount of time studying compatible with reasonable success, in order to devote extra hours to self-support, writing, music, athletics, etc. These people are not, like the other groups, interested in doing better, but in doing as well in less time, which demands increased efficiency. As a matter of fact it is almost always students who are already well above average who take seriously recommendations about study habits. The others either have too little foresight or too little ambition to wish to improve their standings.

A number of universities are now attacking this problem, either by giving courses in how to study, required of freshmen or optional, or by putting it up to the individual departments to suggest to their students how they can study that particular field in the

most profitable manner. The suggestions we shall give will apply equally to all fields.

Before plunging into the recommendations, we wish to emphasize that we understand the human elements of the situation, and are not demanding anything unreasonable in either time or effort.

II. INCENTIVES TO STUDY

The most difficult problem confronting the teacher in getting a pupil to do better work is to overcome his indifference and inertia. The statement that Aristotle made to Alexander, that "there is no royal road to learning," is as true now as it was over two thousand years ago. Learning is an active process; little of value is soaked in by mere contact. One profits in proportion to the effort put forth. Without effort and some sacrifices a person will be no better no matter what we tell him about improving his academic status. Many students have vague intentions of doing well, experience twinges of regret when marks show them to be doing only mediocre work, and make firm resolves to do better next time. But to achieve a real degree of success one must not only intend to do well, but must keep up his work every day, allow few exceptions to occur, and make some sacrifices of pleasant diversions to do it.

A rather common reason assigned for a perfunctory performance is that the content of courses does not seem applicable to later life. A student will say, "I only got a C out of Mediæval History, but I understand as much of the general idea as those grinds that got A. What difference will it make ten years from now whether that battle happened in 843 or 875?" There are at least two substantial answers to this. First, a student does not attain the highest grade without real comprehension and appreciation of more than rote facts. The excellent student has both more facts and a greater understanding of the course. Secondly, and what is perhaps more important, the mediocre student is getting into sloppy habits which are difficult to change when a real performance is necessary.

Many a student does far better than ever before when he gets into a professional school, like law, medicine, or engineering, or when he develops a genuine interest in his major subject. This

shows that the ability was always there and that he could develop himself when the occasion arose. But with many people such an occasion never arises; they do not come into close enough contact with important facts to find a genuine interest. Further, they may carry over poor habits even into professional schools. A student who has been wasting most of his time enters law school, and keeps on playing golf all afternoon and keeping dates at night. He fails to realize that he is up against a more severe test and that there is a definite show-down coming later.

III. PREPARATION FOR STUDY

(1) *Place of Study.* It is a good idea, where possible, to work in a room which is devoted entirely or largely to that purpose. Working in a parlor, living-room, or other place where others are not working furnishes too many distractions. A straight-backed chair will lend to concentration better than one of the upholstered reclining variety. Light should be adequate to avoid eye-strain. Not the least feature is to keep the place of study orderly. When you have finished one subject, project, or day's work, put away neatly all books and notes which you have been using. A mess is confusing, as well as occupying space which should be devoted to the immediate task.

(2) *Prepare for the Whole Task.* Before starting to study or write, get everything in readiness. Pencils should be sharpened, pens filled, eraser ready, paper available, and reference books at hand. Uninterrupted work can only ensue under these conditions.

(3) *Concentrate Thoroughly.* To get the maximum benefit from work one must go at it in vigorous fashion. Otherwise the task will be done in slipshod manner, and where attention has wandered there may be complete gaps in what is retained. For those students who wish to study more efficiently so that they will save time to devote to other things, we point out that concentration will enable one to do the work well in less time. One will derive more benefit from an hour of solid concentration than two of haphazard study.

(4) *Minimize Distractions.* Many students have to study in rather unfavorable atmospheres, such as dormitories or fraternity houses. Distractions are not entirely avoidable, but one is largely his own

master. If he shuts his door, keeps quiet, and does not furnish distractions to others, he can minimize outside noises.

