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MANHOOD

A Complete Manual of Physiology, Hygiene,
and the Prevention of Disease
For the Mature Man

BY J. H. KELLOGG, M. D.

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ment of Science, Societe d'Hygiene of France, American
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every possible source, and faithfully supplies with all the conditions needed to develop in the very best possible manner and to the highest degree of perfection its symmetry and beauty. If one-half the amount of attention were given to children that is bestowed upon raising blooded horses, cows, sheep, or even sporting dogs and pet canaries, there would be a far less number of human beings who might be truthfully labeled, "human failures," numerous examples of which at present may be found in every community.

Parents who take the responsibility of bringing children into the world, should consider that in so doing they assume the grave responsibility of bringing them up in such a way as will make them capable of enjoying life, and making it a success for themselves and for their fellow-men. The rearing of a child comprises much more than simply supplying it with food and clothing and a place in which to live.

Other Natural Rights.— The natural rights of a child demand that it should be supplied with proper food, clothing, and a good home. Proper food and clothing mean, not simply such as happen to be most convenient, or even such as is fashionable or customary, but such as will best serve the wants of its body. Consequently, all parents should give to this matter serious study, that they may be able to form a proper judgment of what is best for their children in these particulars.

Thousands of young constitutions are every year ruined by bad food, before their possessors have reached the end of the first year of life; and thousands upon thousands perish before the fifth year is reached,

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rare cases unpromising infants do afterward develop into strong and healthy persons; but in these instances the constitution must have been unusually vigorous to have enabled the person to surmount the obstacles presented by a feeble infancy and childhood, and develop the robust health of later years.

Badly Born.—Thousands of boys are cheated out of the life and vigor and physical stamina to which they are lawfully entitled, by the spendthrift habits, as regards vitality, of their parents. The wealthy man who squanders his property regardless of the future welfare of his children, spending his money recklessly and foolishly, is no more blameworthy than the man who squanders his capital of strength in the same manner. Many a lad might truthfully rise up in condemnation of his parents, and say, “My father ruined my constitution by bad eating or drinking, by excessive labor in the mad race for fame or riches, and by selfish gratification in the use of alcoholic liquors or tobacco.” Or he might say, “My mother robbed me of the health to which I was entitled, by dressing regardless of the requirements of health, by fashionable dissipation of every sort, and by neglect of the bodily culture necessary to develop and maintain good physical health.”

As an acute thinker has said, “The greatest of all human felicities is to be well born,”— a blessing which the greater proportion of human beings are not permitted to enjoy.

Being well born, a boy has a right to be well reared, to be carefully nurtured, like the rare and tender plant which the gardener carefully protects from injury from

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from the effects of bad feeding and bad clothing combined.

In thousands of homes, in civilized lands, the little ones lying in cribs or creeping or toddling about the floor, are being slowly poisoned by an atmosphere contaminated with impurities, the result of imperfect ventilation. Millions of human lives are snuffed out before the vital flame has scarcely begun to burn, by these unnecessary and most easily preventable causes. This is a matter certainly worthy of most serious attention on the part of every intelligent parent.

Education. — Every boy is entitled to a good education. By education we mean, not simply “schooling,” or a course at a university, but that sort of training and culture which will fit him for usefulness in life. Education, if properly begun, will commence with the first dawn of intelligence. The human infant at birth knows less than the young of most lower animals at the same period of life, and some weeks elapse before any marked intelligence makes its appearance; but when the child first begins to reason, even in the most primitive and simple manner, its education really begins, and from this time forward its mental as well as its bodily activities should be directed in such a manner as to secure to it a symmetrical development of the entire individual, physically, mentally, and morally.

The so-called system of education and the influence to which most boys are subjected for a longer or shorter period while in school, seem to the writer to be exceedingly faulty. The aim appears to be to give the student facts and knowledge, rather than the ability to discover new facts and apply old ones. It usually neglects the

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body almost wholly, and frequently produces a most one-sided development, which, while it at first enables the person to appear to great advantage, ultimately results in failure, both mentally and physically.

The aim of education should be to prepare the individual to make the most of himself in life. It should be a process which will make the most practical men, the most effective workers for the advancement of all human institutions. Any system which neglects any one of the three departments of human nature, mental, moral, or physical, must be necessarily a failure. Simply educating a boy in the arts and sciences, without developing a love for truth, purity, goodness, justice, and other moral qualities, only prepares him to become the most expert of criminals, and fits him the most successfully to elude discovery and defeat justice. So, also, mental and moral discipline, without proper physical culture, may in many respects qualify men for great usefulness in those departments of human life; but will very likely leave them so lacking in the physical force and stamina required for an active and useful life as to render them dead weights upon society, rather than effective agents for the advancement of its interests.

Proper Aims of Education.--The education should be such as will encourage originality of thought, thoroughness in investigation and research, and thoroughness in everything. Impracticable and dogmatic methods, so generally employed in the education of the young, generally result in dwarfing the most valuable qualities of the mind; and it is only those minds which are possessed of an extraordinary degree of individu-

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ality and independence of thought that are able to escape this depraving and deteriorating process.

When a boy first begins to observe and think, encourage his budding mind in the direction in which the natural instincts lead. Bring in his way objects of interest which will attract his attention. When he gets old enough to question concerning the properties of the new objects which he sees, patiently satisfy his curiosity by giving him the information which he desires. If he shows some originality of thought, encourage him in thinking for himself, and lead his mind in such directions as will give his investigative disposition opportunity for a healthy development.

Even oddities and eccentricities are by no means to be always repressed, though excessive oddity should not be encouraged. If there were no odd or eccentric people in the world, there would be little or no progress. The strange departures from the beaten track of custom in thought and manners which sometimes amuse or startle us, often lead to the discovery of new truths or the exposure of old errors, which are fostered and maintained more effectively by our conservative educational systems than would be possible by any other means.

Habits.—Cultivation of correct habits from earliest childhood up, especially during the years preceding the attainment of maturity, is a matter of greatest consequence to every human being. Habits are very easily formed, but are changed only with the greatest difficulty. Habits are created simply by the repetition of the same act. In the beginning, the formation of good habits is often not more difficult than the formation of

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bad habits. The repetition of good acts renders them so easy that they are performed almost automatically, without a thought and without effort. By repetition, also, bad habits come to be performed with equal ease. No parent can accomplish so much real good for his son in any other way as by aiding him in the early years of life in the formation of thoroughly good habits.

The easy grace and courtesy of manner which enable some men to make friends of every one they meet, and without apparent effort, are almost entirely the result of the early formation of habits of manner which render them agreeable to their fellows. The boorishness and repulsiveness of other men, whose real mental and moral worth may be quite as great, which interfere so greatly with their success and advancement in life, may also be traced, in most instances, to the formation in boyhood of bad habits in relation to personal manners and deportment.

So it is in other particulars. Bad habits that are acquired in boyhood, usually adhere to an individual through his whole lifetime. In early boyhood, while the brain is soft and impressible and easily molded by the influences which may be brought upon it, it is a matter of greatest importance that correct and thorough habits should be formed. Habits relate to physical and mental as well as moral acts, and have an important relation to nearly every act or thought.

It is plainly the duty of parents to aid their children in forming such habits as will be conducive to their happiness and usefulness in after years. A child allowed to grow up with slack, slovenly, and careless

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habits, will all his lifetime be compelled to contend against obstacles to success which will make failure in every undertaking of life almost certain; while a child whose early education has been such as to enable him to acquire habits of order, promptness, neatness, thoroughness, and faithfulness, possesses such qualities as will insure success in almost every enterprise he engages in. Every child ought to appreciate the aid which may be given by its parents in the formation of correct habits, and should readily listen to the advice and counsel which the wisdom and experience of a father or a mother may so well give, and which will be of inestimable value to a young and inexperienced lad.

Food, Health, and Morals. — Of physical habits, some of the most important relate to eating. As these habits are formed at a very early age, and have most important relations to health and happiness in later years, they are particularly worthy of attention. A child, even at a tender age, often acquires the habit of eating for the simple purpose of gratifying the palate, and very early acquires those tendencies which, when fully developed, end in a complete enslavement of the individual to appetite, or gluttony. At a very early age, the child should be taught that the appetite is to be controlled, that its palate must not be the sole judge respecting its food, but that reason must wield the controlling influence; that it should eat what is best for it, rather than what it likes best. Of course, it is understood that the food should be palatable, and calculated to satisfy a healthy taste; but children very soon acquire a fondness for highly flavored substances, such

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as sweetmeats, tidbits of every sort, and stimulating foods; and if the appetite is gratified, it soon demands continual satisfaction, to the exclusion of those simple and less highly flavored substances which constitute the natural food of children, and which satisfy a healthy and unperverted taste. The aim should be to preserve natural simplicity of taste, unexaggerated by morbid excitation of the bodily appetites.

Quite extended opportunities for observation have convinced us that the common custom of supplying children with liberal quantities of meat, is a practice which tends to the excitement of morbid and unwholesome tendencies, and is very often productive of disease. Nature furnishes, in the easily digestible grains, fruits, and milk, foods which are perfectly adapted to the digestive organs of a child; and if the dietary is restricted to the use of these articles, most of the derangements of the digestive organs to which children are so often subject, could be avoided. The use of spices, pepper, mustard, vinegar, cloves, etc., is wholly uncalled for by a healthy taste, and may operate in the strongest possible manner to create an artificial craving which demands an excess of food, and produces, at an early age, conditions which ultimately result in dyspepsia and various physical disorders of a serious character.

The habit of eating between meals, so common among little boys, cannot be too strongly condemned. Such irregularities are not the result of a healthy appetite, but of a morbid craving, which frequently arises from a disordered stomach, and which requires attention, but not feeding.

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American boys undoubtedly suffer far more than those of any other land from the disregard of these facts. The peasant boy of Italy, Germany, France, or even England, is satisfied with the very simplest, and often the most meager fare. The Scotch boy eats his bowl of brose, or oatmeal gruel, with a far keener relish than the American boy finds in the highly seasoned viands, the rich cakes, savory pies, and tempting tidbits which his mother, in her mistaken fondness, prepares for him. The Italian boy finds vastly more satisfaction from his meal of boiled or roasted chestnuts than the American boy obtains from the rich and savory dishes so common on American tables.

How often do we hear little boys say, when food is offered them, "I don't like this," or, "I can't eat that." Such remarks are a pretty sure indication that bad habits in eating are already formed, and that such a child may be benefited by going without food until he obtains a relish for wholesome and simple fare.

A Parental Duty.—Parents should take pains to get acquainted with their boys. Often have we known of instances in which boys have grown from infancy to manhood without having really become acquainted with their parents, and their parents were equally unacquainted with them. Parents ought to encourage a disposition in their boys to confide in them in early infancy, so that they may become acquainted with their childish griefs and trials, and know their hopes and aspirations, and be prepared to direct their minds in safe and wholesome channels. Such an acquaintance will enable parents to supply those higher wants of their children which are quite as essential to their

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well-being as proper food, clothing, and shelter. It will aid them in providing suitable food for their higher natures.

Make Home Attractive.—Parents ought to consider it a part of their duty to satisfy the love of the beautiful in their children, as well as to satisfy their hunger. To this end their aim, so far as consistent with their means, should be to render beautiful, by tasteful, even though they may be simple and inexpensive, decorations of the dwelling and its surroundings. Useful and entertaining books should be supplied as the child advances in years. The home should be made so attractive and home influences so strong that no influence beyond the domestic circle will be sufficiently powerful to neutralize or destroy it. Thousands of boys are led into the broad way of vice and sin who might have been saved to virtue and usefulness, if the home had been attractive, instead of being dull and uninteresting, or absolutely repulsive, as is too often the case.

Special Dangers to Boys.—Thousands of pitfalls lie along the road which leads from boyhood up to manhood. Fortunate indeed is the lad who keeps so close along the strait and narrow path of right doing as to avoid them all. One of the first of the evil habits into which boys are apt to fall is that of disrespect to parents. It is so easy to disobey the commands of father and mother, when they are not at hand to enforce them, or when the disobedience may not be discovered by them; and by and by, especially if the kind-hearted parent fails to administer a proper rebuke or punishment, the child comes to disregard altogether his obligation to obedience. Such a lad is already advanced

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far on the road to ruin, and nothing is wanting but opportunity and favorable circumstances to lead him to the commission of almost any sin. Parents cannot do their children any greater wrong than by neglect to exact of them prompt and explicit obedience to their commands.

A wise parent will of course avoid demanding of a child that which is unreasonable, or which may with reason appear to the child to be an act of tyranny or a disregard of its rights. Such a course will destroy the respect of a child, and counteract the effect of any amount of exhortation or even punishment. Most unhappy is the home in which an unruly child holds the reins. We have seen some such homes, in which fathers, mothers, elder brothers and sisters were all in thorough subjection to the petty whims of an infant tyrant, who had been foolishly indulged and petted in his perverseness until he had come to be an autocrat of the domestic circle.

High-Headedness.—Some years ago, the writer was present at a large religious gathering at which a great sensation was produced by a speaker who arose, and, in most impressive tones, exclaimed, “It is a terrible thing for a man to have his own way.” As the words were repeated several times, each time with renewed emphasis, the immense audience fairly trembled at the dire consequences which may result to the man who gives himself up to doing as he pleases. Terrible indeed is it for a man to have his own way, but ten-fold more terrible for a child to have his own way, to follow his inclinations without restraint, to know no law but the demands of his own depraved nature and undisciplined will.

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The parent who allows his boy to grow up wilful, headstrong, undisciplined, and neglectful of the rights and wishes of others and his obligations to law, human and divine, should not charge his misfortunes to Providence if such a son brings down his gray hairs with sorrow to the grave.

Reliability and Genuineness.—Another of the pits of evil into which boys are apt to fall, is that of deception. A little boy, in the absence of the parental eye, has been guilty of an act of disobedience. His mother says, “My son, have you disobeyed my commands?” Shame and fear of punishment tempt him to say “No;” and the mother’s fondness may lead her to neglect to inquire into the matter with sufficient care to discover the untruth. One falsehood prepares the way for another, until by and by the love of truth, honesty, and sincerity is totally destroyed, and the lad grows up sadly lacking in those qualities which fit men for positions of trust and responsibility. Such a boy may sometime appear as a defalcating bank cashier or president, or a swindling “confidence man.” Genuineness is a trait of character whose value is priceless; and one of the saddest features of our modern times is the growing scarcity of real genuineness, thorough honesty, or steadfast sincerity and reliability. The boy who hopes to be a noble man, worthy of the respect of his fellow-men, and capable of wielding a wide and lasting influence in the world, must from his earliest boyhood cultivate fidelity, honesty, sincerity, truthfulness, and genuineness.

Profanity.—Close upon the heels of the evils already mentioned, which ruin the character and useful-

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ness of so many boys, comes that most absurd and unaccountable of vices—profanity. Nothing is more shocking than to hear, when walking along the street, most terrible oaths, lisped by lips that are too young to speak distinctly, but already familiar with the vile language of the street. What can we hope of such a boy, but that he will develop in due time into a criminal of the deepest dye, and be graduated from the school of vice into some prison or reformatory at an early age?

Vicious Habits.—One who has an opportunity to see many of the boys of the present generation, often says to himself, “Whence will come the men to fill the positions of trust and influence twenty years hence?” Vicious tendencies seem to have taken possession of by far the greater share of all the boys we meet. The cigar, the cigarette, and the filthy quid claim them as their votaries at an early age. Often have we seen, in large cities, ragged little urchins, scarcely old enough to walk, picking out of the filth the short stumps of cigars cast away by old devotees of the weed, and enjoying them with apparently as keen a relish as the most experienced smoker. The tobacco-using boy soon learns to drink beer and ale, from which it is an easy step to strong liquors and drunkenness.

Worse Vices.—These bad habits and vices are usually accompanied, if not preceded, by others even more debasing in their effects upon the mind, and more destructive to the body. Practices too vile to be even mentioned in these pages are common enough among boys addicted to the vices named, and often among those whom we least suspect of vicious tendencies of

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any sort. The company of bad boys—boys who indulge in obscene and filthy talk—should be shunned as carefully as though they were afflicted with some loathsome and contagious disease. No physical disease is more contagious than habits of mental and physical uncleanness. Fearful indeed is the extent of such habits among the boys of the present generation, including all classes, even the little toddlers of the nursery, to whom the most horrible practices are taught by vile associates and wicked nurses. Impurity in thought or act is one of the most universal of vices among boys. At the present time, scarcely a school-boy can be found so young that he has not already been instructed in sensuality.

One of the most evident duties of parents to their boys is to instruct them regarding the wickedness and the dangers of vice, and to carefully guard them from the contamination of evil associates.

A boy whose instincts are pure, will flee from the first suggestion of obscenity or vileness, and will avoid those known to be abandoned to sin as carefully as he would avoid a loathsome disease or a poisonous reptile. Happy indeed is the lad who grows to manhood unscathed by the scorching flames of sensual vice, and with a mind unstained by filthy imaginings and mental impurity.

HOW TO BE WELL

IN this short chapter, the reader will find a few important hints respecting the general care of the health, a subject which has not received special attention in other chapters in this work, but which is well worthy of the careful consideration of one who wishes to attain a high degree of physical vigor, and the full enjoyment of all his faculties and senses. The cultivation of health by attention to all the laws which govern the various activities of the body, is one of the most profitable occupations to which a portion of one's time can be devoted.

CARE OF THE SKIN.

The following remarks on this subject are quoted from a larger work by the author, entitled the "Home Hand-Book of Domestic Hygiene and Rational Medicine:"

The skin is one of the most important depurating organs of the whole body. From each of its millions of pores constantly flows a stream laden with the poisonous products of disintegration. As the water evaporates, it leaves behind it these non-volatile poisons, which are deposited as a thin film over the whole surface of the skin. As each day passes, the process continues, and the film thickens. If the skin is moderately

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active, three or four days will suffice to form a layer which may be compared to a thin coating of varnish or sizing. The accumulation continues to increase, unless removed, and soon undergoes further processes of decomposition. It putrefies,—rots, in fact,—and develops an odor characteristic and quite too familiar, though anything but pleasant, being at once foul, putrid, fetid, pungent, uncleanly, and unpardonable.

But the offense to the nose is not the extent of the evil. The unclean accumulation chokes the mouths of millions of little sewers which should be engaged in eliminating these poisons, and thus obstructs their work. Being retained in contact with the skin, some poisons are absorbed, together with the results of advancing decay, thus re-poisoning the system, and necessitating their elimination a second time.

Here, water serves a most useful end, if properly employed. It is unexcelled as a detergent, and by frequent application to the skin, will keep it wholly free from the foul matters described. The necessity for frequent ablutions is well shown by the fact that nearly two pounds of poison-laden solution—the perspiration—are daily spread over the body. It is not an uncommon occurrence to meet with people who have never taken a general bath in their lives. Imagine, if possible, the condition of a man's skin, at the age of seventy or eighty years, which has never once felt the cleansing effects of a thorough bath!

How to Make the Skin Healthy.—A man who has a perfect healthy skin, is almost certain to be healthy in other respects. In no way can the health of the skin be preserved, but by frequent bathing. A daily or tri-

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weekly bath, accompanied by friction, will keep the skin clean, supple, and vigorous. There is no reason why the whole surface of the body should not be washed, as well as the face and hands. The addition of a little soap is necessary to remove the oily secretion from the skin.

A lady of fashion, in enumerating the means for preserving beauty, says: "Cleanliness, my last recipe (and which is applicable to all ages), is of most powerful efficacy. It maintains the limbs in their pliancy, the skin in its softness, the complexion in its luster, the eyes in their brightness, the teeth in their purity, and the constitution in its fairest vigor. To promote cleanliness, I can recommend nothing preferable to bathing. The frequent use of tepid baths is not more grateful to the sense than it is salutary to the health and to beauty. . . . By such means, the women of the East render their skin softer than that of the tenderest babe in this climate." "I strongly recommend every lady to make a bath as indispensable an article in her house as a looking-glass."