This suggests that one study in his own room, library, or other quiet place. Poor results at best will be achieved if one tries to study while taking a sun bath, in a beer parlor, or while in a semi-social gathering of mixed company. Some students dislike complete silence and solitude, and feel that a little noise spurs them on to better efforts. This does not mean that the more distractions the better, however.

(5) *Scan Whole Assignment.* Before learning the details in the reading, it is a good idea to skim over the whole of it rapidly, so that one can get a bird's-eye view of what is coming and what the chief arguments concern. By reading the titles of the different sections one can be prepared to emphasize the important points and to develop his thinking along with the author's.

(6) *Improve Reading Ability.* Reading appears so mechanical a thing that it seems hardly necessary to speak of it. Yet many adults have inefficient habits. They may read more slowly than necessary; they may make too many fixations per line; or they may not vary their methods with different types of material.

This last point is important. In strictly scientific subjects, such as physiology or chemistry, one must read every word, perhaps several times, and compare the exposition with diagrams. But in literature, philosophy, or sociology the assignments are often so long that one will have to skim. We occasionally hear anecdotes that certain scholars are able to take one glance at the page and read every word. In truth, they do not, but they know how to look for the important points, when they must read every word, and what they can pass over rapidly. Skimming is a little dangerous for the amateur, and we hesitate to recommend its widespread use without reservations, because it may be taken as an excuse for careless study.

Skimming is especially valuable for one who is doing intensive work on one topic. After one has read a number of treatises he has absorbed all the major arguments, and the value of reading more is to see which side of the controversy succeeding writers hold, and their evaluation of the various arguments. In such a case it would be foolish to attempt to read every word.

IV. GENERAL POLICIES IN STUDY

(1) *Amount of Time Spent.* Frequently students ask how long they are expected to spend on each assignment. This is impossible to answer satisfactorily, since learning ability varies and the length of assignments is not always the same. In general most universities expect that the average student should spend about two hours outside for every hour of recitation or lecture. Assignments are made with this general end in view. This figure will not hold true in professional schools, in laboratory courses, or in some writing or literature courses.

It is certain that very few students do average as much as two hours for each assignment. Those who do, and have spent the time well, are among the leaders. Following this schedule would bring about a forty-five-hour week, fifteen of class plus thirty of study.

Many instructors prefer to assign a larger body of work which will be called for at the end of the week or at the next examination. Many chapters, or even a number of books, will be assigned, and the student will be expected to budget his own time. For reasons which will be taken up in Section V of this chapter it is very advisable for one to do this work gradually over the whole period, rather than all at once the day before it is due.

(2) *Rate of Learning.* It is a popular superstition that rapid learning means quick forgetting, and that one who learns slowly will retain tenaciously. Experimentation in educational psychology has shown exactly the opposite to be true. The person who can learn rapidly also retains better. This stands to reason; if one has a slow-acting nervous system there seems to be no reason why retention should be good when learning is slow. Quality of brain extends to all desirable activities.

This means that if you are able to learn something more rapidly than your friend, you will find that you also remember it better. Do not misinterpret this as meaning that slipshod work is better than careful study. The law assumes that both people have integrated the material equally well in the beginning. The same fact applies to a single individual. If you can absorb philosophy in half the time it takes to complete a mathematics assignment, it is be-

cause it has more meaning to you, and that fact will allow you to retain it better.

(3) *Study Thoroughly.* One should not study by the clock, but should work until the assignment is done well. Understand all the points brought out, recite them to yourself, and satisfy yourself that you grasp the material well enough to retain it for weeks or months, as necessary.

(4) *Study for Comprehension.* This should be the goal of all learning. If the student does not understand the point, by itself and as related to other things, he is not deriving much benefit from an education, even if he succeeds in passing examinations. Such information will do him no good in the future. To do this one must think, use reference books, encyclopædias, and dictionaries to fill in any gaps he may have in his comprehension.