When foul matters which ought to be eliminated by the skin and quickly removed from the body, are allowed to remain undisturbed, the skin becomes clogged and inactive, and soon loses its natural luster and color, becoming dead, dark, and unattractive. When bathing is so much neglected, it is no marvel that paints, powders, lotions, and cosmetics of all sorts are in such great demand. A daily bath, at the proper temperature, is the most agreeable and efficient of all cosmetics.

Bathing Protects against Colds. — It is an erroneous notion that bathing renders a person more liable

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“to take cold, by opening the pores.” Colds are produced by disturbance of the circulation, not by opening or closing the pores of the skin. Frequent bathing increases the activity of the circulation in the skin, so that a person is far less subject to chilliness and to taking cold. An individual who takes a daily cool bath has almost perfect immunity from colds, and is little susceptible to changes of the temperature. Colds are sometimes taken after bathing, but this results from some neglect of the proper precautions necessary to prevent such an occurrence.

Aristocratic Vermin.—Doubtless, not a few of those very refined and fastidious people who spend many hours in the application of all sorts of lotions and other compounds to the face and hands, for the purpose of beautifying those parts of the person exposed to view, while neglecting as persistently the parts of the person not exposed to observation, would be very much surprised to learn the true condition of the unwashed portions of their cutaneous covering. They instinctively shrink with disgust from a vermin-covered beggar, in whose cuticle burrows the *acarus scabiei* (itch-mite), while troops of larger insects are racing through his locks and nibbling at his scalp. It is quite possible that many a fair “unwashed” would faint with fright if apprised of the fact that her own precious covering is the home of whole herds of horrid-looking parasites which so nearly resemble the itch-mite as to be at least a very near relative, perhaps half-brother or cousin. The name of this inhabitant of skins unwashed is as formidable as the aspect of the creature, though it does not require a microscope to display its pro-

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portions, as does the latter; scientists call it *demodex folliculorum*.

The demodex makes himself at home in the sebaceous follicles, where he dwells with his family. Here the female lays her eggs, and rears her numerous family, undisturbed by the friction of any flesh-brush, and only suffering a transient deluge at long intervals, if such a casualty ever happens. In studying the structure of these little parasites, we have sometimes found several tenants occupying a single follicle, pursuing their domestic operations quite unmolested by any external disturbance.

The demodex has been transplanted from the human subject to the dog, and it is found that the new colony thrives very remarkably, and soon produces a disease apparently identical with that known as "mange."

We have not space to describe in detail these savage little brutes, with their eight legs, armed with sharp claws, bristling heads, sharp lancets for puncturing and burrowing into the skin, and their powerful suckers for drawing the blood of their victims. We care only to impress upon the mind of the reader the fact that neglect of bathing and friction of the skin is sure to encourage the presence of millions of these parasites, and that the only remedy is scrupulous cleanliness of the whole person. Like their relative, the itch-mite, they do not thrive under hydropathic treatment, and are very averse to soap and water. The best way to get rid of them is to drown them out. They do not produce the irritation which characterizes the presence of the itch insect, so that this evidence of their presence is wanting. But they are likely to be present in a

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torpid, unhealthy, unwashed skin, no matter how delicate or fastidious its possessor.

Bathing a Natural Instinct.— All nature attests the importance of the bath. The rain is a natural shower bath in which all living things participate, and gain refreshment. Its invigorating influence is seen in the brighter appearance, more erect bearing, and brighter colors of the plants after a gentle rain. The flowers manifest their gratitude by exhaling in greater abundance their fragrant odors. Dumb animals do not neglect their morning bath. Who has not seen the robin skimming along the surface of the lake or stream, dipping its wings in the cool waters, and laving its plumage in the crystal drops that its flapping pinions send glittering into the air? No schoolboy who has ever seen an elephant drink will forget how the huge beast improved the opportunity to treat himself to a shower bath, and perhaps the spectators as well, for he is very generous in his use of water.

If man's instincts were not rendered obtuse by the perverted habits of civilization, he would value the bath as highly, and employ it as freely, as some of his more humble fellow-creatures, whose instinctive impulses have remained more true to nature, because they have not possessed that degree of intelligence which would make it possible for them to become so grossly perverted as have the members of the human race. Man goes astray from the path of rectitude, not because he is deficient in instinct, but because he stifles the promptings of the divine voices, which would lead him right if he were obedient to them.

The Best Material for Underclothing.— As the skin is constantly throwing off moisture, it is very im-

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portant that the clothing shall be able to take it up and transmit it to the air. Woolen goods hold the moisture for a long time, and accumulate it, and with it of course are retained the various excretory substances which escape from the body in the sweat. It is on this account not well adapted for garments to be worn next to the skin. Linen is superior to all other fabrics for this purpose. Cotton stands next in value. The fact that the quick drying of linen exposes the skin to rapid cooling by evaporation, necessitates the wearing of outer garments of wool to prevent the too rapid loss of heat during those seasons of the year when extra precaution is required, which means practically every day in the year in nearly all parts of the world. The only exceptions are those extremely hot localities in the tropics in which the temperature ranges high both day and night.

Loosely woven garments are decidedly preferable to close fabrics, for the reason that they are more permeable to air, and hence allow a frequent change of the air in contact with the body. Warmth may be obtained by increased thickness. The air inclosed in the meshes of a fabric constitutes an excellent nonconductor. Several thin garments are on this account much warmer than one thick one, the interposed layers of air having a high protective value.

The wearing of linen next to the body is certainly conducive to cleanliness. Linen undergarments prevent undue heating of the skin and accumulation of moisture, which has the effect to relax the skin and maintain constantly in a moist and decomposing state the excretory substances thrown off. Linen undergar-

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ments are also less irritating than those made of wool. This fact is recognized by many persons whose skins are especially sensitive. Linen may be worn at all seasons of the year. It is only necessary to provide sufficient outer clothing to secure the necessary warmth. An additional pair of thick undergarments affords better protection than extra outer wraps, and are less expensive.

White Garments Preferable to Colored.—The color of the clothing is of importance, because of its transmission and absorption of the sun's rays. Dark-colored fabrics, especially that of rough texture, absorb the heat rays, and this leads to an accumulation of heat. At the same time, however, they protect the body from the chemical rays of the sun. The head is, ordinarily the only part of the body which requires protection from the sun, and for this, ample protection is afforded by hats of various sorts, with the addition of a moist cloth laid inside upon the head, if necessary in very hot weather. The heads of work horses may with advantage be protected in like manner by means of a straw hat and a wet sponge.

On the whole, white garments offer advantages over those of any other color, for the reason that they transmit a considerable amount of light. Contact of light with the skin is necessary for its health. Exposure of the skin to the direct rays of the sun is also advantageous and promotive of skin cleanliness, as by this means many disease-producing germs which accumulate upon the skin may be destroyed, even though they may have escaped removal by the bath.

A matter of the highest importance is the equable

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clothing of the body so that there shall not be undue accumulation of heat in certain parts, while other parts are insufficiently protected. The arms and legs, and particularly the feet, require special protection, for the reason that they are farthest from the body, while they present a larger surface in proportion to their weight and the amount of blood supplied to them than does the trunk. Many persons suffer greatly from insufficient clothing of the limbs in the cold seasons and on cold mornings and evenings, without being aware of the cause of their illness. Congestion of the head, and various disturbances of the stomach and bowels and other internal organs, and especially lung affections, are the result of this neglect. When the arms and the limbs are chilled, their blood vessels are contracted, and some internal part must of necessity be overcrowded with blood, or congested. A state of congestion is always one of weakness and lowered resistance to disease, and is the introduction to chronic maladies and even degenerations and organic changes.

Useful Hints Respecting the Clothing.— A few “don’ts” in relation to clothing may be found helpful:

Don’t dress the neck too warm when going out in cold weather. A little extra protection is required for the ears, but it is not necessary to muffle up the neck with thick furs to protect the ears. A light scarf or ear muffs are all that is needed. Warm wrappings about the neck cause the skin of the neck to become moistened with perspiration. When the wrappings are removed indoors, the slow cooling which takes place in consequence of the evaporation, chills the parts, and may produce sore throat or nasal catarrh.

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Don't wear rubbers indoors, nor out of doors, except when it is necessary to prevent wetting the feet. Rubbers being impervious to air, prevent evaporation, so that the perspiration is retained, and the shoes and stockings become damp from the perspiration. When the rubbers are removed, evaporation chills the feet, the same as though they had been wet by the rain or by walking on a wet pavement. On removing the rubbers after they have been worn for some time, it is a good precaution to remove the shoes and stockings and put on dry ones. If this cannot be conveniently done, care should be taken to keep the feet warm until the shoes are dry. The rubbers should be dried before wearing again.

Don't wear a mackintosh or rubber overcoat, except when necessary; and on removing the waterproof, when it has been worn for some hours, don't forget to change the undercoat also. The clothing is saturated with moisture from the skin, and a chill may be induced by evaporation from the moist clothing.

Don't wear at night underclothes which have been worn during the day.

Don't forget, on going to bed at night, to hang up the underclothing in some place where it will air overnight. It is a good plan to lay the clothing over a warm steam coil when it is convenient to do so. Persons who perspire freely should employ two suits of underclothing, wearing each every other day, allowing one day for airing and drying.

Don't wear more clothing than is really necessary for comfort. Many people render themselves sensitive to cold by wearing too much clothing.

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On going out of doors, don't forget to slip on an outer garment of some kind if the temperature is considerably lower than the indoor temperature; especially protect the head and the feet.

Don't wear thin-soled shoes at any season of the year. One may take cold from chilling of the feet as the result of wearing thin-soled shoes in walking over a cold pavement, even when the pavement is perfectly dry.

Don't adjust the clothing to suit the season of the year only, but adapt it to the weather conditions of each particular day.

Don't wear high-heeled shoes, nor pointed shoes, nor narrow-soled shoes, nor tight shoes, nor low shoes. Don't wear slippers, except in the house. Shoes must have broad, reasonably thick soles, plenty of room for the toes, low heels. Rubber heels are a great comfort.

Don't support the clothing by bands tight about the waist.

Don't constrict the limbs by means of elastic bands to support the stockings. Support all clothing from the shoulders, not by bands, but a waist, or the "union" plan.

It is rare to find a woman who will admit that her clothing is too tight, and yet it is equally hard to find a woman whose clothing is not so tight as to do serious damage. Unfortunately, the idea prevails among women that a small, round waist is a mark of beauty and a thing much to be desired. Men probably to a considerable extent entertain this same erroneous notion. The fact is that women naturally have larger waists than men, compared with their height. This

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is due to two facts: (1) That the stomach, liver, bowels, spleen, and other organs are larger in women than in men of the same size; (2) that women are naturally a little more fleshy than men, and have plumper figures. If a woman has a smaller waist than a man of the same height, it is because she has made it so by an unnatural mode of dress; just as the Chinese women make their feet ridiculously small by compression, so the American woman makes her waist absurdly narrow in the same way.

The author has measured the waists of a large number of civilized women of different nationalities, —American, English, French, and German, Indian women, Mexican women, Chinese women, Zulu women, Arabian women, Egyptian women, negro women from far up the Nile,—and has invariably found that women who have never been deformed by wearing the clothes which the civilized woman habitually wears, have waists larger in proportion to their height than have men of the same race. The author has taken the pains, also, to measure a large number of ancient models as represented in famous statuary. He finds the same thing to be true. Here are some figures. The circumference of the waist of the Venus de Milo is nearly one-half that of the height of the figure, the exact proportion being 47.6 per cent of the height. The following table shows the figures obtained by modern measurements:

	PER CENT OF HEIGHT
French peasant women.....	45.4
Chinese women.....	45.4
Average of forty-three American women, eighteen to twenty-five years of age, wearing healthful dress.....	44.04
Venus de Milo.....	47.6
Average of two thousand men, eighteen to twenty-five years of age, measured by Dr. Scaver of Yale.....	42.7
Average of eleven hundred women wearing ordinary dress.....	39
Apollo Belvidere.....	45



VI FASHION DI FORMI D WOMAN



THE VENUS DE MILO

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From these figures we see that the waist measurement of the Apollo Belvidere is more than two per cent less than that of the Venus de Milo. The waist measurement of two thousand men, measured by Dr. Seaver, is nearly 3 per cent less than that of the average French woman, 3.7 per cent more than that of the average American woman, 2 per cent less than that of the average American woman when wearing a healthful dress. The proportions of the Venus de Milo, recognized by artists as the finest model in existence, show a waist measurement five per cent greater than that of the average American man. That this proportion is not abnormal is shown at once by a glance at the reproduction of this beautiful Greek statue shown in the accompanying cut.

The fashionable dressmaker insists that the young lady's figure must be "*formed*," and so as she develops she grows into a mold, like a cucumber in a bottle. And thus it happens that we find the civilized woman with a waist disproportionately small, as we find among the aristocratic class of Chinese women, dwarfed and misshapen feet. The small-footed woman of China, in consequence of her deformity, is compelled to hobble about in a most ungraceful fashion, requiring usually one or more persons to sustain her in keeping her balance. She cannot run, skip, or work, as can her large-footed sisters. She is willing, however, to endure the inconveniences of being a cripple and the loss of the use of her feet and legs rather than forego the pleasure of being in fashion. If the sacrifices which the civilized woman makes to fashion were no greater, there would be comparatively small ground

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for complaint; but the habitual girding of the waist results in mischiefs of vastly greater magnitude than those which the Chinese woman inflicts upon herself.

The injury resulting from this waist constriction is not simply an external deformity. The chief evil consequences are those which result from the displacement of the stomach, liver, bowels, kidneys, and other abdominal organs. Numerous important facts in relation to the serious consequences resulting from displacement of this sort have been developed as the result of comparatively recent discoveries and researches. Professor Glenard, of France, for example, has brought out the fact that a great number of chronic diseases of the stomach, liver, and nerves are due to the simple displacement of the stomach and bowels.

In an accompanying illustration is shown the effects which actually resulted from the compression of the ordinary dress. This lady was certain that she had never worn her clothing tight. She had never intended to, her clothing was always comfortable; but both her kidneys were found floating, and they had fallen several inches below the ribs, her stomach had fallen nearly to the umbilicus, the colon was lying still lower down, and the patient was in an exceedingly wretched state as the result. It is not necessary that the waist should be greatly constricted that these effects should result. Pressure of the belts just tight enough to prevent expansion of the waist in breathing will ultimately result in pushing the important organs which lie above the waist downward to the extent of several inches. This result is produced by the expansion of the lungs in deep breathing. In coughing, lift-

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ing, singing, or as a result of deep breathing induced by exercise, the diaphragm forces the stomach and other organs downward. When there is opportunity for the waist to expand, the additional room required for expansion of the lungs is obtained by separation of the ribs, allowing a lateral expansion of the abdominal space; but when this expansion of the lower part of the chest is prevented by belts, bands, tight waists, or a corset, the stomach and other organs must be crowded downward below their normal position; and a frequent repetition of this action finally results in prolapse of all the organs which occupy the upper part of the abdominal cavity. It is no more possible for a dislocated stomach to perform its functions properly than for a dislocated hip to serve its proper purpose. In fact, dislocation of the hip or knee is a much less serious injury, and likely to affect the general health far less injuriously than dislocation of the stomach or liver or kidneys. Extreme waist constriction not infrequently causes still more dreadful deformities of the liver, which interfere with its function. It is possible, even, that the liver may be cut in two. The author has met two cases of this sort. A German surgeon was obliged to open the abdomen of a woman, and remove a portion of the liver, which had been cut off by constriction of the waist, and had become gangrenous.

The author, a number of years ago, made a careful examination respecting the position of the stomach, liver, and bowels in fifty working men and seventy-one working women, all of whom were in ordinary health. In the seventy-one women examined, pro-

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lapsus of the stomach was found in fifty-six cases. In nineteen of these cases, the right kidney was found prolapsed, and in one case, both kidneys. The fifteen cases in which the stomach and bowels were not prolapsed were all persons under twenty-four years of age. None of these would admit that they had ever laced tightly, and four had never worn corsets or tight waistbands, having always worn the clothing suspended from the shoulders. It is noticeable that in a number of cases in which corsets had never been worn, tight waistbands had produced very extensive displacement of the stomach, bowels, and kidneys. In one of these the liver was displaced downward.

In fifty men, the author found only six in whom the stomach and bowels could be said to be prolapsed. In one, the right kidney was prolapsed. In only three was the degree of prolapse anything at all comparable with that observed in the women, and in these three it was found, on inquiry, that a belt or something equivalent had been worn as a means of sustaining the pantaloons. In another case the patient very properly attributed his condition to the wearing of a truss furnished with a belt drawn tightly about the waist.

From the above facts it appears that prolapse of the abdominal organs was found present in eighty per cent, or four-fifths (four out of five) of the working women, all of whom considered themselves in ordinary health. Prolapse is produced in men, as in women, by wearing belts instead of suspenders to support the clothing. A military officer who was under the author's care several years ago had a floating kidney which was the result of the constriction of the sword belt.

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He had been in the habit of carrying a heavy sword for many years. In the case of a blacksmith in whom a floating kidney was found, it was due to the practice the man had of tying his leathern apron strings tightly about his body while shoeing horses. In both these cases the patients were suffering much pain and distress because of the condition of the kidney, but were wholly oblivious to the mischief which had been done by the practice of girding the waist. Such cases are not rare among men, although by no means so common as among women.

The proper action of the chest may be aptly compared to that of a pair of bellows. The lower ribs, to which the strong breathing muscles are attached, serve as handles.

In natural breathing, the action is chiefly at the waist, although the entire trunk wall and every organ within the trunk participates in the movement. The action begins with expansion, first the sides, and then in front, finally a slight elevation of the upper chest, and, in forced respiration, a slight drawing in of the lower abdomen at the same time with the chest elevation.

The average civilized woman is certainly very much inferior to the average civilized man in physical vigor. The constancy of this observation has led both the profession and the laity to regard woman as naturally weaker than man. But that this is not necessarily so, is shown by the constant experience and observations of travelers among uncivilized tribes. Travelers in China are often astonished at the immense loads which Chinese women carry upon their shoulders. Some

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years ago the author saw a woman in the market place at Naples, Italy, carrying off upon her head an immense load of vegetables, which required two men to lift into position. De Saussure relates that when he had finished his observations in the valley of Zermatt, he packed a collection of mineralogical specimens in a box, and called for a porter to carry it out of the valley, as the mountain roads were too steep to be traveled by four-footed animals of any sort. After a fruitless search for a man who was able to transport his box of specimens, he finally was told that if he wished a porter to carry his package, he must employ a woman, as no man could be found who was able to even lift the box. He accordingly engaged a woman who offered herself for the purpose, and stated that she carried the heavy box of minerals over the steep mountain roads without the slightest injury either to it or to herself.

Most invalid women complain of pain when on the feet, dragging pain in the bowels and the lower portion of the back, pain at the extreme lower end of the spine, soreness and pain in the region of the navel, a feeling of lack of support in the lower abdomen, a sensation commonly described as "goneness" at the pit of the stomach, weakness of the lower limbs, pain in the back, crawling, tingling, numbness, stinging, and other sensations in the legs, cold hands and feet, burning of the soles and palms. Sometimes the patient says that when on her feet she is only comfortable when holding up the bowels with the hands. Such patients tenaciously cling to the corset because they evidently need some support. These patients also

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often complain that when they undertake to stand without a corset, there is such a sinking at the stomach that they are compelled to sit down. The evident cause is the dragging of the prolapsed bowels and stomach occasioned by the relaxation of the abdominal muscles, by which the branches of the pneumogastric and sympathetic nerves are put under an unnatural strain.

Neither a proper knowledge of the requirements of the body nor a just consideration of the principles of beauty justifies the popular mode of dress. The idea that a small waist or a round waist is beautiful, is a mischievous and dangerous notion which ought to be eradicated from the public mind. God never made a waist round, slight, or tapering, as though it were chiseled out of a block of wood; and why should we allow ourselves to be persuaded by the fashion mongers to regard as beautiful a thing which from an artistic standpoint is truly hideous, monstrous, and repulsive? An artist who should make an undraped figure with the waist modeled after a French corset, would not be allowed to exhibit his work in any respectable gallery.

We see in the enormous busts and bustles which fashion prescribes, an evident attempt to cover up by means of these excrescences the uncouthness of form which the corset and other fashionable modes of torture have induced, and by their aid to approach as far as possible to the ideal figure, which, in its native grace and beauty, requires no such accessories.

When men and women recognize the body as a sacred temple given them to care for as a most pre-

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cious treasure, the first question which is asked in relation to dress will not be, "Is this garment in fashion? Is it the latest style?" but, "Will it answer the demands of modesty and protection without in any way interfering with any bodily function?" The wearing of a dress which in any way deforms the body or interferes with any vital process, is a sin against Heaven, is nothing more nor less than a defacing and profanation of the temple of the Most High. For a woman to undertake to improve upon the handiwork of God by changing the shape of her body regardless of the effects upon those delicate and marvelous organs which are placed within the trunk, and in which daily and hourly miracles of creation and transformation are wrought in carrying forward the various processes of life,—for any person to presume to improve upon the masterpiece of the Great Artist which he himself pronounced very good, is an affront, an insult to the Creator. It is a duty which every woman owes to herself, to the race, and to God, to thoroughly inform herself upon the question of healthful dress, and to lay aside at once and forever all waist-constricting bands, corsets, belts, and other trammels, and to clothe herself with such garments as shall be thoroughly in harmony with physiology and common sense.

CARE OF THE EYES.

Use of the Eyes.—The effort to accommodate the eye in looking at near objects requires the action of several muscles, which must continue to act so long as the sight remains fixed on near objects. When the effort is long sustained, these muscles become weary, and when not given proper opportunities for rest, they may become seriously diseased. If the eyes are easily tired, and can be used but a short time without a blurring of vision or aching of the eyeballs, it is probable that there is some serious defect, and an oculist should be consulted.

Never try to read or do work requiring close application of the eyesight in a poor light. In doing so, the book or other object must be brought too near the eye, and thus near-sightedness may be acquired.

In reading, have the light come over the shoulder, the left if convenient, and avoid using the eyes in a glaring light as much as possible.

Never expose the eyes to a sudden bright light when it is possible to avoid doing so. After the eyes have been closed for some hours, some little time elapses after they are opened before they are fully accustomed to the light. On this account, it is not well to employ the eyes in reading immediately on waking in the morning.

Reading in the cars is injurious to the eyes on account of the shaking which continually changes the distance between the book and the eye, and thus taxes most severely the organs of accommodation.

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Wearing Glasses.—When glasses are needed by old persons, they should be worn, not necessarily all the time in all cases, but when specially needed, as in reading, doing fine work, etc. Persons who are near-sighted should avoid wearing too strong glasses, as this will increase the defect.

Glasses should enable a person to read with ease at eight to twelve inches from the eye. An old person who cannot see well without slipping his glasses down upon his nose, should obtain stronger glasses.

Eye Lotions.—The common use of the numerous domestic and patented eye washes is a frequent cause of serious disease of the eye. When the eyes are simply irritated by excessive work, a cold, exposure to dust, or any similar cause of irritation, frequent bathing with tepid water, or rest with a thin cloth wet in tepid water laid over the eyes, is a good and harmless remedy. If the case is not speedily relieved by some simple measures of this sort, consult a competent physician at once.

Things in the Eye.—Dirt in the eye, if visible, may usually be removed by a corner of a folded handkerchief, or by the end of the finger previously moistened with oil. If out of sight under the lids, a loop of hair passed under and withdrawn will generally bring it out. A piece of steel or other sharp substance which has become imbedded in the eyeball, should never be left to work out, but a competent surgeon should be consulted at once.

If lime or any other alkali has gotten into the eye, bathe with water at once, and as quickly as possible apply a weak solution of vinegar, using about a table-spoonful of vinegar in half a glass of water.

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Inflammation of the eye, if attended by great pain, intolerance of light, or a mattery discharge, demands the attention of a skilful physician.

Catching Eye Diseases.—All inflammations of the eye, attended by a discharge, are contagious by contact; and persons suffering in this way should never use the same wash-basin or towel used by others, and should sleep alone. Neglect of this rule sometimes allows a dangerous disease of the eye to extend through a whole school or institution.

Squint is an affection of the muscles of the eye. If the muscles which turn the eyes inward contract more strongly than the opposite muscles, the individual is “cross-eyed.” If the outer muscles contract the more strongly, the eye turns out, and the individual is said to be “wall-eyed.”

Wild Hairs.—Sometimes the eyelashes grow in a scattered manner, and turn inward toward the eyeball, causing great irritation. These are commonly called *wild hairs*. If persistently pulled out, they sometimes cease to grow, although the only certain cure is by a surgical operation.

Education of the Eye.—It is well known that savages and foresters generally possess much more acute vision than other persons, often being able to see clearly at long distances objects which are wholly invisible to others. This is undoubtedly the result of education; and it is quite certain that careful training of the eye in discerning objects at a distance would greatly increase its usefulness, and counteract the increasing tendency to short-sightedness which is becoming so marked among civilized nations as to excite considerable alarm.

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HOW TO CARE FOR THE EARS

Observe the following rules respecting the care of the ears:

Never clean the ears with a pick or with the twisted end of a towel. The earwax dries up, and falls out of itself. Efforts to keep the ear free from wax increase the difficulty by irritating the membrane, and causing it to make more wax.

Never allow cold water to enter the ears, and do not let a cold wind blow into them. If they must be exposed to cold air or to water, protect them by a little wad of cotton placed in the ear. Care should be taken to remove the cotton when it is no longer needed. Much mischief sometimes results by leaving portions of cotton or paper in the ear.

If a seed or other foreign substance has gotten into the ear, do not try to remove it by introducing a knitting-needle or by any similar means. The only safe plan is to syringe the ear with warm water, leaning the head to one side so that the object may drop out if loosened. If a pea or bean has been in the ear so long that it has swelled, and hence cannot be dislodged by the syringe, it may be contracted so that it will fall out by holding alcohol in the ear for a short time.

If an insect gets into the ear, pour in a little oil, which will suffocate it, when it may be removed by syringing.

Shouting into the ear may cause deafness. This is true of any loud or unexpected sound. Such sounds are liable to cause rupture of the drum head, which may be some time in healing, and may leave the hear-

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ing permanently impaired. When a loud sound is expected, the ear is prepared for it by loosening of the drum head. It is also well to keep the mouth closed and to cover the ears.

Earache may usually be allayed, if given early attention, by applying flannel cloths wrung out of water as hot as can be borne. This common complaint among children is often the result of a cold, and if it occurs frequently, may cause permanent deafness.

Partial deafness is much more common among children than is generally supposed, and a child should not be punished for inattention until its ears have been carefully tested by stopping each one in succession, and testing the other by speaking to the child at a distance while the eyes are covered. A person is often able to hear well when giving close attention; but when not expecting to be spoken to, will hear nothing.

Boxing and pulling the ears are barbarous practices, which often cause loss of hearing, and sometimes disease of the ear which proves fatal.

A cold in the head often causes partial loss of hearing for a few days, due to obstruction of the Eustachian tube. If often repeated, permanent deafness may result.

Discharge from the ears is usually the result of an inflammation of the middle ear with rupture of the drum head. Such a case should never be neglected. Consult a physician at once.

Never put chloroform or laudanum in the ear for relief of toothache.

The use of tobacco in any form often leads to deafness by causing disease of the throat, which leads to

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ear diseases. The same may be said of the use of liquors.

Tea and Coffee.—The widespread use of these popular beverages is undoubtedly responsible for much of the nervousness and a considerable share of the dyspepsia so common among civilized people. For many years, the use of these narcotics was considered harmless, by physicians as well as by the laity; but in recent years, many eminent physicians have become aroused to the fact that both tea and coffee are productive of much harm, and are protesting against their use. The active principle of both tea and coffee is a narcotic poison, a few grains of which will produce almost instant death when given to a cat or dog. Indeed, so small a quantity as twelve grains of this poison have been known to produce very dangerous symptoms in a strong man; and cases are on record in which persons have been made insensible by the drinking of strong tea.

Some years ago, a case was reported in which an English physician lost a fine horse through the carelessness of the groom, who allowed a small quantity of tea to become mixed with the grain which was fed the horse. The horse died with all the symptoms of narcotic poisoning. There is enough of this poison in a single ounce of tea to produce dangerous symptoms.

Coffee contains some less of the poison, but this does not diminish the harm arising from its use, as a larger quantity of coffee is usually employed than in the use of tea. In addition to this active principle, known as *theine* or *caffeine*, both tea and coffee con-

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tain *tannin*, which injures the stomach by contracting the blood vessels, and otherwise impedes digestion by precipitating the pepsin of the gastric juice.

Persons who use tea and coffee are subject to nervous trembling of the hands, headache, defective vision, and various other disturbances which indicate too clearly the poisonous character of these narcotics to leave any room for doubt respecting the propriety of their use. Both tea and coffee are particularly injurious to children, and wise parents, even though themselves wedded to their cups, will certainly withhold them from their children.

Drugs.—Great harm is done by the indiscriminate and wholesale use of drugs, which is so common at the present time. There are very few drugs which are not more or less poisonous in character, and the majority are deadly, except when taken in small doses. Those who use drugs should recollect that they are harmful, not only in large doses, but in small doses, when long continued. Quite a large proportion of common remedies, such as quinine, “blood purifiers” of all sorts, bromides, iodides, etc., are productive of much harm unless scientifically used. An immense amount of injury is done by the use of patent medicines, nearly all of which are composed of harmful ingredients, and which, so far as our observation goes, which is quite extensive, are capable of doing great mischief.

It is a favorable omen that the better class of physicians, especially those who have had the advantage of a course of medical study in European hospitals, where they have the opportunity to watch the prac-

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tice and listen to the teachings of the highest medical authorities in the world, use drugs far less freely than formerly. More reliance is placed upon proper diet and attention to the general habits of life; to the removal of the causes of disease, rather than the mere mitigation of the symptoms. There is no question but that diseases have been vastly multiplied by the multiplication of medicinal remedies. In a community where doctors are plenty, drug diseases are generally almost as numerous as disorders which arise from natural causes.

Rules for Dyspeptics.—A few years ago we formulated for dyspeptics a few rules, which we give below, publishing the same in our little work, "Digestion and Dyspepsia." Subsequently we printed the same in our journal, *Good Health*. A short time later they came back to us as an editorial in a popular magazine, published in London, and edited by an eminent physician, a member of the Royal Society. We feel highly complimented that our English friend is willing to give so hearty an indorsement of our views on this subject as to be willing to have them appear as his own. The following are the rules:

1. Eat slowly, masticating the food very thoroughly, even more so, if possible, than is required in health. The more time the food spends in the mouth, the less it will spend in the stomach.

2. Avoid drinking at meals; at most, take a few sips of warm drink at the close of the meal, if the food is very dry in character.

3. In general, dyspeptic stomachs manage dry food better than that containing much fluid.

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4. Eat neither very hot nor very cold food. The best temperature is about that of the body. Avoid exposure to cold after eating.

5. Be careful to avoid excess in eating. Eat no more than the wants of the system require. Sometimes less than is really needed must be taken when the digestion is very weak. Strength depends not on what is eaten, but on what is digested.

6. Never take violent exercise of any sort, either mental or physical, just before or just after a meal. It is not good to sleep immediately after eating, nor within four hours of a meal.

7. Never eat more than three times a day, and make the last meal very light. For most dyspeptics, and for nearly all adults, especially business and professional men, two meals are much better than three.

8. Never eat a morsel of any sort between meals.

9. Never eat when very tired, whether exhausted from mental or physical labor.

10. Never eat when the mind is worried or the temper ruffled, if possible to avoid doing so.

11. Eat only food that is easy of digestion, avoiding complicated and indigestible dishes, and taking but one to three kinds at a meal.

12. Most persons will be benefited by the free use of granose and similar cereal preparations, though many will find it necessary to avoid vegetables, especially when fruits are taken.

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A LARGE share of the accidents and ailments to which men and boys are subject may be successfully treated by a few simple remedies, and by the aid of appliances which may be found in every household. Many of these ailments are, from their apparently trivial nature, apt to be neglected, as the result of which they not infrequently give rise to very grave conditions, and become a cause of much suffering and inconvenience. Hence, information respecting the nature of ailments which are of such frequent occurrence, is of too great importance to be overlooked in a work of this character; and the knowledge of the simple means by which they may be relieved, is well worth the space which is devoted to the subject in this chapter.

CHRONIC INFLAMMATION OF THE THROAT. OR PHARYNGITIS

Symptoms.—Slight pain in swallowing; granular appearance of the throat; elongation of the palate; tough, tenacious mucus, occasional hawking and spitting; “hacking” or “hemming” cough; husky voice; expectoration of small, cheesy or calcareous masses; slight hemorrhages from the throat in the morning.

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Causes.— This disease is most commonly the result of repeated attacks of acute pharyngeal catarrh, though it not infrequently arises insidiously. The individuals most subject to the disease are those addicted to the use of liquor, tobacco-users, persons of sedentary habits, and those exposed to an atmosphere charged with dust or irritating gases. A humid atmosphere and changeable climate favor the production of this disease. Males are more frequently affected than females. It is found in its worst form in persons of vicious habits. What is known as clergyman's sore throat is a form of this disease, and it is undoubtedly the result of the sedentary habits of this class of persons. Diseases of the stomach and liver are frequently causes of pharyngeal catarrh. Bad dietetic habits are an important factor in the production of this disease. The use of mustard, pepper, vinegar, pepper-sauce, ginger, and various other condiments, and the excessive use of salt, sugar, fats, and animal food, must be set down among the principal predisposing causes of this form of the disease. In this way the terms "stomach cough" and "liver cough" have arisen, the stomach being really the remote cause of the cough, the direct source of which is the irritation in the throat. The most annoying symptom of chronic pharyngitis is the hacking or "hemming" cough, which is sometimes very harassing. The cough arises in some cases from the irritation of the soft palate, and in others from the elongation of the palate. When the palate becomes so long that the end rests on the back part of the tongue, it is very likely to cause a most annoying cough, and efforts at expectoration.

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Treatment.— The avoidance of all causes of the disease is of the greatest importance. The patient should adopt a plain, simple dietary, avoiding condiments, the use of fats, sugar, pastry, and all stimulating and clogging foods. If the patient has been addicted to the use of alcoholic liquors or tobacco in any form, these habits must be at once abandoned. Every possible measure should be taken to build up the general health by frequent bathing, keeping the skin in an active condition, as well as by out-of-door exercise and careful regulation of all the habits. Every night, before going to bed, apply a cold compress to the throat, and cover with a flannel. Remove in the morning, and bathe the parts with the hand dipped in cold water. Dry thoroughly, and in cold weather apply a little oil to the neck.

Apply daily to the throat, by means of a swab, some astringent application, as tannin and glycerin, or alum and glycerin, in the proportion of one dram of either to the ounce of glycerin. In cases in which there is great dryness of the throat, astringent applications are not required. Some simple stimulating application, as gargling salt water, a teaspoonful to the pint, or a solution of chlorate of potash, will be found useful. In cases in which the throat presents a granular appearance, the galvano-cautery in the hands of a specialist is often required for a perfect cure.

ENLARGED TONSILS

Symptoms.— Sensation of a lump in the throat upon one or both sides; difficulty in swallowing, in extreme cases; voice changed, patient often being unable to pronounce certain words; great susceptibility to “cold in the throat;” constant irritation in the throat; in many cases, impairment of hearing.

The enlargement is sometimes confined to one side, but frequently both tonsils are affected. In some cases the enlargement is so great that the passage through the throat is almost entirely obstructed. We have frequently had cases in which the two tonsils came in contact, so great was the enlargement. Sometimes the enlargement is produced gradually. This is especially the case in scrofulous children. The results of enlarged tonsils are more serious than are generally supposed. They not only occasion permanent injury to the voice, giving it a nasal character on account of the partial paralysis of the soft palate, preventing complete closure of the passage to the nasal cavity, but not infrequently occasion serious injury to the middle ear from inflammation of the Eustachian tubes.

Treatment.—In cases of moderate enlargement, the treatment described for chronic pharyngitis may be given with success. Where the enlargement is very great, there is no remedy but removal. The operation is a trivial one, and should be resorted to promptly when its necessity becomes apparent.

In cases of moderate enlargement of the tonsils, and those in which the patient objects strongly to removal by the tonsillotome, the tonsil may be removed by the application of the galvano-cautery.

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NASAL CATARRH

Chronic catarrh is not, as many persons suppose, a chronic inflammation of the part affected, but is a congestion, usually of a passive character. The blood vessels of the affected membrane are greatly relaxed, and turgid with venous blood. The constant pressure of blood induces an excessive secretion, and the premature death of the covering cells. The secretion decomposes, and becomes acrid, increasing the irritation, and ultimately causing ulceration. The excessive blood supply of the membrane occasions swelling and abnormal growth. The membranes lining the nasal cavity and other portions of the respiratory tract become thickened, and various unhappy results follow.

Causes.—Among the most active of all exciting causes of catarrh of the nose and throat, is what is popularly known as taking cold. “A cold in the head” is essentially a slight fever accompanied by an acute inflammation of the mucous membrane lining the nasal cavity.

A cold is usually looked upon as a very trifling affair, which scarcely needs serious attention, as it will work off of itself in a few days. This is really a grave error. Neglected colds are the most common cause, not only of catarrh of the nose and throat, but not infrequently of still more grave diseases, as chronic laryngitis and consumption. At best, a neglected cold leaves behind it an increased susceptibility to taking cold, so that another is contracted much more easily than the first; and this susceptibility to taking cold

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is increased until finally a very slight exposure, which would be in fact no exposure at all to a healthy person, will be sufficient to induce a severe cold, which may last for weeks, or even months. After a time, indeed, the susceptibility becomes so great that no exposure whatever is required to cause the individual to take a cold. A change of a few degrees in the barometer, or a slight variation in the temperature of a room, or a change in the direction of the wind, may be sufficient to bring on a fresh attack.

Thus what was at first only an occasional occurrence, colds being contracted only at long intervals, becomes, on account of serious exposure, a practically continuous condition, and a simple cold has resulted in a chronic catarrh. The frequent inflammation of the nasal membrane has caused its blood vessels to become relaxed and dilated to such an extent that the condition is permanent, and the membrane is constantly congested, thus occasioning a too profuse secretion of mucus on the part of the glands situated in the membrane, and a too rapid exfoliation, or shedding, of the epithelial cells covering the membrane.