Many experiments have demonstrated that meaningful material is both more rapidly learned and more accurately retained. This means that a student who understands thoroughly what he is reading will be that much better able to reproduce it on an examination (if that is the goal). If one studies out the whys and wherefores of a statistical formula he will always be able to reproduce it, but until he has done that he must go through the laborious process of trying to remember what to him are meaningless radical signs, squares, plus and minus signs, etc. As one student said:

When I started geometry I had a bad time. I just couldn't give proofs on examinations or in class recitations, and my work was really a flat failure.

Suddenly I realized that I had not been reading it to understand the reasoning thoroughly. I had been reading the propositions and demonstrations, and guess I had been more or less saying to myself that it all sounded reasonable, and dismissing it with that. Naturally I couldn't give it back later.

Recitation is a good test of understanding. It has been said that if one could not explain something logically he did not understand it clearly himself. This perhaps ties up thinking too closely with language, but language is our only means of communication with others, and if we cannot express our thoughts in language they are not serviceable. Try telling yourself what you have read, and if

you have difficulty or are hazy, study it some more, until you can explain it well.

(5) *Look for Points of View.* In many courses, especially in more advanced work, much of the material is controversial. One should see which side the author is taking, and why. Do not condemn him if he disagrees with a previous authority. The instructor in the course chooses material carefully, from a great many available references, to give you representative opinions of leading men in the field. Knowledge is not absolute. Controversial subjects are taken up both because they are too important to omit until they are settled (if ever) and because it gives the student good practice in thinking and weighing the evidence.

Avoid dogmatism; just because the other man happens to disagree with you or some one you respect does not mean he is wrong. There are at least two sides to most questions. Each man has his own reasons for being a Republican or Democrat, Baptist or Catholic, Mason or Elk, hereditarian or environmentalist, absolutist or relativist. Their reasons are as good or better than yours for holding the other position.

In literature courses one must watch for the views and style of the author as much as for the plot of the story. Too many students forget this, and stop studying when they have finished reading, trusting to luck to be able to answer questions on subjects which should demand previous thought. This is particularly true in advanced language courses. It is assumed that by then one will have a grasp of the language, so that he may appreciate literary style and not be satisfied with mere translation.

(6) *Use Initiative.* The men who get ahead in the world are those who are one jump ahead of the rest, whether it is in designing new styles of clothing, making radical improvements in automobiles, or initiating economic or social reforms. If you are not satisfied with the discussion of a topic in the lectures and readings, do extra work. Supplementary readings are often suggested; if not, go to your professor. He will be so pleased to have a student volunteer to do more than a minimum that he will be more than willing to give you additional references and talk the matter over with you. Such additional work may not necessarily help the grade, but a student

who is in the habit of doing more than the bare essentials will build up such a body of knowledge that he just cannot help doing well.

(7) *Add to Your Knowledge.* With rare exceptions, each assignment is designed to add to your knowledge or to enlarge your outlook on learning and life in general. If it has not done so, you have missed something; ask yourself the purpose of the assignment.

V. EFFICIENCY OF LEARNING

In this section we shall suggest practical application of laws of learning which have been discovered in the laboratory, use of which should enable one to carry on his study in more efficient manner. Some of the points will demand a little more time and effort than one ordinarily spends, but most of them should produce greater returns in the same or even in less time than is used now.

(1) *Overlearning.* Material is fixed more securely if one practices beyond the point of barely learning it. One does not stop learning to skate when he can just navigate the length of the ice without falling down, nor call himself a tennis expert when he can barely return the ball over the net, somewhere into the opponent's court. No; he would keep on until he could skate smoothly and with some speed, or until he could hit the tennis ball hard and where he desired. Similarly with studying. If you want to remember the material for an examination a month hence, you should practice it now until it is well integrated. There will be less loss with lapse of time. This is especially true with information which is not entirely logical, such as dates, names of Presidents or kings, or lists of nerves or bones in the human body. Not until they have been practiced until they can be rattled off without hesitation is one sure that they will be available at a later date when one wishes them.