It may be well to consider some of the ways in which persons contract colds. In general, it may be said that a cold is occasioned by some violation of the laws relating to health, particularly those relating to the proper clothing of the body. The majority of bad colds are contracted in the spring and fall, as at these seasons of the year people are apt to be most careless in regard to the proper protection of the body. Many persons neglect to put on an extra suit of warm underclothing sufficiently early in the fall to avoid an early

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cold; and probably an equally large number commit a similar error in leaving off the warm woolen under-suits too early in the spring, and before the weather has become settled. In this climate, the weather can scarcely be considered settled before the first of June; indeed, in some seasons the weather does not seem to be settled at all. A "cold snap" will sometimes occur in July and August, which creates as great a necessity for additional underclothing as the approach of cold weather in late autumn. The only safe plan in relation to clothing is to wear woolen drawers and under-vests the year round. Some prefer a mixture of wool and cotton, and, as a rule, such a fabric is more agreeable to the skin than pure wool. The summer suits may be as thin as desired; in winter, very heavy suits should be worn, and in severe cold weather, two or three suits. The clothing should be carefully adapted to the weather. Extra cold weather in winter, and an extra exposure to the cold, call for one or two extra suits of underclothing; and a cold spell in midsummer creates a still more urgent demand for extra clothing than a similar change in winter, as warm weather produces a condition of the skin which is not so well prepared to defend itself against the cold as when it has been accustomed for some time to a lower temperature.

The clothing of the head is a matter of special importance. Men, as a rule, protect their heads by warm fur or felt caps or hats; but women are generally so enslaved by fashion that health is sacrificed for the sake of gratifying the perverse taste for displaying a fashionable bonnet, which cannot be considered

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as in any degree a protection to the head, being at best merely an ornament. Both the head and the neck should be sufficiently protected to prevent chilling. The wearing of heavy fur scarfs and mufflers is, however, a practice to be condemned, as the amount of heat thus induced is so great as to produce perspiration, and, as a result, increased liability to colds. Woolen wrappings for the throat possess the advantage of being pervious to the air, and consequently less liable to excite undue activity of the skin. The throat should not be enveloped in so many folds as to occasion an excessive degree of heat.

The practice of cutting the hair of men and boys very short, which has been much in vogue in recent years, must also be condemned as in the highest degree productive of catarrhal affections. The hair is intended as a protection to the scalp, and should be left sufficiently long to serve its purpose. No less to be condemned are the enormous masses of hair sometimes worn by ladies, which overheat the head, and injure the scalp by their great weight.

Too great stress cannot be laid upon the importance of proper clothing of the feet and lower limbs. Thin-soled shoes are scarcely better than no shoes at all, as they rapidly conduct the dampness through to the feet. The sole of the foot is very largely supplied with nerves, and is one of the most sensitive portions of the body. It is on this account that a cold is contracted more rapidly by wetting or chilling the feet than by similar accidents to most other portions of the body. The shoes should be thick and warm, with heavy soles, and rubbers should be worn during wet weather, or

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when the shoes come in contact with moist surfaces. The wearing of rubbers or waterproof overshoes constantly is not a healthful practice, however, as the moisture escaping from the surface of the feet is retained, so that they become wet, and injury may result as readily as though they were wet in any other way.

Somewhat extended opportunities for observation have led us to the conclusion that an inactive state of the liver has some influence in predisposing an individual to catarrh. We have observed that a torpid liver is, in the majority of cases, associated with nasal catarrh; and chemical examination shows that the discharges of the nasal cavity of a person suffering with catarrh contain a considerable quantity of cholesterine. The influence of diet, as the excessive use of fats, sugar, condiments, and numerous other unhealthful articles, in predisposing to catarrh, is unmistakable. Sedentary habits, by lowering the vital tone and lessening the resisting power of the individual, are predisposing causes which should be mentioned.

Symptoms.—The symptoms of acute nasal catarrh, or cold in the head, are too familiar to most persons to require more than a very brief description. The usual symptoms are chilliness; lassitude; pain in the forehead; a watery discharge from the nose, which becomes yellowish and thick after two or three days; feverishness; coated tongue; and loss of appetite. The eyes are also frequently affected, being in most cases red and congested, and often suffused with tears. Frequently repeated acute catarrhs may finally give rise to chronic catarrh; however, the latter sometimes develops gradually, without being directly traceable to acute colds in the head.

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Chronic nasal catarrh, with which we are chiefly concerned, presents varied symptoms in its different stages. In the first stage of the disease, which is usually known as simple chronic nasal catarrh, the symptoms are similar to those experienced in the last stages of acute cold in the head. There is a more or less copious discharge from the nose, either through the nostrils, requiring the frequent use of the handkerchief, especially in the morning, or through the passage to the throat at the back of the nasal cavity, as indicated by a dropping at the back of the throat. The patient suffers more or less with a dull pain over the eyes, in the cheek bones, or at the back of the head, which is increased in damp weather or whenever a slight cold is taken.

After a time the long-continued congestion and irritation of the nasal membrane gives rise to swellings and permanent thickenings of the mucous membrane and tissues underlying it in various parts of the nose, in consequence of which the several passages through the nose are more or less obstructed, so that breathing is interfered with, especially during sleep. On falling asleep, the patient involuntarily opens his mouth, not being able to secure a proper amount of air through the obstructed nostrils without the aid of the voluntary effort which he habitually makes during waking hours. The obstruction of the nasal passages is also indicated by a decidedly nasal tone in the voice, or, rather, absence of nasal resonance in the voice, giving the voice the peculiar qualities produced by speaking with the nose closed. A similar swelling and enlargement occurs in certain glands at the foot of the phar-

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ynx, or point at which the nasal cavity and the pharynx unite, known as the pharyngeal tonsil. This enlargement sometimes becomes so great as to almost wholly obstruct the passage between the nose and the throat. We have met with cases where the opening, which is usually capacious, was not much larger than a goose quill. The obstructions produce especially during sleep various abnormal sounds in breathing. Snoring is always indicative of some obstruction of this sort.

Changes in the form of the nose also occur. The abnormal quantity of blood supplied to the mucous membrane lining the nasal cavity occasions an abnormal development of all the tissues; and an enlargement and thickening of the upper part of the nose occurs, and also, in many cases, an elongation of the septum of the nose, the cartilaginous extremity of which often becomes turned to one side. Very frequently, also, the central position of the septum deviates to one side, producing obstruction of the passage upon that side of the nose. Abnormal growths also appear in the nasal cavity, such as mucous and fibroid polypi, cartilaginous points sometimes appearing as rounded prominences and in others as long ridges projecting from the vomer, either directly outward or downward. We have frequently met cases in which nearly the whole nasal cavity was an abnormal growth of this kind. At the time of this writing we have under treatment a patient from whose nasal cavity we have, within the past few weeks, removed eight polypi, most of which were of considerable size, and obstructed the nasal passages in such a manner as to make breathing through the nose impossible.

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In many cases of catarrh, especially in those in which the disease has advanced so far as to produce abnormal growths and permanent enlargement of the structures within the nasal cavity, the disease is accompanied by an offensive odor. The breath at times becomes very foul, and the patient may be easily led to believe that extensive destruction of the tissues in the nasal cavity is taking place. This is due to the accumulation of secretions in the nasal cavity, which, on account of the numerous obstructions, cannot be thoroughly cleansed, either through the anterior or posterior openings, and in consequence of long retention the catarrhal secretions undergo decomposition, giving to the breath a peculiar and offensive odor, characteristic of this stage of the disease.

Dry Catarrh.—This state of things may continue for a few days or for a large part of a lifetime. Sooner or later, however, in the majority of cases, a still more advanced stage of the disease is reached, which is commonly known as dry catarrh. In this form of the disease, there is deficient activity of certain of the glands of the nose, due to atrophy or obstruction of the glands from long-continued pressure on account of the thickening and abnormal growths already described. There are two kinds of glands in the nasal mucous membrane, one variety producing a thick, viscid mucus, the other, a liquid serum. The latter glands are destroyed first, so that the viscid mucus, which is not sufficiently fluid to escape through the passage of the nose, adhering to the surface of the mucous membrane, quickly dries, forming scabs, which soon putrefy, and produce an exceedingly bad odor. In some cases,

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the odor of the breath is so intensely fetid as to produce loss of appetite and great impairment of the general health.

The patches of putrid mucus adhering to the mucous membrane produce excoriations, finally resulting in ulceration, which may even penetrate to the bony and cartilaginous structures of the nose, and thus occasion loss of the septum of the nose, and destruction of some of the bony prominences which project into the nasal cavity from the bones of the face. In this form of the disease, the patient usually experiences relief from some of the distressing symptoms suffered during the early stages of the malady. The obstruction to the nasal breathing is removed, and the various abnormal thickenings gradually shrink away, until the passage through the nose becomes so wide that the back of the throat can be easily seen through the nostrils. Patients of this class frequently remark that they suffered greatly with catarrh in early life, but have outgrown it, and wish treatment simply for the removal of the bad odor from the breath, to which their attention has usually been called by friends, it being generally the case that when the disease has advanced so far as in this class of cases, the sense of smell has been almost or entirely destroyed through the same destructive processes which have removed the thickening and swellings which occurred in the earlier stages of the disease.

The effects of nasal catarrh are not entirely confined to the nasal cavity. The irritating discharges dropping down into the throat occasion gradual extension of the disease into the pharynx, causing thick-

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ening of the mucous membrane of this part, hypertrophy of the tonsils, and elongation of the palate, which produces irritation of the throat, unpleasant tickling sensations, and a variety of other sensations of an unpleasant character. It also extends farther downward into the larynx, causing hoarseness and weakness of the voice, and occasionally its entire loss.

Treatment.—The treatment of nasal catarrh has afforded a rich field for quacks, and has been a source of almost infinite annoyance to physicians. It is only in recent years, and since the subject has been taken up by scientific specialists, that the disease has been managed in anything like a successful manner. We have no universal panacea. The disease is one which possesses individual peculiarities to a very large extent, and can be successfully treated only by a careful adaptation of remedies to individual cases. In the first place, we must condemn utterly the use of any of the popular catarrh specifics, inhalants, etc. These remedies are usually such as have proved successful in a few instances, and will benefit a certain proportion of cases, but are quite as likely to do harm to a larger number. The various popular nostrums advertised for the cure of catarrh are composed of substances which have been well known to the medical profession for years, and possess no such mysterious specific virtues as are attributed to them.

We shall notice the treatment of the various forms of catarrh in the same order in which they have been described, beginning with the simplest form, an acute catarrh, or “cold in the head.”

How to Treat a “Cold in the Head.”—To be successful, the treatment must be begun almost as soon

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as the cold is contracted. When an acute catarrh has already existed for two or three days, it is of no use to attempt abortive treatment, for the disease must run its course, although proper treatment will abridge the natural course of the disease, which is from three to six weeks.

If by exposure to cold air or draft while the body is in a state of perspiration, by wetting the feet, or by similar means, the circulation has been disturbed, producing sneezing, snuffles, a stuffed feeling in the head, "watering" of the eyes, and a watery discharge from the nose (the usual symptoms of coryza), the patient must at once resort to some means to restore the circulation, and produce a proper activity of the skin, so as to withdraw the excess of blood from the mucous membrane of the nasal passages. An alcohol sweat, a vapor bath, a wet-sheet pack, a Turkish or Russian bath, or even a hot full bath, or any means by which vigorous activity of the skin may be induced, will be effective.

After taking treatment of this sort, however, it should be recollected that considerable danger is incurred, since the disturbed condition of the system, which involves the nervous system as well as the circulatory apparatus, renders the person much more liable to make large accessions to the cold already contracted, than before the cold was contracted. The following plan is one well suited to home treatment:

Within an hour or two of the time the first symptoms of the cold appear, let the patient drink copiously of some hot drink, which may be simply hot water, or weak hot lemonade, or diluted infusions of catnip,

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peppermint, or almost any one of the numerous domestic remedies used for this purpose. From two to three pints of hot water should be taken in the course of an hour or two. During the water drinking, some one of the various forms of hot bath mentioned should be taken, so as to produce vigorous perspiration, which will be aided by the hot-water drinking. After the bath, the patient should immediately go to bed, covering up warm with woolen blankets, so as to continue the activity of the skin in a moderate degree for several hours. If the bath is taken at night, the patient should receive, the next morning, a salt-rub, which consists in rubbing the whole surface of the body with common salt, mixed with water to the consistency of mush.

After the rub, the body should be sponged with tepid water so as to remove the salt, and then rubbed dry. The delightful smoothness of the skin which is produced by this means will be sufficient inducement to repeat the bath at sufficiently frequent intervals to overcome the susceptibility to chilling. The body should be rubbed with olive or cocoanut oil after the bath. Vaseline may be used in the absence of anything better. When a full sweating bath cannot be taken, a thorough sweat can sometimes be produced by a hot foot bath and copious hot-water drinking, followed by a few hours in bed, wrapped in warm blankets.

The unpleasant sensation in the nose and head can be best relieved by sponging or bathing the face with hot water, applying a fomentation to the forehead or back of the head when there is pain in these parts, and snuffing up the nostrils a solution of common salt

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in water, a teaspoonful to the pint. The temperature of the water should be at least 105° or 110°, or as hot as can be borne without discomfort. When the throat is sore, a fomentation or hot sponging should be applied to the throat, to be followed by a cold throat pack to be worn all night.

When the cold has continued two or three days, so that there is a thick, yellow discharge from the nose, and dropping at the back of the throat, the treatment must be such as will be recommended for simple chronic catarrh.

Treatment of Simple Chronic Nasal Catarrh.—This is by far the most common of all forms of nasal catarrh. It is chiefly characterized by the thick, yellow discharge which necessitates the frequent blowing of the nose, and the use of the handkerchief, or clearing from the throat the thick mucous discharges which are constantly dropping into it from the back part of the nasal cavity. Either or both of these prominent symptoms may be present, according as the disease is chiefly located in the anterior or posterior part of the nasal cavity, or throughout the whole extent of the nasal mucous membrane. Other symptoms of this form of the disease which we have previously described, we do not need to recapitulate. The examination of the nasal mucous membrane by means of instruments for the purpose, shows the affected portion to be red and swollen with congestion, and covered more or less with a thick yellow discharge which is characteristic of this stage of the disease. The indications for treatment are two: (1) To cleanse the diseased mucous surfaces; and (2) To apply such remedies as will remove the

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congestion, and induce a healthy action in the mucous membrane.

Cleansing of the Nasal Cavities.— For this purpose a solution is required which will not irritate the mucous membrane, and at the same time will possess the property of dissolving the nasal mucus. Pure water will answer neither of these purposes. The fluid naturally secreted by the nasal mucous membrane is slightly saline. When pure water is injected into the nasal cavity, it is absorbed too rapidly by the mucous membrane, so that it becomes quickly swollen, producing pressure upon the sensitive nerves, thus giving pain. The addition of a small quantity of common salt or carbonate of soda increases the specific gravity of the water, giving it more nearly the character of the normal nasal fluid. The amount of salt required to produce a solution most nearly corresponding with the natural fluid, is one dram, or an even teaspoonful, to a pint of water. Both common salt and carbonate of soda, especially the latter, possess the property of dissolving with readiness the nasal mucus. Borax also possesses this property to some degree. These substances, therefore, are the proper ones for use in making the solution. The following formulæ are thoroughly satisfactory:

1. Common salt, an even teaspoonful; soft water, warm, one pint. To be used in cases in which there is only a small quantity of discharge.

2. Common salt, one-half teaspoonful; carbonate of soda, one-half teaspoonful; soft water, warm, one pint. To be used in cases in which there is an abundant discharge.

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3. We frequently add glycerine to either or both of the solutions in the proportion of an ounce to the pint of the solution.

Another very effective method for cleansing the nasal cavity, is by means of the atomizer. The atomizer produces a coarse spray with considerable force, and is best for this purpose. The spray should be directed into each nostril in various directions to insure cleansing of the entire surface, and in cases requiring it, may also be directed behind the soft palate, thus cleansing the back part of the nasal cavity also.

Having cleansed thoroughly the nasal cavity by some one of the various methods, we are now prepared to apply a medicated solution for the purpose of relieving the chronic congestion of the membrane, and inducing a more healthy action. In cases of simple catarrh, the thorough application of the cleansing solution alone is often sufficient to effect in time an entire cure.

Hay-Fever. — Dr. Morell Mackenzie writes as follows respecting the management of this very eccentric and annoying malady:

“The treatment of hay-fever is by no means satisfactory, and in no disease is the old adage, that ‘prevention is better than cure,’ more truly applicable than in the case of this complaint. If the poison be continually introduced into the system, the antidote, if one exists, can have but little chance of effecting a cure. The first measure, therefore, must be to remove the patient from a district in which there is much flowering grass. A sea voyage is probably the most perfectly satisfactory step that can be taken. Patients who are

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unable to go to sea should endeavor to reside on the coast, where they will generally be free from their troublesome complaint, except when the land-breezes blow. Dwellers in towns should avoid the country, and those who reside in the country should make a temporary stay in the limits of a large town. It often happens, however, that such a change of abode is not practicable; and under such circumstances, if the complaint be very severe, the patient should, if possible, remain indoors during the whole of the hay season. Many persons, of course, cannot keep in the house during the month or six weeks of the hay-fever period; and those who can are apt to find such detention not only irksome, but very injurious to the general health. If, therefore, a patient be obliged to go out of doors, he should plug his nostrils with cotton-wool or wadding, and should defend his eyes by wearing spectacles with large frames, accurately adapted to the circumference of the orbits. Plugging the lachrymal ducts with small glass rods has also been recommended, and Thorowgood speaks favorably of a little apparatus containing a few drops of camphorated or carbolized solution, which can be comfortably worn in the nostrils. Instead of *plugging* the nose, it has been advised to close it by compression with a little metal clip. As rapid motion in the open air almost always aggravates the complaint, it may be advantageous to wear a veil over the face while driving. One made of 'three ply' of fine silk gauze has been found very useful. It is recommended that it should be made in the form of a bag open at both ends, one end fitting round the hat, while the other has attached to it a heavy wire ring

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about ten inches in diameter, which lies on the shoulders, and keeps the veil off the face. Those who do not mind being occasionally mistaken for the 'veiled prophet of Khorassan,' will, no doubt, adopt this plan. Protected in this way, many people predisposed to hay-fever escape altogether, while others contract the affection in a very mild form."

The unhappy victim of hay-fever who has to undergo the operation of having his nose stopped with cotton-wool, his lachrymal ducts plugged with glass rods, and his eyes encased in goggles, would undoubtedly be glad to wear a veil to hide his face from the curious gaze of the cruel public, and is certainly to be pitied; nevertheless, we have seen decided advantage gained by following the suggestion to plug the nostrils with cotton and protect the eyes when riding or walking in the open air.

We would add another measure of prevention not mentioned by the distinguished writer from whom we have quoted. Our observation has been that persons who suffer the most severely with hay-fever are invariably those who are subject to catarrh during other seasons of the year, usually in a chronic form, as a result of which the mucous membrane of the nose is in a swollen and thickened condition, obstructing the nasal passages to a greater or less degree. A slight additional irritation, such as the cause of hay-fever produces, is sufficient to produce almost complete obstruction of the nose; and through reflex action, spasm of the air tubes of the lungs is produced, making breathing difficult, and often occasioning most aggravating distress.

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There are always to be found in these cases certain sensitive points in the nasal cavity which may be treated by galvano-cautery applications in such a manner as to overcome the hyper-sensitiveness which gives rise to the distressing symptoms of the disorder.

Moist Tetter, or Salt-Rheum. — This disease is essentially catarrh of the skin. Its characteristics are too well known to require description. It is a scaly disease of the skin, usually attended by intense and persistent itching. The itching is generally most thoroughly relieved by hot bathing of the parts. If the hands or feet alone are affected, they may be soaked in water as hot as can be borne, several times a day, for ten or fifteen minutes, and on removal, a little olive-oil or cocoanut-oil should be applied, so as to protect the surface from the air. Sponging the parts with water in which bicarbonate of soda has been dissolved in the proportion of one large teaspoonful to the pint of water, is a good means of affording relief. In advanced cases, in which the skin has become dry and thickened, with a tendency to crack, the use of an unguent of equal parts of zinc ointment and tar ointment is probably the most effective application which can be made. This preparation is much used in the skin hospitals of New York City and by specialists.