(2) *Review.* Frequent short reviews will assist one greatly. One will remember not only the major points, but will refresh details which otherwise might be forgotten. There are two situations where such review is particularly applicable. First, for learning lecture material which has just been heard. Most students take notes and let them lie cold until just before the examination. Incomplete sentences, technical terms, and lists of titles without explanation or expansion may become incomprehensible at a later date. If one re-

views within a day after the lecture he can fill in gaps before memory disappears. Secondly, review of the readings or text assignment just before the recitation will freshen the memory. The writer would venture to predict that a fifteen-minute review of the lecture notes within one day of the class, and a fifteen-minute review of the readings the day after they were originally done, would enable one to raise his grade by one letter. The additional time and effort necessary are very little as compared with the returns. Most studying stops just at the point where a little additional effort would bring far more than proportional results.

(3) *Distribution of Practice.* This follows directly from the preceding discussion. Experiments have shown that distributing one's efforts over a number of days brings about learning in less total time than if one jams in a lot of work all at once. Specifically, this means that if one feels that he should read over a difficult assignment three times, it should be done on three successive days (or something like that), rather than done three times in a row the same evening. Retention is even more outstanding than the ease of original learning if one has learned by distributing his effort. A month from now the material will be far better retained. This is probably due to one's attention and enthusiasm being better when one does not work too long continuously at one task, and to the promptings given the memory before it begins to fade.

(4) *Recitation.* We previously pointed out that learning, to be at all satisfactory, had to be active. The process of recall later will be active; one has to force himself to remember things for reproduction on examinations. If he does not try his ability to recite now he is just trusting to luck that he can call them up at a later date. Active recitation has been found to help learning and retention very decidedly. Gates performed an extensive investigation on the relative effects of different amounts of study and recitation, and found that all proportions of recitation produced better results than silent study alone. The highest efficiency was attained by a combination of 80 per cent recitation and 20 per cent study. This was for learning biographical material and nonsense material by school children and might not hold good for all material, or for adults. Recitation is probably more valuable for rote materials than for more logical contents, which are studied for the meaning rather

than for the exact words. But even ideas and arguments can be recited to oneself, and this method is the best for checking up one's knowledge and ability to reproduce on demand.

(5) *Retroactive Inhibition*. This rather imposing term refers to the fact that material that has not been too well integrated is subject to interference by subsequent events. Suppose, for example, we have learned a poem just to the point of being barely able to repeat it, and are then asked to learn a second. After completing this we are asked to reproduce the first. This may be found to be very difficult, because the last poem is more recent and interferes with the retention of the first. Several outstanding conclusions have appeared as the result of several investigations of this phenomenon.

Interference is proportional to the similarity of the two materials. Thus, learning two similar passages from the same poem would give maximum interference; two different poems would not cause so much conflict; and there would be practically none between a poem and a mathematics assignment. Further, the interference is greater the closer the interpolated activity follows the original. Finally, there is greater loss if the mental activity is very strenuous. We can give several practical suggestions from these facts. One should not study two closely related subjects, say Spanish and Italian, in succession. He should do one, then study an entirely different subject, like mathematics, and then go back to the original field. He should take a little time out after completing an assignment to let it soak in before he starts the next. (This warning is rarely necessary.) Finally, one might alternate tasks demanding severe concentration with others calling for easier and more routine work, such as review or copying notes.

(6) *Mnemonic Devices*. Sometimes one is asked if he can suggest any tricks which will enable a person to remember things better. Usually such requests relate to material which is largely rote in nature. The basis of any such devices lies in finding something meaningful which can be associated with something already known or easy to remember. We might mention a few devices which have worked. A statistician found trouble in remembering the street number of the house of a friend until it occurred to him that the number, 1369, was the perfect square of 37. This reduced the task to remembering only two figures. The height of Mt. Fujiyama,

12,365 feet, is easily learned if one notices that the figures are the number of months and number of days in the year. Medical students have learned the names of various nerves or other parts of the body by taking the first letter of each part and forming a poem or catch phrase from them. Orators have tried to remember the main points of their speeches, so that they could speak without notes, by associating each point with some part of the room.