Warts. — Warts are due to excessive growth of the papillæ of the skin. They occur most frequently upon the hands of young persons. They are occasionally seen upon the face. The idea that warts are contagious has little foundation. Warts of the face are liable to degenerate into cancers.

Treatment. — After thoroughly oiling the skin about the wart, touch it with the end of a stick dipped in

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nitric acid. Acetic acid may also be used for the same purpose. The application should be repeated every few days until the wart is destroyed. Warts sometimes disappear very suddenly, which has given rise to the idea that they may be driven off by various maneuvers supposed to possess the power of dispersing them in a magical manner.

Granular Sore Eyelids.--This very common affection is many times the outgrowth of a feeble state of the body, and is not infrequently the result of repeated inflammation of the lids. It sometimes results from a single attack of granular conjunctivitis. It ought to be known that the disease is somewhat contagious. It is often communicated through the medium of a common towel in families and boarding-schools. It cannot be contracted, as many people suppose, by simply looking at a person suffering with sore eyes.

One of the most efficient remedies is the hot water spray applied locally, or laving the eye with hot water. The temperature should be as hot as can be borne without discomfort, the application being continued ten or fifteen minutes, and made twice a day. We have seen cured, by this treatment alone, very obstinate cases of many years' standing, which had resisted many other methods of treatment. Consult a good oculist.

Nettle Rash, or Hives.--This is a nervous affection of the skin in which blotches resembling those of the nettle-sting appear upon the surface, accompanied by itching and burning sensations. Disturbance of digestion is the usual cause. For immediate relief, bathe the parts with a solution of soda or saleratus, a teaspoonful to the pint of hot water. Simple sponging

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with hot water, or hot salt and water, a tablespoonful to the quart, is in some cases still more effective. The exciting cause must be removed to effect a permanent cure. A very excellent remedy is menthol, which should be rubbed upon the affected parts. When the eruption is general, a long neutral bath (92° to 94°) affords great relief. The addition of a pound of sal soda to the water increases the effect of the bath in allaying the itching.

Constipation.—Obstinate chronic inactivity of the bowels may be due to any one of several causes. One of the most common causes is a torpid state of the liver. In cases in which the stool is hard and dry, the immediate cause is deficiency of secretion on the part of the intestinal mucous membrane. The following suggestions will be found helpful: 1. Eat coarse food, such as cracked wheat, peas, beans, vegetables, etc. Avoid meat and condiments, tea, coffee, fats, pastry, and all unwholesome articles of food. 2. Drink two to four pints of water daily. The water should be taken an hour before the meal, and not within two hours after. 3. Wear at night a wet abdominal bandage, consisting of a towel wrung out of cold water dry enough so it will not drip, and covered with several thicknesses of dry flannel. The towel should be long enough to go around the body two or three times. It should be taken off in the morning, and the surface of the body rubbed for a while with the hand dipped in cold water. Two or three times a day knead and percuss the bowels with the hands for five or ten minutes very thoroughly.

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Boils.—A boil originates in the death of a small portion of the deep tissues of the skin, which generally involves a sweat or a sebaceous gland. Inflammation is the natural process by which the dead tissue is separated from the living. The boil first appears as a red and somewhat painful nodule in the skin, about the size of a bean or pea. Very soon a white point forms at the apex; swelling spreads about the center, usually attaining about the size of a dollar. At the end of four or five days, the central portion, marked by a white point, becomes loosened, and a discharge occurs consisting of a plug, or core, together with the matter, blood, and fragments of dead tissue. The suppuration generally ceases in three or four days.

Treatment.— Boils may often be cut short if treated early by continuous applications of ice. The best plan that can be recommended for general employment is the early application of the fomentation, by which the pain may be relieved, and the natural process hastened. When there is general discomfort, warm full baths are very advantageous.

The boil may be aborted by injecting into the center with a hypodermic syringe one or two drams of a strong solution of carbolic acid in alcohol. One part carbolic acid to nine parts of alcohol is a good solution. A little cocain may be injected first to prevent pain. This should be done by a physician.

Corns.— Corns, or callouses, on the soles of the feet are often very painful, and occasion great inconvenience. If very tender and swollen, with redness of the tissues round about, the proper remedy is rest, lying in a horizontal position, accompanied by proper use

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of poultices, until the soreness and irritation disappear. After the tenderness has subsided, a loose shoe should be worn; and to relieve the corn of pressure, apply over it a thick piece of buckskin or felt, with an opening in the middle the size of the callous. By this means, the pressure can be wholly taken off the callous, and nature will in due time effect a cure. If the skin is very thick, it may be softened by the application of compresses wet in soda-water and saccharated solutions. In a short time, the skin becomes softened, so it can be easily scraped off.

Freckles.—There are two kinds of freckles. Those which are produced by exposure to sun and wind are very superficial, and are easily removed by such substances as will remove the superficial cellular layers of the skin. Among the best remedies for this purpose are the following:

1. Three tablespoonfuls of fresh scraped horse-radish; buttermilk, a pint. Allow to soak six or eight hours, shaking occasionally. Cider vinegar is sometimes used in place of the milk. Apply to the face at night, leaving on till morning.

2. Two tablespoonfuls of lemon juice; an equal quantity of water; a tablespoonful of glycerine; a heaping teaspoonful of powdered borax. Apply three or four times a day, drying after fifteen or twenty minutes with a fluffy towel.

Oily Skin.—In some persons there is an excessive production of sebaceous matter, or sebum, due to morbid activity of the fat glands of the skin. The skin of such persons presents a shiny look. Little beads of oily matter may be seen at the mouths of the glands

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near the roots of the hairs. The forehead, nose, and cheeks are most frequently affected. When the scalp is affected, the condition may be indicated by soiling of the pillow. Acne is frequently accompanied by this condition.

Treatment.—The only treatment to be employed is the frequent application of soap. When many of the glands are clogged up, as indicated by the abundance of grubs, the surface should first be thoroughly rubbed with warm oil. Coconut or almond oil is the best. After half an hour, the surface should be rubbed with a flannel cloth, thoroughly saturated with soap moistened with warm water, and stretched over the fingers; or a soft sponge may be used. This is best done at night, just before retiring. When the secretion of fat is very profuse, the operation may be repeated two or three times a day.

Dandruff. — This is a condition in which branny scales are shed from the scalp in great abundance.

Treatment.—Restore the general health by proper attention to the digestion and general hygiene. For dandruff of the face, apply the same remedies recommended for the skin. The scalp should be treated in the same way, by gentle shampooing with ordinary washing soap, once or twice a week. A very soft brush should be used. Neither a stiff brush nor a fine comb should ever be used for removing dandruff.

An excellent remedy for dandruff is resorcin. It should be dissolved in alcohol, twenty grains of resorcin to the ounce of alcohol. This should be rubbed into the scalp freely once or twice a day.

Chilblains. — A gentleman called at our office the other day, suffering with what his physicians had

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termed eczema of the feet. The heels and sides of the feet were red and slightly swollen and exceedingly painful. The trouble began with freezing the feet several years ago, as we found by inquiry. The case was evidently one of chronic erythema, an inflammation or congestion of the skin, or what might not improperly be termed, chronic chilblains. The following treatment cured him: 1. Bathing the feet with very hot water for fifteen or twenty minutes every night. 2. After bathing the feet with hot water, rubbing well with *benzoeated zinc ointment*.

Foul and Profuse Perspiration.—Just before retiring at night, take a hot and cold foot bath, dipping the feet first in cold water, then in hot, allowing them to remain in each for about one-half minute, and repeating the operation fifteen or twenty times. Then wipe with a soft towel, and when nearly dry, rub with subnitrate of bismuth, using a large teaspoonful for each foot.

Piles.—Piles, or hemorrhoids, is a disease in which the veins of the rectum, through obstruction of the portal circulation, have become varicose. The tumors or hard bunches which protrude from the rectum are usually dilated or thickened veins, the distended walls of which frequently become so thin as to rupture, thus causing hemorrhage. This may vary in degree from a small streak of blood upon the passage to so great a quantity as to endanger the patient's life. A cure of this disorder consists in removing the cause, which may be a congested liver, producing habitual constipation of the bowels, and, in most cases, removal of the hemorrhoidal tumors by some one of the various approved methods is necessary.

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When a movement of the bowels is accompanied by very great pain, the patient will experience great relief by sitting over a vessel filled with very hot water, the steam arising from it causing the irritated parts to become relaxed. Take a hot sitz bath, temperature 104° F. Take a hot enema when the bowels move, temperature 105° to 110°, and repeat the enema after the movement of the bowels. The sitz bath and the enema may be repeated two or three times a day. When there is much bleeding, the use of a decoction of hamamelis, or witch-hazel, made by adding one ounce of the fluid extract to a pint of water, is beneficial. One-fourth pint of this decoction should be used by enema after each movement of the bowels, and at night just before retiring. The local application of a cold compress is a useful measure not to be neglected. Of the various ointments recommended for use, an ointment composed of fl. ex. hamamelis one part and vaseline three parts, is one of the most useful. Subsulphate of iron is also a good astringent for use in these cases. It may be applied as an ointment, twelve grains to the ounce of vaseline. Use twice a day. In bad cases the patient must remain in a horizontal position until the hemorrhage is permanently controlled, or for at least half an hour after each movement of the bowels. Such cases require a surgical operation for a radical cure.

Red Nose.— This very annoying affection, which is usually, but not always, the result of the free use of alcoholic liquors, or indulgence in excesses of eating, may usually be relieved by very simple treatment if thoroughly carried out. The treatment consists in bathing the face and nose with water as hot as can be

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borne for five minutes three times a day. Once in two or three days the nose should be painted with two or three coats of flexible collodion, which will at once, by contraction, compress the dilated blood-vessels, and remove the red color. The only objection to the use of collodion is that it gives the nose the appearance of having been varnished, but one who is really desirous of being relieved of this source of annoyance, will be willing to put up with this slight inconvenience for a few weeks.

Baldness. - If the scalp is smooth and shiny, no remedy will be of any service. If small, fine hairs are present, improvement may be secured by the employment of such means as will stimulate the hair follicles. The best of all stimulants is bathing of the head every day with cold water, accompanied by gentle friction, as rubbing with the ends of the fingers until the scalp is red, and gently brushing with a soft brush. The application of the actinic rays of the sun is found to be one of the most effective means of curing baldness. In a case recently treated at the Battle Creek Sanitarium, a man whose scalp was bald, in the course of a few weeks found himself raising a fine crop of new hair as a result of the application of this remedy.

Acne, or Pimples. This disorder is indicative of a general lowering of the vital resistance. It is often associated with indigestion. The general health should be built up by means of cold water bathing. The affected parts should be bathed with very hot water for five minutes two or three times daily. A small sponge is a very convenient means of making the application. The sponge should be dipped in very hot water

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and applied to the affected parts of the face, treating two or three pimples at a time successively, going over the whole surface. The disuse of animal fats is often necessary. The application of the actinic light rays by means of suitable apparatus is an excellent method of treating this difficulty. The skin is at first tanned, afterward develops a fine, healthy condition.

Sleeplessness. — This most annoying and exhausting symptom may be greatly relieved by attention to the following suggestions:

1. Retire early, having taken, an hour or so before, sufficient muscular exercise to induce slight weariness.

2. Eat nothing within four hours of bedtime. If "faint" at the stomach, drink half a glass of hot lemonade. If this does not suffice, a mellow, sweet, or sub-acid apple may be taken an hour before retiring, unless fruit occasions pain or acidity.

3. If feverish, the skin being hot and dry, take a light hand bath with tepid water upon retiring.

4. If troubled with cold feet and hands, employ the means suggested for the cure of cold feet.

5. Sleep in a cool room, but take care to see that the bedding is well aired and dry, and the room well ventilated.

6. When nervousness causes loss of sleep, there are various methods of inducing slumber, one of the most efficient being slow, deep, and steady breathing. By this means the lungs are filled with blood, and the brain is thus relieved of the congestion which causes wakefulness.

7. The neutral bath is the most effective means of promoting sleep. The temperature of the bath should

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be 92° to 95°. The bath should be taken at bedtime. The patient lies in the bath until he becomes sleepy; then drying himself quickly and with as little exertion as possible, he goes directly to bed. In extreme cases the patient should be allowed to fall asleep in the bath. The wet-sheet pack may be used instead of the full bath when the latter is not available. The wet sheet should be wrung out of cold water as dry as possible. Care should be taken not to cover the patient too warmly. Covering should be just sufficient to make the patient comfortable, without inducing perspiration.

Heart - Burn.—A teaspoonful of wheat charcoal, taken immediately after a meal, is an excellent non-medicinal remedy for this uncomfortable derangement of digestion. Thorough mastication of the food is a measure of primary importance. Food should be chewed at least four or five times as long as usual. Tea, coffee, cold water, and other drinks should be avoided at mealtime.

Ivy Poisoning.—The susceptibility of poisoning by poison-oak seems to be due in a large degree to a sort of idiosyncrasy. Very few persons are likely to be poisoned unless they come in immediate contact with it. The result of poisoning with this plant is an inflammation of the skin, which in some cases is very violent. The best remedy in such an attack is application of cloths wet in cold water, or iced lime-water. Alternate hot and cold sponging of the part is frequently effective. The patient should drink a quantity of hot water, which is useful in producing perspiration, and this should be followed by a wet-sheet pack or vapor bath. Sponging of the parts alternately with

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hot and cold water is of use in removing the swelling after the acuteness of the attack is passed.

Writer's Cramp. — *Symptoms* : Fatigue and a sense of insecurity in the arm and hand ; patient grasps his pen too firmly ; fingers seem clumsy ; pen jerked up and down by twitching of the muscles of the hand and arm

Treatment.— In many cases, absolute rest of the affected muscles is necessary. This frequently necessitates a change of occupation. Every possible attention should be given to improvement of the general health. The application of galvanism to the affected muscles is an effective remedy in many cases. Hot sponging, alternate hot and cold applications, and massage are also of use. Some patients obtain the needed relief of the affected part by learning to write with the other hand ; but, unfortunately, in many cases this also becomes affected. Some relief from the disagreeable jerking may be obtained by the use of quill or stub pens. Fastening a sponge to the penholder at the point at which it is held is sometimes beneficial. Some persons find relief to a considerable degree by grasping the pen between the first and second fingers, instead of between the thumb and forefinger.

The most recent, and apparently the most successful, method of treating writer's cramp is by means of massage. This is applied in various ways, according to the indications of each particular case.

Varicose Veins.—This is a condition in which the veins are greatly dilated, and become tortuous in their course. It is occasioned by occupations which require

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long standing upon the feet, by constipation, and especially, in women, by pregnancy.

Treatment. — The inconveniences of this disease may be greatly lessened by the use of the elastic silk stocking or the elastic bandage. The bandage should be applied from the toes to above the affected part. It should be wound smoothly and with even pressure. Little pressure is required, as the natural swelling of the limb in standing will produce all the tension necessary, although a very slight pressure may be employed in the application of the bandage with the limb in a horizontal position. The patient should take care to keep the affected limb horizontal or slightly elevated as much as possible, so as to encourage the flow of the blood toward the heart. Sometimes the dilatation of the vein becomes so great that rupture occurs. In case of such an accident, the patient should at once elevate his limb as high as possible, and place a small roll of cloth, as a folded pocket handkerchief, over the point of the rupture, applying strong pressure over the compress. Recent improvements in surgery render it possible to effect a radical cure of this disease by antiseptic ligation.

Nosebleed. — Here are a few of the best remedies for this very common and sometimes dangerous affection:

1. Have the patient raise both arms above the head. This will cause contraction of the blood-vessels in the arms, and simultaneously in the mucous lining of the nasal cavity. In mild cases, this remedy will uniformly succeed with promptness. A dry handkerchief should be held to the nose in the meantime.

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2. Administer a nasal douche with a hot solution of common salt. Dissolve a tablespoonful of salt in a quart of water at a temperature of 130°, and administer with a fountain syringe, inserting the nozzle of the syringe in the nostril which does not bleed, and allowing it to run out of the other.

Pinching the nose, seizing it as close to the cheek bones as possible, and pressing firmly for ten to fifteen minutes will often effect a cure.

Ear Discharge. — Cleanse the ear by means of a douche administered with a fountain syringe, allowing the fountain to hang only a few inches above the head. After the ear is thoroughly cleansed, carefully dry the canal by means of small bits of absorbent cotton wound about the end of a wooden toothpick. Then fill the canal quite full with powdered boracic acid. Repeat this every other day. A few weeks' treatment will usually effect a cure, even in the most obstinate cases.

Burning Feet.— Bathe the feet night and morning with tepid water, to which a little soap has been added. When nearly dry, dust freely over them a powder composed of one part of salicylic acid and sixteen parts of powdered alum. If the burning is especially troublesome at night, dip in hot water for fifteen minutes before applying the powder. A jug filled with cold water is a good palliative.

Sunstroke and Heat Exhaustion.—When a person is suffering with sunstroke, the face is red, the temples are throbbing, and the skin is hot. The proper treatment is to immediately put the patient in a cold bath if possible, or douse him with cold water. Pouring

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cold water on the head and over the body is a means which should be employed, if a well is near. The body should be vigorously rubbed at the same time. No time should be lost in applying this important measure of treatment.

Heat exhaustion is a condition very different from sunstroke. The surface is likely to be cool instead of hot, and the patient requires hot applications instead of cold. He should be put into a hot bath, or have fomentations applied to the head and spine, while the body is sponged with hot water.

Bruises.—A bruise should be treated immediately by fomentations. Afterward apply the heating compress consisting of a towel wrung dry out of cold water, applied over the part and covered with several thick folds of flannel, so as to secure immediate warming. This compress should be left on for three or four hours. Then the fomentations should be applied. This treatment should be repeated several times daily. In this way the discoloration of the skin can be almost entirely prevented, and often wholly.

Burns and Scalds. - Protect the injured part from the air by covering with oil or vaseline, or equal parts of oil and lime-water. The most effective means of relieving the suffering from burns, is by immersion in water at a temperature about that of the body. At the Royal hospital in Vienna, patients are frequently kept in baths with the whole body immersed for several months. The new skin forms very readily under this treatment, and great comfort is afforded the patient. The bath temperature must be slightly below that of the body, and must be changed two or three

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times a day. Cloths wrung out of cold water frequently changed or kept cool by sprinkling cold water upon the parts, or allowing the water to drip from a vessel suitably arranged, constitutes one of the most effective means of relieving the pain of a severe burn in which the skin has not been broken. When the skin is not broken, dry carbonate of soda may be spread over the parts and covered with a cloth, or the surface may be painted with a saturated solution of picric acid. The application should be repeated several times daily.

Sprains. — Give the parts rest at once, and apply very hot fomentations. If the part becomes swollen and hot, apply the fomentations every two hours, and wrap the affected joint and the adjacent portions of the limb with cloths wrung out of cold water. The cloths should be large enough to extend six or seven inches either side of the joint. The cloths should be renewed as soon as they become slightly warmed, or as often as every five or six minutes. For more effective cooling, a small stream of cold water may be allowed to trickle upon the parts, the water being caught in some suitable receptacle placed beneath the limb. After the first twenty-four hours, fomentations should be applied three times a day, and the heating compress should be applied during the intervals. This consists of a towel, or several thicknesses of cheese-cloth wrung dry out of cold water, wrapped about the affected parts, and thickly covered with flannel, so that reaction and warming will occur quickly. After the third day the joint should be carefully moved, and the muscles above and below the joint should be lubricated with vaseline

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and rubbed in the direction of the heart. Very gentle rubbing may also be applied to the joint itself. Each day the amount and the vigor of the rubbing may be increased. Care should be taken to avoid procuring a lasting pain in the joint. The effect of the treatment should be to afford relief.

Muscular Strains. — If the muscles have been strained by too heavy lifting or too violent exercise, take a hot bath, or sponge the parts with hot water, and give the overworked parts entire rest until all soreness is gone. After the hot application a heating compress should be applied, to be well covered with mackintosh and dry flannel. This should remain in place until the next hot application. The heating compress consists of a towel or napkin wrung dry out of very cold water, covered with flannel or mackintosh, so as to secure the needed warming.

THE RUM FAMILY

NO greater calamity can befall a quiet, peaceful community than to have a bad family move into it. But no neighborhood ever suffered more from the bad influence of a family of wicked persons than from the effects invariably produced in any city or village by the advent of the rum family, with its numerous progeny of vices, irregularities, and crimes. We propose to devote this chapter to a consideration of the leading traits and characteristics of the rum family, and to make our readers sufficiently well acquainted with the various members of the family to convince them that they are all unsafe associates for young men, or indeed for any one who wishes to maintain his self-respect, and his standing as a useful member of society.

The original alcohol family contains half a dozen or more members, some of whom, although naturally inclined to evil, have become useful members of society; while others have been the means of a vast deal of harm. The four best known to the public have been supplied with names by the chemist, to distinguish them from one another, and are known as *methylic* alcohol, *ethylic* alcohol, *amylic* alcohol, and *butylic* alcohol.

The first of these, methylic alcohol, is commonly known as naphtha. Methylic alcohol, or wood naphtha,

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is derived from the distillation of wood. It produces intoxication very quickly when drunk; but its effects are very transient, owing to its great volatility. It is not often used as an intoxicant, but has been so employed by persons of peculiar taste, or confirmed inebriates who were prevented from obtaining their customary allowance of grog. The author once had a patient who on several occasions swallowed half a pint of naphtha, when brandy or whisky could not be obtained.

Ethylie alcohol, or wine spirit, is the intoxicating element of spirituous liquors, and is obtained by the distillation of fermented liquids. The most common form in which it is used as a beverage is in brandy, whisky, beer, wine, etc. It is seldom found pure in commerce, being usually mixed with water. This variety of alcohol is more intoxicating in its effects and more injurious to the vital tissues than the preceding.

Butylic alcohol is generally obtained by the fermentation of the beet root. It is also, perhaps, produced in the fermentation which occurs in butter and cheese when they become old and rancid, since these substances contain an acid known as butyric acid, which is derived from this kind of alcohol. It is this which gives to frowy or rancid butter and very old cheese their peculiar flavor. This member of the family is still more active in intoxicating properties than those already mentioned, producing an intoxication which is very slowly recovered from, and in which there is very low prostration, trembling of the muscles, and severe coldness.

Amylic alcohol, or fusel-oil, is produced by the fermentation of potatoes, and also, to some extent, by the

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fermentation of grains and fruits. It has a burning taste and pungent odor, and is the characteristic constituent of bad whisky. A few drops of fusel-oil will produce as profound an intoxication as a considerable quantity of ordinary alcohol, which accounts for the infuriating and deadly effects of bad whisky, as well as its rapidly fatal effects, as often seen among miners, negroes, and Indians. The deadly effects of cheap rum from the West Indies have become so manifest in some of the South Sea Islands, controlled by the English government, that it has become necessary to prohibit its introduction.

There are several other alcohols closely allied to those mentioned, and with similar properties, besides numerous other compounds which are classed by chemists in the "alcohol series," among which are the well-known substances, carbolic acid and creosote, the caustic and poisonous properties of which are too well known to require other than mere mention. If not own brothers, these compounds are at least cousins of "the demon of the cup."

Intoxication.— Each member of the alcohol family is capable of producing poisonous or intoxicating effects. In fact, they are all poisons, the effects of which have been termed *intoxication*, although the word "intoxication," when strictly used, means simply poisoning, and is properly applied to the condition of the system when laboring under the influence of any poison whatever. This use of the word is not very common in our language, although in the German language it is frequently so employed.

The Properties of Alcohol.— Perhaps the reader will be interested in the following remarks made by

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the author in a lecture at a temperance convocation a few years ago:

Here is a test for alcohol: If you drop a little of this fluid into any substance containing alcohol, there will appear a very marked greenish color. Here is a glass vessel containing alcohol. I put a little of the test into it, and there is at once a perceptible change of color. Here is a vessel containing brandy. I need not tell you that it contains alcohol, for you see that the application of the test shows it at once. In the same way I will test the liquid contained in these other vessels, which are whisky, ale, gin, and hard cider. You see that the green color is very deep in each one. Here is some beer. I drop in a little of the test, and you see at once a green tinge spreading through the foam that rises up in the tube, and also gathering at the bottom. This is presumptive proof that there is alcohol in beer.

Poison in Bitters.—I have some other things here that I propose to test. There are a number of good people in the world who would not think of touching a drop of gin or whisky, but who do not have the slightest objection to taking a glass of bitters every morning. They will recommend you to take a little bitters for your stomach's sake. Here is a bottle of Hostetter's Stomach Bitters. I pour a little of it into this tube, and apply the test. You see how green it turns. It has almost as much alcohol in it as Scotch Whisky. Look at this sample of Jamaica Ginger. I put in only a few drops of the test, and it turns as green as the gin. It has just enough ginger in it to flavor the alcohol.

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Here we have a bottle of "Temperance Bitters," or at least what is advertised as such. This is Dr. Walker's California Vinegar Bitters. The proprietor is taking an active part in the temperance work on the Pacific Coast. He is one of the most zealous advocates of temperance in the State, and publishes a temperance almanac to advertise his "bitters," which he declares contain no alcohol. Let me read you what is printed on the paper that goes around the bottle: "Dr. J. Walker's California Vegetable Vinegar Bitters, the Great Blood Purifier and Life-giving Principle. A remedy for dyspepsia, indigestion, consumption, sore eyes, stomach-ache, fits, palpitation of the heart, biliousness, etc., etc., tape, pin and other worms. No alcohol enters into the composition of the bitters. That curse is not offered for medicine. Nothing but invigorating and purifying herbs give them their wonderful powers to cure." In order to determine the amount of alcohol contained in a bottle of the bitters, I had half a bottle distilled by the chemist, and in this flask you see the product of the distillation. By means of the alcoholometer, it has been found to contain twenty per cent of alcohol. Now we apply the test. There is as beautiful a green as you could desire to see. I will guarantee this bottle of bitters to contain five per cent of alcohol.

Fire-Water.—Now let me call your attention to some of the physical properties of alcohol. It is combustible, as you all know. I will touch a match to some of this Jamaica Ginger. See how it flames up. It continues to burn as I pour it from one vessel to another. How evidently appropriate is the Indian's name for alcohol—"fire-water"!

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In addition to this, alcohol is a *desiccant*, that is, it is drying in its character. I have been using some of it as a drier. I put this piece of steak into alcohol a few days ago, and I think it would now answer very well as a tap for a boot. After a few weeks, it will become so dry that I could rub it in pieces with my fingers.

An Alcohol Omelet.—This egg which I hold in my hand is the representative of an animal. The complete fowl is not here. If you place it under the proper conditions, that is, if you simply keep it warm,—you know we have artificial “mothers” nowadays,—it will develop into a full-fledged chicken. We can take the effect of alcohol upon this egg as a sample of what it will do to the human body. As I break the egg into a vessel containing whisky, you see that it turns white, and it will soon become as hard as though it were dropped into boiling water. If the vessel had contained pure alcohol, it would become so hard in a short time that I could turn the vessel upside down without spilling out the egg. Alcohol has the same drying and hardening effect upon the human body. The liver, the heart, and in fact the whole body, is made up principally of albumen and fibrin, the substances which compose the egg.

A Human Pickle.—Besides its drying properties, alcohol is also an antiseptic; that is, it possesses the property of preventing decay in perishable substances. Some one may say that if alcohol prevents decay, it ought to be valuable in preventing the decay and death of the human body. In fact, a young man once told me that his grandfather had taken, during his life, a

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hogshead of Jamaica rum, and he was sure that it had been the means of preserving him to a good old age.

During the Centennial year, while I was in Wilmington, Delaware, I heard of a man who was one hundred and seventeen years old on the fourth of July. I was paying a good deal of attention to the subject of hygiene just at that time, and I thought perhaps he had lived so long because he was temperate in his habits. Upon inquiry, however, I found that he was an inveterate smoker, and that for a hundred years he had taken his toddy regularly. This was quite a disappointment, but I resolved to see him, nevertheless. When I found him, I thought that whisky had not done so much for him after all. He hardly looked like a human being, he was so dried and shriveled up. He looked like some of those strange creatures that Stanley saw in Africa. After seeing him, I came to the conclusion that he was a human pickle. He had been pickled by the use of alcohol, and had in reality been dead for the last thirty or forty years, though his friends had neglected to bury him.

It is through its antiseptic properties that alcohol interferes with the process of digestion. The process of digestion is in some respects similar to that of fermentation. If you keep meat in alcohol, it will never decay. If, therefore, you take alcohol into the stomach after each meal, you will interfere with the process of digestion which is going on there, and will in time seriously impair the digestive functions of the stomach. Alcohol also destroys the pepsin of the gastric juice.

The Whisky Breath.—In the next place, alcohol is volatile. Many who use whisky wish it were not;

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for it is this property which enables any one to detect a man who has been drinking, by the odor of his breath. This is the reason why some people carry cloves and things of that sort in their pockets to chew on frequent occasions.

Alcohol an Irritant.—That alcohol is an irritant, may be readily shown by placing a drop of it in the eye. I recently had a patient who was suffering with a disease of the eye, for which I prescribed a solution of atropia to be placed in the eye. The druggist used a solution of atropia in alcohol for making the lotion, and the effect on the eye of the patient was so irritating that she came very near losing it, although the solution contained not more than ten drops of alcohol to the ounce. If, then, it is irritating on the outside, how much more dangerous must be its effect on the inside, when it comes in contact with those delicate little cells which do our thinking and feeling for us, and perform all the work of the body.

How Alcohol Stimulates.—Alcohol is often called a stimulant, and so it is, if we use the word in its proper sense. A stimulant is well defined by an English physician as “something that gets strength out of a man instead of putting it into him.” There is a general idea that drinking whisky makes a man stronger; but this is a mistake. A whip is a stimulant to a tired horse; it makes him go faster, but it does not make him any stronger. This is precisely the effect that alcohol has upon the human body. Experiments show that a man is actually weaker, that he cannot lift so much after he has taken a drink of liquor as he could before. A man who has just had a glass of

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whisky feels as though he could run faster, lift more, or make a better speech, than he ever did before in his life; but the fact is that both his muscular and mental powers have been impaired. The feeling of strength is apparent, not real.

Let us now notice a few of the arguments against the use of alcohol, which scientific research has developed:

1. Alcohol a Poison of Plants.—Vital properties are pretty much the same in a general way, whether manifested by a mushroom or a man; and any substance which will destroy the life of a plant is not likely to be wholesome to human beings. If a plant be watered with a solution of alcohol, its leaves soon wither, turn yellow, and the plant dies, even when the proportion of alcohol is as small as one part in one thousand parts of water.

2. Alcohol a Poison to Animals.—A tadpole, when dropped into a vessel containing alcohol, dies in a minute. Leeches and other small animals succumb in like manner.

A New York journal recently reported a series of experiments by a French physician on the influence of alcoholic liquors on fowls, as follows:

“He administered to them brandy and absinthe, and found one and all to take so kindly to their unwonted stimulants that he was forced to limit each bird to a daily allowance of six cubic centimeters of spirits, or twelve of wine. There was an extraordinary development of cocks’ crests, and a rapid and general loss of flesh. The experiments were continued until it appeared that two months’ absinthe-drinking suf-

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ficed to kill the strongest cock or hen; while the brandy-drinkers lived four months and a half, and the wine-bibbers held on for ten months before they died the drunkard's death."

Drunken Goats.—Some Pennsylvania beer-sellers tried the effects of beer upon a goat. Whether the experiment was for the purpose of determining the quality of the beer or the constitutional toughness of the goat, is not recorded; but the result was fatal to the goat, notwithstanding the hardihood for which he is proverbial. Just how many glasses were required to extinguish him is not mentioned; but he died, and the high quality of the beer was established beyond the possibility of cavil.

But this is not the end of the story. The Humane Society heard of the proceeding, and immediately began an action against the beer-venders for cruelty to animals. The action was undoubtedly justifiable; but it is a matter of wonderment that the same lawmakers who have made it an offense to kill goats with beer, have never once thought of its being a crime to kill human beings by the same means, although there are millions of human beings sacrificed in this way, to one goat. It is to be hoped that the question of prohibition will be agitated until human beings are at least as well protected as goats.

Swine Topers.—The eminent Dr. Dujardin-Beaumont, of Paris, has been engaged for some years in conducting experiments to ascertain the effect of alcohol upon various animals, chiefly pigs, and finds it to be uniformly that of a poison. A brilliant writer wittily says, "If lower animals were addicted to the drug

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to one-tenth the degree man is, in a short time there would not remain upon the face of the earth an animal which would be tamable, workable, or eatable.”

3. Alcohol a Poison to Human Beings.—Notwithstanding the apparent impunity with which diluted alcohol in the form of various liquors may be taken, pure alcohol is rapidly and certainly fatal when taken into the stomach without dilution. Cases of instant death from drinking a considerable quantity of strong liquor have often been recorded; and numerous instances of death from this cause are constantly occurring in every large city. As we shall show hereafter, alcohol in every form is still a poison, the rapidity of its effects being largely determined by the degree of dilution in which it is introduced into the system.

4. Alcohol an Irritant.—The irritating effects of alcohol are readily observed by placing a drop upon a raw surface. Even a very dilute solution will produce intense suffering. Still more profound, though for a time less irritating, effects are produced when the alcohol is absorbed into the system, and comes in immediate contact with the delicate internal structures of the body.

5. Alcohol a Narcotic.—Its first effects are exciting; but like most substances of similar nature, its secondary and more prominent effect is that of a narcotic. It benumbs the sensibilities. If a man is exhausted, it relieves the sense of fatigue by obtunding his senses, not by replenishing his wasted energy. Persons who have died from an overdose of alcohol, present all the indications of narcotic poisoning.

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6. Alcohol an Anesthetic. — A tablespoonful of strong alcohol, held in the mouth for two or three minutes, will obtund the sense of taste so as to render a person unable to distinguish sweet from sour, saline from bitter. If taken in a sufficient quantity, it will relieve the sense of pain sufficiently to enable a surgeon to perform an operation with little or no suffering on the part of the patient. A few years ago we employed it successfully as an anesthetic to enable us to perform an operation upon the eyes. The patient, a lady, asserted that she felt scarcely any pain, although the operation involved the most sensitive portions of the eye, and required fully half an hour for its performance, as both eyes were operated upon.

7. Alcohol Not a Food. — The aristocratic toper, who wishes to give an air of respectability to his vice, will claim that alcohol is a food. He will cite, in proof, instances in which persons have lived for weeks by the aid of no other nutriment, taking nothing but alcohol and water. This semblance of argument scarcely needs exposure; for the most it can be claimed to prove is the fact that persons have lived several weeks while taking only alcohol and water. The fact that individuals have in several instances been known to live from thirty to sixty days while taking only water, shows conclusively that those who survived a shorter time on brandy and water, lived in spite of the alcohol instead of by its aid.

8. Alcohol Makes Bad Blood. — Those who have maintained that alcohol is a food, have made many experiments for the purpose of establishing their theory upon scientific grounds. By these experiments,

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it has been found that the urine and other excretions contain less of the worn-out material of the tissues when a person is using alcohol than when he is abstaining. From this alone it is concluded that alcohol prevents the wearing out, or disintegration, of tissue,— a most astonishing conclusion. No one but a man stoutly prejudiced in favor of alcohol would think of forming such a conclusion. A far more rational deduction from the premises would be that the presence of alcohol in the system prevents the excretory organs from eliminating from the body the dead and poisonous products which result from the wearing out of the tissues.

It is on account of this impure state of the system that the flesh of spirit drinkers is notoriously so difficult to heal in cases of wounds or surgical operations.

9. Alcohol Destroys the Blood.—When this fiery drug is taken into the stomach, it is soon absorbed into the circulation, where it comes in contact with the corpuscles of the blood. The effect upon these delicate and important structures we can study by applying alcohol to the blood outside of the body; for the corpuscles will retain their life and activity for a time after being removed from the body, if placed under proper conditions. To make sure of no mistake about this matter, we will perform the experiment while we write. Our microscope, which will magnify one million times, being in readiness, we thrust a needle into the finger, and thus obtain a tiny drop of blood. Placing it upon a glass-slide, we adjust it upon the instrument, and look at it. Although the film of blood in view is so thin as to be transparent, it is crowded with beautiful bi-

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concave discs, the red blood corpuscles, each of which is perfectly formed, though only one thirty-five hundredth of an inch in diameter. Now we apply a drop of alcohol, a very tiny drop. Mark the effect. No sooner does it touch these little bodies, than they begin to shrink, and soon lose all resemblance to their natural appearance. In a short time they can be seen breaking up into fragments; and in five minutes from the commencement of the experiment, the once beautiful and symmetrical bodies which compose one-half of the blood, are reduced to broken fragments and shapeless masses. They have been fairly cut in pieces and eaten up by the alcohol.

Rum Choking.—“But what harm does this do?” says the toper or the moderate drinker. “The loss of a few blood corpuscles cannot be of any great consequence.” The ultimate effects are the same as though the supply of air were cut off from the lungs by a cord tightly drawn around the neck. The business of the red corpuscles is to carry oxygen from the lungs to the tissues. If they are destroyed, oxygen cannot be carried in sufficient amount, and the blood becomes foul, being charged with large quantities of carbonic acid, a poisonous substance which ought to be replaced by oxygen. One of the quickest ways of destroying life now known, is to cause an animal to inhale a poisonous gas known as carbonous oxide, which has the effect to paralyze all the blood corpuscles. Alcohol does the same thing just in proportion to the quantity taken.

10. Alcoholic Degeneration.—In addition to its effects upon the corpuscles, alcohol produces other

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serious changes. One of the most important of these is coagulation, or thickening of the fibrin of the blood, occasioning the formation of little clots, which are swept along in the blood current until they reach the finest capillaries, where they are lodged, thus obstructing the circulation, and, according to the eminent Professor Carpenter, of England, constituting the first beginning of organic disease of the nerve centers and other important organs. These minute clots are often the cause of boils and other troublesome abscesses; and when they become enlarged, as they sometimes do, they may produce instant death by the plugging up of a large artery in the brain,—an accident which there is every reason to believe is not uncommon in cases in which large quantities of alcoholic spirits are taken.

Alcohol also greatly increases the amount of fat in the blood, probably by preventing the changes necessary to complete digestion or assimilation of the fat. In consequence of this surplus of free fat in the blood, fatty degeneration of the heart, blood-vessels, liver, kidneys, and in fact of every part of the body, is induced, the fat particles being deposited in these various organs in place of their proper tissue.

It may further be objected that these changes do not occur unless very large quantities of alcohol are used. This, again, is an error. Dr. Carpenter is authority for the assertion that the changes in the corpuscles and the fibrin of the blood take place when not more than one part of alcohol to five hundred of blood is employed. Thus it will be seen that the very weakest wines are unsafe, since none of them contain

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less than three to five per cent. Even small beer would be capable of doing mischief in this way.