The value of these tricks is not so much in the apparent methods as in the fact that actively manipulating the material is of value like that obtained through recitation. The direct method of reciting the material several times would be just as good, perhaps better, although perhaps not so entertaining. Associations are not always easy to discover and apply—for example, with infactorable numbers. For similar reasons, the elaborate outlines prepared for review for an examination probably establish memory by the very process of going over the ground in such active fashion.

VI. A SCHEDULE FOR WORK

Unsystematic study is likely to be haphazardly done. Too many breaks are likely to occur, as diversions present themselves, or as one does not feel particularly in the mood to study at any particular moment. Postponed work is never done, or is done badly by cramming the night before an examination.

It is especially important for the freshman to have his routine carefully mapped out. As a general rule he has lived at home during high school and has not had to do much planning. Lessons are assigned each day, and in much more detail than will be done in college. Spare hours are usually designated as study periods and the pupil is expected to go to a certain room, where a teacher supervises to see that study is carried on and that quiet is maintained. The principal may call him in if he is not doing well—something which is not done in the university, because of large numbers, more impersonal contact, less frequent recitations and examinations, and the fact that he is treated more as an adult.

We present in Figure 33 a sample schedule of work. In drawing this up we have taken into consideration several important points. The first is to use profitable hours which are often wasted,

such as between breakfast and the first class, and in the early evening. Nothing of great moment could be done then, anyway, so we suggest their use so that more desirable hours can be freed for other activities. Secondly, we have not tried to assign definite activities to all possible hours. A person who tries to put himself on a 100-per-cent efficiency basis will find that within a few days he is

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8	**	French	Rev. Eng. & Bot.	French	Rev. Eng. & Bot.	French	**
9	**	Psych.	English	Psych.	English	Psych.	Rev. Soc.
10	**	Rev. Fr., Psych, Soc.	Library	Rev. Fr., Psych, Soc.	Library	Rev. Fr. & Psych.	Soc. quiz
11	Study French	Sociol.	Botany	Sociol.	Botany	Study Soc.	**
1:30	Study Psych.	Botany lab.	Study French	Botany lab.	Study French	**	**
2:50	Study Psych.	Botany lab.	Study French	Botany lab.	Study French	**	**
3:50 to 6	**	Sports	Rest	Sports	Rest	Sports	**
5	**	Study English	Study Psych.	Rest	Study Psych.	Study Sociol.	**
6	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
7	**	Study English	Study Psych.	Study English	Study Psych.	**	**
8	**	Study Botany	**	Study Botany	**	**	**
9	**	Study Botany	**	Study Botany	**	**	**

FIGURE 33. A SAMPLE SCHEDULE OF WORK.

getting stale and unable to concentrate. It is a good idea to devote some time to relaxation, reclining or engaging in light conversation. Under activities here we are not speaking of study alone. We include sports, writing letters, dancing, and other things involving definite output of energy. Thirdly, we suggest certain regular exercise, which most people seem to need. As we emphasized in Chapter XXII, a clear mind can only be maintained in a healthy body.

One notices that there are a number of spare hours each day. These, in addition to providing for leisure, furnish elasticity to the schedule to take care of pressure before examinations, preparation of topics or reports, conferences, or any other irregular inroads on time.

This sample schedule does not commit one to a life of unalloyed work. We have allowed ample time for extra activities, recreation, and rest. We have also minimized evening work. For demonstration we picked out a rather full schedule, including one time-consuming laboratory course.

Most students who make out and follow reasonably closely such a schedule soon find that they get well ahead of it. Having a regular routine, they work more efficiently when they do study, they make use of hours which are usually wasted, and the schedule issues a sort of challenge which spurs them on to better effort.

VII. TAKING NOTES

Notes are a shortened form of the original, taken for purposes of reviving the memory at a later date. To get the maximum value one should be systematic about taking them.

The first principle is that any note should contain full meaning so that later you will know exactly what it means. State in addition to the name of the topic the view put forth, the reasons, and the conclusions. If this is not included you may not be able to recall later the arguments of the writer or lecturer. Complete sentences are not necessary.