11. A Drunkard's Heart.—When alcohol is taken into the blood, it soon comes in contact with the nerve centers which govern the action of the heart. Its effects are the same as upon the other nerve centers. It paralyzes them, just as chloroform does the brain. Then the heart is like a steam-engine without a governor, or a clock from which the pendulum weight has been removed. It runs down with wonderful rapidity. This effect is largely due, also, to the influence of alcohol upon the small blood-vessels; the nerves which control them becoming paralyzed, they become dilated or relaxed, and so afford less resistance to the action of the heart, allowing it to beat too rapidly. This increased action is most unfortunately mistaken for increase in strength on the part of the organ, when it is mere increase of action—wasted force. The amount of extra work done by the heart under the influence of liquor may be readily estimated. Dr. Parkes, by a series of careful experiments, found that the pulse of a man whose heart beat about seventy-four times a minute, or 106,560 times in twenty-four hours, when drinking only water, was, when under the influence of one ounce of alcohol per day, compelled to beat 430 times more in a day. Two ounces of alcohol per day caused an increase of 1,872 beats a day. Four ounces required 12,960 extra beats a day. Six ounces drove the pulse up to 18,432 extra beats; and eight ounces, to 25,488 unnecessary beats, or nearly one quarter more than when taking only water.

A Topper's Pulse.—The pulse of a toper is characteristic. It is weak, frequent, easily quickened. even

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by very slight exercise, and very irregular. Alcohol has a directly depressing influence upon the heart, diminishing its power for work, and rendering it subject to both functional and organic disease.

12. The Whisky Flush.—The local blood supply of the body is regulated by means of special nerves, which follow the blood-vessels from the heart to their minutest distribution. One of the effects of alcohol is to paralyze the centers in which these nerves originate, which renders the vessels unnaturally dilated, allowing too much blood to enter various parts, thus occasioning congestion and even inflammation. In this way the lungs, liver, heart, or any other portion of the body, may become diseased. It is this which causes the drunkard's face to flush; and not only the face, but the whole body—the brain, the liver, every vital organ—is in the same state of congestion. Is it any wonder that the toper feels depressed and enervated, and in need of a “pick me up” the next morning after a debauch? or that he falls so easy a victim to causes of disease which others escape? It was long ago observed that drunkards are the favorite victims of cholera, the plague, sun-stroke, and other causes of speedy death. The system is prepared, by the paralyzing influence of the drug, for almost any form of disease to which human flesh is heir.

13. A Toddy Blossom.—One of the signs of intemperance, which its victims put forth the most strenuous efforts to suppress, is that peculiar enlargement of the nose, with intense redness, so appropriately termed the “rum blossom.” The effect of alcohol is to paralyze the nerves of the blood-vessels; and when



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its frequent use occasions the almost constant paralysis and engorgement of the blood-vessels of the face and nose, more particularly the latter, it grows too fast, and by this means may acquire enormous size.

14. The Drunkard's Brain.—The brain, when it is healthy, is so soft that it would scarcely retain its shape if it were not for the skull. The sharpest knife is required to cut it without mangling its structure. It is necessary to immerse the organ in alcohol for weeks, in order to harden it, when a microscopic examination is necessary. But a drunkard's brain is already hardened. A celebrated anatomist declared that he could tell a drunkard's brain in the dark, by the sense of touch alone.

It must not be supposed that every drunkard's brain is as hard as a pickled one; but it may be fairly supposed that the hardening effect of alcohol has no little influence in the production of degenerations of the brain, such as result in various forms of progressive paralysis. Numerous functional disorders of this organ are also traceable directly to the habitual use of alcoholic liquors. Locomotor ataxia, an almost hopeless malady, involving the brain and spinal cord, is very often the result of intemperance.

Recent experiments have shown that even moderate doses of alcohol produce changes in the nerve cells of the frame. The delicate filaments by which cells connect with one another become shrunken, thus making it impossible for them to make the proper contact. They become changed in form so that they make wrong contacts, just as sometimes happens in a telephone or electric-lighting system when the wires are broken, thus

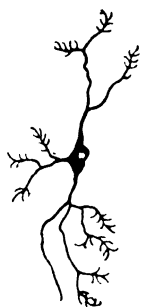
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shutting off lights and breaking communication and forming connections which may be dangerous and in the highest degree undesirable. The accompanying illustration shows the appearance of some of these nerve cells damaged by alcohol. The experimenter found that this effect is produced immediately, and lasts for some days, so that when a person is under the influence of alcohol, even though he may not have taken a very large dose, his nerve cells are in a damaged and injured state. When this injury is frequently repeated, the damage becomes permanent. It is in this way that paralysis, insanity, and various other nervous disorders which are characteristic of the effects of alcohol are produced.

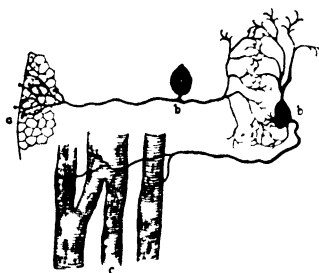
15. Alcoholic Apoplexy.—The intense congestion of the brain induced by alcohol is the very condition in which apoplexy, or rupture of a blood-vessel, is most likely to occur. When the walls of the arteries have been weakened by fatty degeneration, the danger is increased many fold.

It has been claimed that old persons require alcohol on account of the diminished activity of their vital functions. The fact above stated shows clearly that in old age the danger from the use of alcoholic liquors is greatly increased.

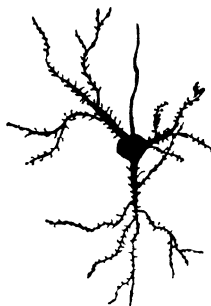
16. Alcoholized Nerves.—Who has not observed the trembling, unsteady hand of the man who has long been accustomed to the use of alcoholic liquors? Often his shaking hand deposits a share of the poisonous dram upon the ground. If he is a mechanic, he cannot resume his work without a strong toddy “to steady his hand;” if an accountant, he must have a glass to



A NEURON,
OR NERVE-CELL



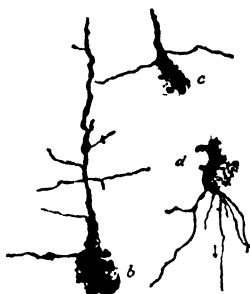
(a) SKIN
(b) NERVE-CELLS
(c) MUSCLE



NORMAL NERVE CELL SHOW-
ING POINTS OF CONTACT



NERVE-CELL IN ACUTE
ALCOHOLISM



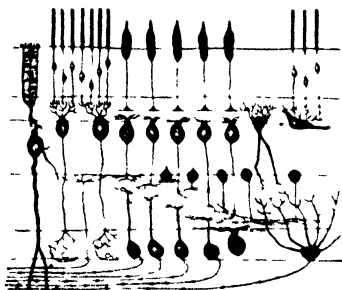
APPEARANCE OF NERVE-CELL
IN CHRONIC ALCOHOLISM



CONTRACTED
NERVE-CELLS
CONTACT BROKEN



A PURKINJE'S CELL



NERVE CELLS OF THE RETINA

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“clear his head.” This condition, at first temporary, finally becomes permanent, and thus hopeless disease may originate.

17. The Drunkard's Stomach.—We have endeavored to illustrate by colored plates the contrast between a healthy stomach and a stomach affected by alcoholic disease.

We would direct special attention to the uniform rosy tint characteristic of the healthy state of this organ, in which digestion, one of the most important of the vital processes, is performed. The stomach is a hollow organ, and physiologists have succeeded in making a permanent opening into its interior in some of the lower animals, through which they could watch the organ at work, and study the effects of the various substances which were introduced through the mouth, or through the artificial opening. Accident has, in several cases, made the same observation possible in human beings. One of the most notable cases was that of Alexis St. Martin, an employee of the Hudson Bay Fur Company, who, in the early part of last century, received a gun-shot wound, which carried away a considerable portion of the abdominal wall, and perforated the stomach. The wound healed in such a way as to leave a permanent opening into the stomach, through which the process of digestion, and the effects of various substances upon the stomach and digestion, could be accurately observed for many years. Dr. Beaumont made a careful study of the effects of alcohol upon the stomach of this man.

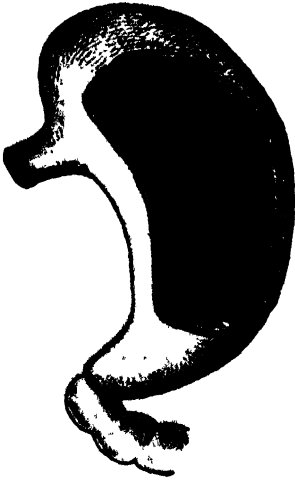
18. The Stomach of a Moderate Drinker. — The illustration also represents the condition of the stomach

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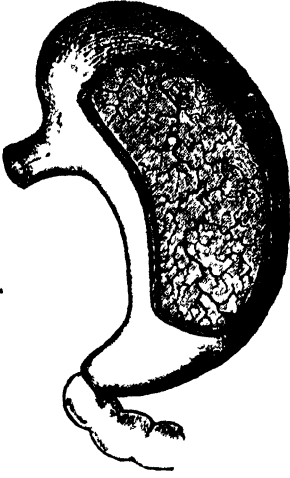
of a person accustomed to use alcoholic drinks in what is known as "moderation;" as, for example, a man who takes his glass of grog before breakfast or at dinner, or a bowl of sling as a "night-cap." The mucous membrane of the stomach is in a state of congestion. This congested condition was observed by Dr. Beaumont in the stomach of Alexis St. Martin whenever he was allowed to take alcoholic drinks, of which he was very fond, even in moderate quantity. The effect of alcohol, as well as that of mustard, pepper, pepper-sauce, spices, and condiments, is to produce a state of excitement and irritation in the stomach, the result of which, when frequently repeated, is permanent congestion, and is the cause of numerous forms of dyspepsia. But alcohol does more than simply irritate the stomach. By its antiseptic influence, it prevents the digestion of the food; and by its chemical properties, it destroys the action of the gastric juice, and so does triple mischief.

19. The Stomach of a Hard Drinker.—A representation of the actual state of things which has been found existing in the stomachs of persons accustomed to use alcoholic liquors daily in large quantities is shown in the accompanying cut. The blood-vessels are dilated, as in the case of the moderate drinker; and in addition, small ulcers are scattered over the diseased surface. The stomach of an old toper might be in the condition shown in this plate without his being conscious of the fact, as the nerves of the stomach are so paralyzed by alcohol that their normal sensibility is quite lost.

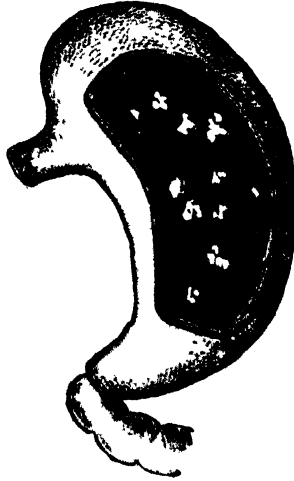
20. The Stomach in Delirium Tremens.—The cut also represents in a very faint degree the terrible con-



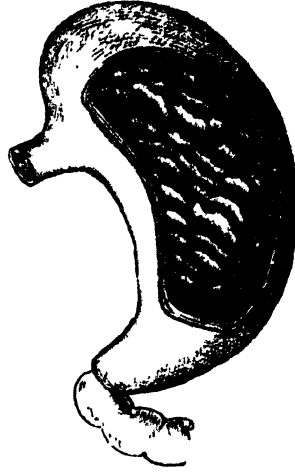
A HEALTHY STOMACH



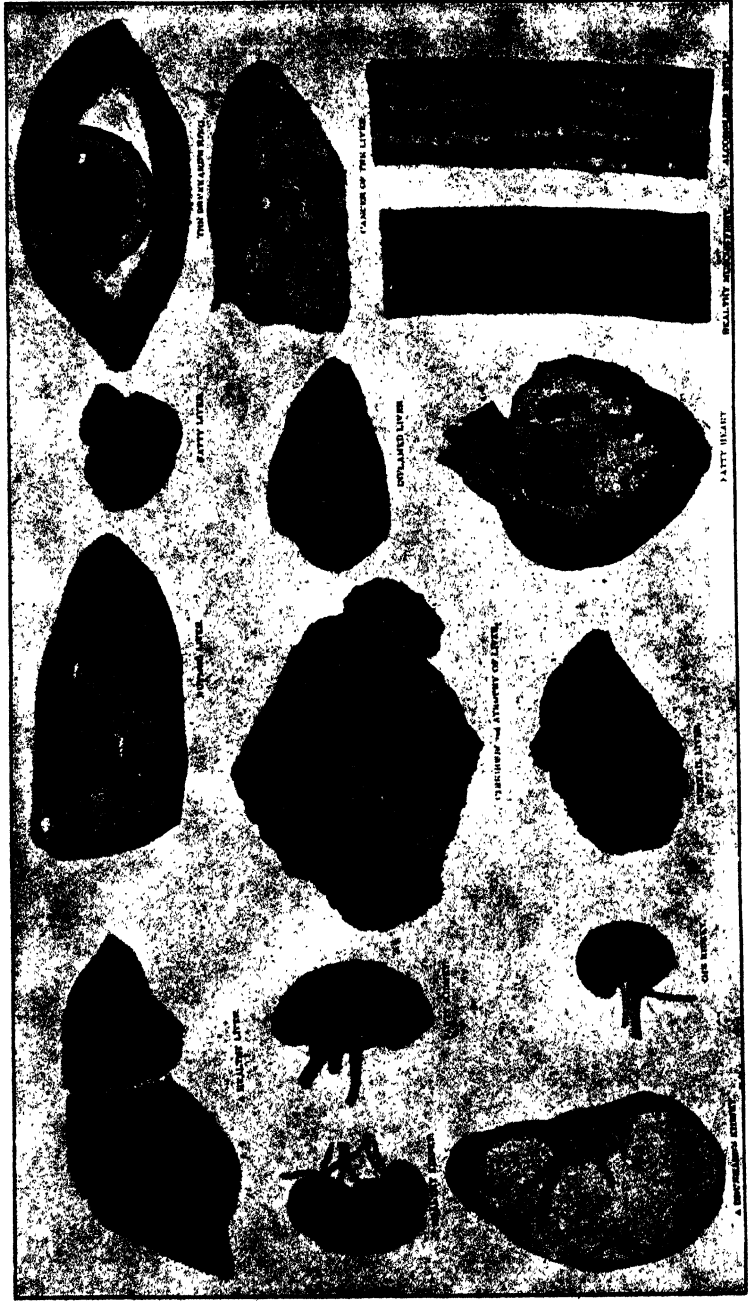
THE STOMACH OF A MODERATE DRINKER.



THE ULCERATED STOMACH OF AN HABITUAL DRUNKARD.



THE STOMACH IN DELIRIUM TREMENS.



EFFECTS OF ALCOHOL UPON THE VITAL ORGANS

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dition present in the stomach of a victim of alcoholic poisoning, suffering with what is generally known as "delirium tremens," or acute alcoholism. The mucous lining of the stomach is in a state of intense inflammation, so that its functions are wholly suspended. In a case which we had under treatment a few years ago, we found the patient at our first visit suffering most intense nausea. He had been vomiting incessantly for two or three days. The smallest sip of water could not be retained upon the stomach. Great quantities of mucus were vomited, together with blood. During such an attack, the patient generally feels little pain, and often refers his symptoms to his stomach, since his sensibilities are so benumbed that he is unconscious of his real condition. Dr. Beaumont observed, on one occasion when Alexis St. Martin had been drinking heavily for a few days, that although his stomach was in a state of inflammation and ulceration, he was insensible of pain, and felt no inconvenience, only suffering from a severe headache. *Post-mortem* examination of persons who have died of delirium tremens usually discloses the stomach black with mortification.

21. Alcoholic Insanity.—The condition of a man under the influence of liquor is precisely the same as that of an insane man as regards his mind. When the act of getting drunk is frequently repeated, the condition of the mind induced by drink may become permanent, when the individual is a fit subject for an insane asylum.

22. A Drunkard's Liver.—The appearance of a drunkard's liver is characteristic. "Hob-nailed liver" is another name for the diseased organ as found in

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spirit drinkers. It is shrunken, hard, and almost totally useless, insensible alike to pain and proper sensibility. Externally, it looks like the hob-nailed sole of an English cartman's shoe, from which resemblance it received its name.

23. Beer and Bright's Disease.—The idea that beer is harmless because it contains but a small proportion of alcohol, has been wholly refuted by the observation that Bright's disease and other maladies of the kidneys are far more frequent among beer-drinkers than among any other class of men.

24. Drunkard's Dropsy.—The bloated features of the sot indicate too plainly for mistake the dropsical tendency of the alcohol habit; and the ultimate effects of the poison upon the liver and kidneys, as already described, lay the foundation for one of the most incurable of all the forms of dropsy. We have seen many cases of dropsy induced in this way, and recovery, even under the most favorable circumstances, has been very rare indeed.

25. Alcoholic Consumption.—Dr. Richardson points out the fact that alcohol, instead of preventing, actually produces consumption, and that of the most fatal type. He states that a person suffering from alcoholic phthisis shows no improvement under treatment. The disease steadily, surely, and usually quite rapidly, progresses to a fatal termination.

26. Alcohol vs. Strength.—The laborer, the traveler, and the soldier use alcohol under the delusion that it strengthens. When fatigued, the laborer takes a glass of grog, and feels better, or thinks he does. He imagines himself stronger. His increased strength,

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however, is wholly a matter of imagination. Experiments show that a man can lift less when under the influence of alcohol than without it.

27. Alcoholized Muscles.—Among the other degenerations produced by alcohol, fatty degenerations of the muscles should be mentioned. This degeneration consists in a change of the proper muscular tissue to fat. The process may involve all the muscles of the body, or simply a few, as those of the heart and blood-vessels. It is an injury which can in no way be repaired, and must inevitably end in death, sooner or later.

28. Alcohol vs. Animal Heat.—The sensation of warmth produced by taking a glass of wine or brandy is delusive. The circulation is unbalanced, and for a few moments there is a seeming increase of heat; but the thermometer shows that there is a decrease in the temperature. Says Dr. Parkes, the eminent English sanitarian, "All observers condemn the use of spirits, even of wine or beer, as a preventive against cold." The names of Dr. King, Dr. Kane, Captain Kennedy, and Dr. Hayes may be cited as holding this opinion. In the last expedition in search of Sir John Franklin, the whole crew were teetotalers.

29. Alcohol a General Disturber in the Vital Economy.—Close upon the derangement of the stomach, which is certain to come sooner or later with all drinkers, follows nearly every other functional disease possible to the human system. Every organ is disturbed. The whole vital machinery is deranged. Strange noises are heard in the head, occasioned by the rushing of hot torrents of poisoned blood through the dis-

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tended blood-vessels of the head, which pass near the ear. Black spots and cobweb appearances annoy the sight. Alcoholic amaurosis, or amblyopia, comes on, and the sight becomes impaired; sometimes blindness follows. The dilated blood-vessels of the skin become permanently enlarged, especially in the face and nose, and the drinker has a rum blossom. Skin diseases of various sorts are likely to appear, particularly eczema of the fingers or toes, or on the shins. An unquenchable thirst seems to be ever consuming the blood, and nothing but alcohol will even temporarily assuage the desire for drink. Notwithstanding, large quantities of fluid will be taken, often amounting to several quarts a day, which overwork the excretory organs.

The liver and kidneys are disturbed in their functions, one day being almost totally inactive on account of the congestion, and the next rallying to their work, and doing double duty.

Every organ feels the effect of abuse through indulgence in alcohol, and no function is left undisturbed. By degrees, disordered function, through long continued disturbance, induces tissue change. The imperfectly repaired organs suffer more and more in structure, until the most extensive and disastrous changes have taken place.