Choice of material to record will vary with the course. Facts are of course common to all. In science, the apparatus, techniques, procedures are important. In literature one must watch out for style, comparisons, and other æsthetic matters. In advanced courses which involve theory one must be on the lookout for evaluations of crucial theories and hypotheses, as well as plain factual matter.

It is suggested that in following a lecture the notes be as brief as you think is consistent with subsequent recall. If too many are taken the mechanical act of writing will consume so much time that you may miss something important which follows.

One has an advantage in taking notes from readings, since he can

look over the whole before he starts to read and thus discover what is coming, and since he can set his own pace. He will miss nothing while he is jotting down a note. Reading over the whole assignment before taking down a single note will enable one to take down only the most important points, not waste time with unessential ones, will keep the general order more logical, and will give one a review while re-reading the text.

It should not be necessary to take notes from the regular text in the course. Important passages can be checked in the margin or underlined to facilitate later review.

Some sort of outline is usually advisable. If the writer or lecturer uses one you should follow that. The main heads may be listed as I, II, III; the subheads as A, B, C; points under these as 1, 2, 3; etc. Do not outline so completely that the material loses meaning and connection.

VIII. EXAMINATIONS

(1) *Preparation.* If one has prepared his daily work thoroughly and regularly, and has reviewed from time to time, an examination should not presage the end of the world, as many students seem to think. Only a few hours of review should be necessary. If a person raises a big hullabaloo over having two examinations on one day or on successive days, he is admitting that he has neglected his daily work and needs a lot of time for cramming.

(2) *Questions.* Study should not be indiscriminate. Questions are not made to trip up students, but to see whether they understand the important facts and arguments of the course. If you understand the purpose of the course, and pay attention to what the lecturer and author emphasize, you should be able to discover the points on which to lay major emphasis in preparation.

(3) *Physical Condition.* What would you think of a coach who kept his men playing football or running around the track all the night before an important event? If one sits up half the night cramming for a test he is in no fit condition to take it. The good student prefers to get plenty of sleep and fresh air. It is especially recommended that the last hour before an examination be spent in relaxation, lying down or perhaps taking a walk. If you know

anything at all and go into the test with your head clear you are halfway through it already. The importance of physical condition increases with the length of the test.

(4) *Read the Examination Thorough Before Writing Anything.* As soon as the test is passed out, read all the questions. There are two reasons for this piece of advice. First, you will not include with an early question material which is more important for a later one which may be somewhat related to it, thus wasting time. And second, you will give your mind a chance to mull over the later questions while you are writing the first few. This has been called putting the subconscious to work. Whether this hypothesis is correct or not, the fact is significant. Many students have found themselves utterly blank on a question when they first read it, but when they came back to it a half hour later they could make a good answer. Material has come back in the meantime, but it would not get this chance if one had not read the question previous to writing on it.

(5) *Answer the Exact Question.* Make sure that you read the whole question and any directions there may be at the top of the page. Often a student loses credit because he has not answered what was asked. While the information reproduced may be perfectly good, it has missed the target and can be given little credit. Be sure you do not miss a "not," a "why," or the second half of a two-part question.

(6) *Organize Your Answer.* The question is asked to see if one understands certain important facts and theories. If these are well stated one gets credit; if they are expressed badly or only in part, one will get only partial credit. So plan your answer to include all the major points. Do not waste time on extraneous material, or in writing while you are warming up to the subject; when you start to write plunge right into the heart of it. It is far better to think two minutes and write eight than to try to write all ten without getting any organization. The slight loss in volume will be more than made up by increased quality. If you outline and number your points, it will convince the reader of your comprehension and thoroughness.

(7) *Plan Your Time.* Divide your hour, or whatever time is allotted, into equal parts for the various questions, and try to follow

this schedule throughout the test. But if the questions carry different values, plan accordingly. Plan to do yourself equal justice on all questions, not having to omit or skimp on the last few, as often happens. The fact that the test was rather long cannot be taken to give you unearned credit, as this would penalize unfairly those students who planned rightly.

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¹ We do not attempt to document the discussion with references to many well-known principles of learning which we have applied to study habits. Many original references can be found in Hunter's article.

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