30. Alcohol vs. Longevity.— It is not very easy to prove that the influence of alcohol, as of every other poison, is to shorten life. Dr. Willard Parker, of New York, shows from statistics that for every ten temperate persons who die between the ages of twenty-one and thirty, fifty-one intemperate persons die. Thus it appears that the mortality of liquor-users is *five hun-*

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dred per cent greater than that of temperate persons. These statements are based on tables used by life insurance companies.

31. The Entailments of Alcohol.—The drinker himself is not the only sufferer from his vice. Indeed, it seems in many cases that he is not the greatest sufferer. He may even live out his threescore years and ten, in apparent defiance of the laws of nature and the warnings of friends; but look at his children. Are they as strong and robust as he?—Oh, no; instead, we often see them frail, nervous, imbecile, idiotic,—poor specimens of the race. “The iniquities of the father are visited upon the children.”

Dr. S. G. Howe attributed one-half the cases of idiocy in the State of Massachusetts to intemperance, and he is sustained in his opinion by the most reliable authorities. Dr. Howe states that there were seven idiots in one family where both parents were drunkards. One-half of the idiots in England are of drunken parentage, and the same is true of Sweden, and probably of most European countries. It is said that in St. Petersburg, most of the idiots come from drunken parents.

A RELIC OF BARBARISM

THE origin of a custom which has enslaved many millions of human beings in its toils, which has within a few centuries fixed itself so firmly upon the race, and become so widespread as to be practically universal among mankind, whether civilized or savage, cannot be without interest to those who are users of the weed, as well as to those who wage war against this evil practice. The latter, especially, will find in the ignoble origin of tobacco-using an argument of no little force against this vile habit; and it is for this purpose particularly that we write.

Tobacco-Using Discovered.—In the month of November, 1492, when Columbus discovered the island of Cuba, he sent two sailors to explore it, who reported, when they returned, among many other strange and curious discoveries, that the natives carried with them lighted fire-brands, and puffed smoke from their mouths and noses, which they supposed to be the way the savages had of perfuming themselves. They afterward declared that they “saw the naked savages twist large leaves together, and smoke like devils.”

To civilized human beings, this was the first sight of the vile habit which has become so common that every city, town, and village is actually perfumed, or more properly fouled, with the vile stench of the poisonous weed. The impression made upon the unso-

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phisticated Europeans was evidently not greatly in favor of the custom, since they compared the smoking Indians to devils.

Originating with the wild barbarians of America, the smoking habit was, after some years, introduced into Europe; and receiving the sanction of the physicians who, just at that time, chiefly occupied themselves in searching for some new nauseous compound with which to experiment upon the lives of their patients, it was rapidly adopted, not only by the lower classes, but by those in high authority, even princes and nobles participating in the new intoxication.

Origin of Snuff-Taking.— It appears that the taking of tobacco in the form of snuff was also discovered among the savage natives of this continent upon the second visit of Columbus to America in 1494. A Roman friar, named Pane, who accompanied the expedition, thus describes the custom as it then existed among the Indians: “After reducing the leaves to a fine powder, they take it through a cane half a cubit long; one end of this they place in the nose, and the other upon the powder, and so draw it up, which purges them much.”

The purging referred to evidently describes the violent sneezing which resulted from the inhalation of the powdered poison. If the sailors thought that the smoking savages appeared “like devils,” they certainly must have been ready to compare a party of sneezing Indians to a group of lunatics. However, it must be confessed that the charge of lunacy could not be applied to the ignorant, barbarian snuff-takers with one-half so much propriety as to their civilized and enlightened, but certainly not wise, imitators. How so filthy, un-

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natural, and eminently disgusting a habit could ever have been cultivated by rational beings, is a most profound mystery.

Origin of Tobacco-Chewing.— In 1503, when the Spaniards landed in Paraguay, the natives attempted to repulse them, and came out against them in large numbers, beating drums, throwing water, and “chewing herbs and spurting the juice toward them.” The herb employed was tobacco, and the object of its use in the peculiar manner indicated was to get the poisonous juice into the eyes of the intruders, and thus disable them by depriving them of sight. From this it would seem that tobacco-chewing was first practiced as a means of defense, for which purpose the expectorated juice was undoubtedly quite effective. We have seen modern tobacco-chewers whose copious expectoration made it next to impossible for any one to approach within several feet without being soiled with the vile juice. In the days when war was carried on by hand-to-hand combat, we can very readily understand that a wild Indian filling the air all about him with poisonous, irritating, filthy tobacco juice, would be a very formidable object.

The Inventors of Pipes and Cigars.— The first smokers employed what was practically identical with the modern cigar. Dry tobacco leaves were made into rolls, and wrapped with the leaves of Indian corn, one end being lighted, and the other placed in the mouth. Pipes were also employed, those used in North America being shaped almost exactly like the letter Y, except that the stem was longer and the forked end was symmetrical. In use, the forked end was placed in the

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nostrils, and the other end in the dense smoke arising from tobacco leaves placed on glowing coals. In Mexico and South America, pipes almost exactly like those now in use, with numerous other forms, were employed in the same way in which pipes are now used.

Thus it appears that tobacco-using, together with the implements of its use and all the different modes of taking it, originated wholly with the heathen barbarians who roamed like wild beasts over the plains and through the dense forests of this continent four centuries ago. Civilized men have made no improvements or discoveries of any account in connection with its use; they have simply followed the example of those naked savages whom the discoverers of America saw chewing, snuffing, and smoking "like devils" over four hundred years ago. It is evident, then, that tobacco-using is a barbarous custom in the fullest sense. As to how savages learned the use of the weed, history does not give us any hint; but the fact that pipes and snuff-taking tubes are found in their most ancient burial mounds, which are often surmounted by huge trees that must have required many centuries for their growth, is evidence of its great antiquity; and in this habit we may unquestionably find one of the causes which have reduced the American savage to his present degraded and deteriorated condition.

Reader, if you smoke, chew, or snuff the filthy weed, we would ask you to pause a moment between your whiffs, or before you renew your quid, or take a new pinch of the delectable poison, and consider whether it is worthy of the dignity of an intelligent, enlightened, cultivated human being to spend his money, waste his

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time, and squander his health in imitating a vice which originated with ignorant, degraded savages, and remains a relic of barbarism which has been grafted upon civilization.

Chemists, botanists, and physicians unite in pronouncing tobacco one of the most deadly poisons known. No other poison, with the exception of prussic acid, will cause death so quickly, only three or four minutes being required for a fatal dose to produce its full effect. It is botanically known as *nicotiana tabacum*, and belongs to a class of plants known as the *solanaceae*, which includes the most poisonous of all species of plants, among which are *henbane* and *belladonna*. There are more than forty different varieties of the plant, all of which possess the same general properties, though varying in the degree of poisonous character.

Nicotine.—The active principle of tobacco, that is, that to which its narcotic and poisonous properties are due, is nicotine, a heavy, oily substance, which may be separated from the dried leaf of the plant by distillation or infusion. The proportion of nicotine varies from two to eight per cent, Kentucky and Virginia tobacco usually containing six or seven per cent. A pound of tobacco contains, on an average, three hundred and eighty grains of this deadly poison, of which one-tenth of a grain will kill a dog in ten minutes. A case is on record in which a man was killed in thirty seconds by this poison.

A Pound of Tobacco Will Kill Three Hundred Men.—The poison contained in a single pound of tobacco is sufficient to kill three hundred men, if taken in such a way as to secure its full effect. A single cigar

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contains poison enough to extinguish two human lives, if taken at once.

The essential oil, nicotine, has more than once been used for homicidal purposes. It was employed by the Count Bocarme to murder his brother-in-law, for the purpose of securing his property.

The Hottentots use the oil of tobacco to kill snakes, a single minute drop causing death as quickly as a lightning stroke. It is much used by gardeners and keepers of greenhouses to destroy grubs and noxious insects.

A number of instances are recorded in which death has been produced by applying a little of the oil from the stem or bowl of an old pipe, to a sore upon the head or face of a small child.

Poisoning through the Skin.—The poison of tobacco is so potent and violent in its action that even the external application of the moist leaves to the skin is sufficient to produce most serious symptoms. If a cigar be unrolled, and the leaves composing it be applied over the stomach, great nausea will be produced in a very short time. This method has been used to induce vomiting. Cowardly soldiers have been known to place tobacco leaves under their arms just before going to battle, for the purpose of producing sickness.

Some years ago a man was detected in an attempt to smuggle a quantity of tobacco by placing the leaves next to his skin. The nearly fatal symptoms which followed, led to the discovery of the smuggler.

Deadly Vapor.—If tobacco is poisonous when applied to the skin, it is doubly so when inhaled. The smoke of tobacco contains, in addition to nicotine, several other poisons, the chief of which are *pyridine*,

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picoline, sulphuretted hydrogen, carbon dioxide, carbonous oxide, and prussic acid, all of which are fatal poisons when received into the system in any other than the most minute quantities. Thus it is not to nicotine alone that the evil effects of smoking are due, but to all of these poisons combined.

Birds, frogs, and other small animals die when exposed to the fumes of tobacco in a confined space. Cheese-mites, bees, and other insects may be quickly killed by directing upon them a stream of tobacco smoke from an ordinary pipe.

Poisoning through the Lungs.—Inhalation is the most speedy way of getting any volatile poison into the system. The reason of this is obvious when the fact is made known that the lungs present a mucous surface fourteen hundred square feet in extent, every inch of which is in the highest degree capable of absorbing gaseous substances brought in contact with it. This membrane is of the most marvelously delicate character, being of such exceeding thinness that it forms scarcely any obstacle to the passage of gases which enter the lungs by respiration. Just underneath this delicate membrane passes all the blood in the body, or an amount equivalent to the whole quantity of the blood, once every three minutes. The vapory poison inhaled by the tobacco-smoker is not simply taken into the mouth and then expelled, but it penetrates to the remotest air cells, and spreads itself out over the whole of the immense extent of membrane stated. Thus it is plain that the blood of the smoker is literally bathed in the narcotic fumes drawn from his pipe or cigar.

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So readily does the system receive the poison of tobacco in this way, that it has repeatedly been observed as a fact that persons who are engaged in the manufacture of cigars often suffer much from the characteristic effects of nicotine poisoning.

When tobacco is applied to the mucous membrane, as in chewing and snuff-taking, its poisonous elements are absorbed in essentially the same manner as when it is applied to the skin, but much more rapidly. In chewing, considerable quantities are also absorbed through the stomach, being swallowed with the saliva.

Poisonous Effects of Tobacco-Using.—Very few users of the weed need to have a description of the effects of a moderate degree of poisoning from tobacco. The giddiness, nausea, and deathly sickness which follow the first attempt to use the drug, are indubitable evidence of the poisonous character of tobacco, which evidence is confirmed by the difficulty, in many cases very great, experienced in becoming addicted to its use. In severe cases of poisoning, violent vomiting and purging, vertigo, deathly pallor, dilatation of the pupil, a staggering gait, disturbed action of the heart, interference with respiration, and in extreme cases insensibility and syncope, are commonly observed. Only a very small quantity is necessary to produce these symptoms in a person not accustomed to its use; but in persons who have habituated their systems to the poison, a much larger quantity is required.

Persons not accustomed to the use of tobacco, often show symptoms of poisoning from taking a very small quantity of the drug, as by inhaling its fumes in a

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smoking-car or a barroom. Infants are often sickened by inhaling the air of a sitting-room which is poisoned by a smoking father. There is good reason for believing that not a few infants' deaths have occurred from this cause, as it is well known that young children are exceedingly susceptible to the influence of poisons of all kinds.

Conditions of a Boy Learning to Smoke.—Of course no one has ever examined the internal organs of a boy while he was undergoing the terrible ordeal of "learning to smoke;" but lower animals have been examined while under its influence, and the conditions observed are thus described by an eminent scientist and physician:

"From analogy derived from the inferior animals, which analogy must be very perfect, the conditions of the vital organs are as follows: The brain is pale and empty of blood; the stomach is reddened in round spots, so raised and pile-like that they resemble patches of dark Utrecht velvet; the blood is preternaturally fluid; the lungs are pale as the lungs of a calf, when we see them suspended in the shambles; while the heart, overburdened with blood, and having little power left for its forcing action, is scarcely contracting, but is feebly trembling, as if, like a conscious thing, it knew equally its own responsibility and its own weakness. It is not a beating, it is a fluttering heart; its mechanism is perfect, but each fiber of it, to its minutest part, is impregnated with a substance which holds it in bondage, and will not let it go."

Why All Smokers Do Not Die of Tobacco-Poisoning.—It is often objected that while chemistry and

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scientific experiments seem to prove that tobacco is a powerful poison, the experience of thousands of persons disproves the theory of its poisonous character, since if it were so intense a poison as described, cases of death from tobacco-poisoning would be much more frequent.

To this objection we answer: (1) One reason why so few persons are reputed to die of *nicotine*, or tobacco-poisoning, is the wonderful faculty the system possesses of accommodating itself to circumstances. Through this means the worst poisons may by degrees be tolerated, until enormous doses can be taken without immediately fatal effects. Corrosive sublimate, strychnia, belladonna, and many other poisons, may be thus tolerated.

(2) In our opinion, the majority of tobacco-users do die of tobacco-poisoning. Death as surely results, ultimately, from chronic as from acute poisoning, though the full effects are delayed, it may be, for years. A man who dies five or ten years sooner than he should, in consequence of tobacco-using, is killed by the poison just as truly as though he died instantly from an overdose.

Chronic Tobacco-Poisoning.—The symptoms of chronic tobacco-poisoning cannot be better stated than in the following summary by Dr. B. W. Richardson, one of the highest medical and scientific authorities of England:

“Smoking produces disturbances—

“*a.* In the blood, causing undue fluidity and change in the red blood corpuscles.

“*b.* In the stomach, giving rise to debility, nausea, and in extreme cases, sickness.

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“c. In the heart, producing debility of that organ, and irregular action.

“d. In the organs of sense, causing in an extreme degree, dilatation of the pupils of the eye, confusion of vision, bright lines, luminous or cobweb specks, and long retention of images on the retina, with other and analagous symptoms affecting the ear; viz., inability clearly to define sounds, and the annoyance of a sharp, ringing sound like a whistle or a bell.

“e. In the brain, suspending the waste of that organ, and oppressing it if it be duly nourished.

“f. In the nervous filaments and sympathetic or organic nerves, leading to deficient power in them, and to secretion in those surfaces—glands—over which the nerves exert a controlling force.

“g. In the mucous membrane of the mouth, causing enlargement and soreness of the tonsils,—smoker’s sore throat,—redness, dryness, and occasional peeling off of the membrane, and either unnatural firmness and contraction, or sponginess of the gums.

“h. In the bronchial surface of the lungs, when that is already irritable, sustaining the irritation and increasing the cough.”

The above quotation is of peculiar force, coming as it does from a man who is not only well qualified to speak on the subject from his high scientific attainments and large experience, but is peculiarly well fitted to speak authoritatively, and certainly without prejudice against tobacco, himself being, from force of long habit, a smoker.

Dr. Richardson has elsewhere asserted that the injury done to the blood corpuscles by *nicotine* can

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be readily detected in the blood of an old smoker by examination with the microscope. He thus describes the changes which are found to take place in the blood of a smoker:

Effects in the Blood.—"The blood is made thinner than is natural, and, in extreme cases, paler. In such instances the deficient color of the blood is distributed to the body altogether, rendering the external surface yellowish white, and puffy. . . . But the most important change is exerted on those little bodies which float in myriads in the blood, and are known as the red globules. These globules have, naturally, a double concave surface, and at their edges a perfectly smooth outline. . . . The absorption of the fumes of tobacco leads to rapid changes in them. Microscopically examined, they are found to have lost their round shape, to have become oval and irregular at their edges, and instead of having a mutual attraction for each other, — a good sign, within certain limits, of their physical health,— they lie loosely scattered. Indeed, they indicate to the learned observer, as clearly as though they spoke to him, that the man from whom they were taken was physically depressed, and deficient in both muscular and mental power."

The fact is established beyond the possibility of successful controversy, that tobacco is a poison, deadly in large doses, pernicious and harmful in all doses. It taints the breath, ruins the digestion, obliterates taste and smell, spoils the blood, oppresses the brain, depresses the heart, irritates the nerves, wastes the muscles, obstructs the liver, dims the vision, stains the skin, and deteriorates and contaminates every organ

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and tissue with which it comes in contact in the body. Its influence is to lessen vitality, to benumb the sensibilities, to shorten life, *to kill*.

Tobacco Predisposes to Disease.—By its deteriorating influence upon the system, tobacco lessens the vital resistance of the body to other causes of disease, and so produces a predisposition to nearly all classes of maladies. As bearing upon this point, we may quote the following from eminent authorities:

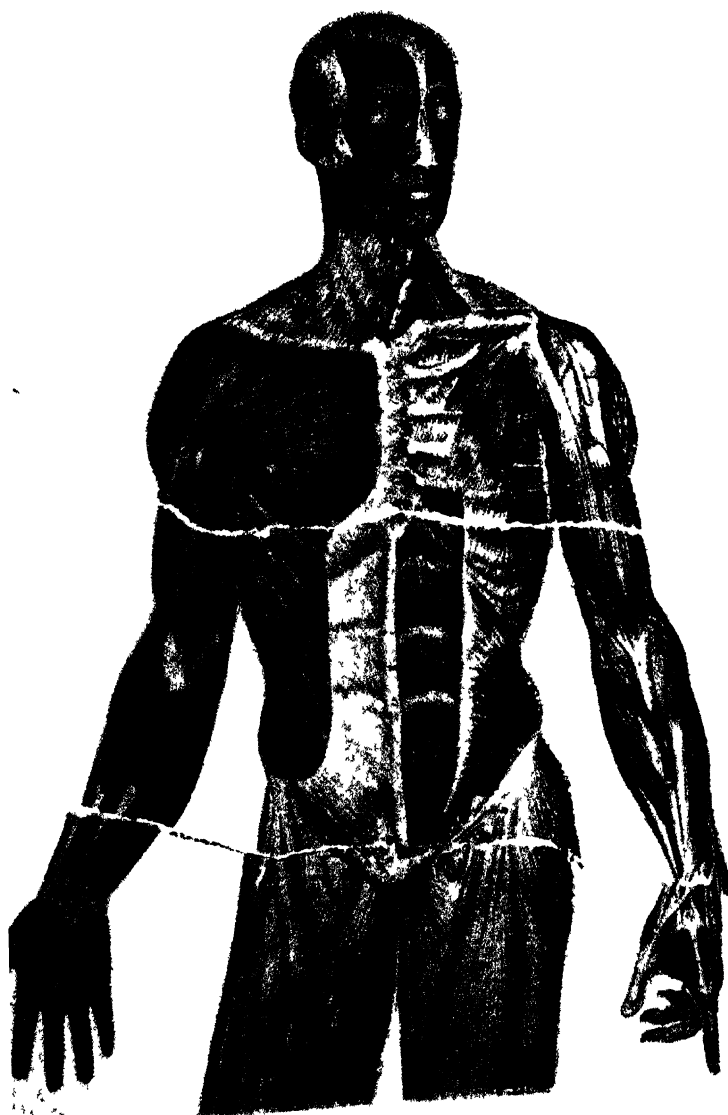
“Look at the pale face, imperfect development, and deficient muscular power of the inhabitants of unhealthy, malarious districts. They live on, but with only half the proper attributes of life. So it is with the habitual smoker.”— *Mr. Solly, F. R. S.*

“I do not hesitate to say that if a community of both sexes, whose progenitors were finely formed and powerful, were to be trained to the early practice of smoking, and if marriage were confined to the smokers, an apparently new and a physically inferior race of men and women would be bred up.”— *Dr. B. W. Richardson.*

A British officer in India stated that of eleven officers sent out on an expedition, only two escaped in good health, and they were non-smokers.

In speaking against tobacco, Dr. Edward Smith, the eminent English authority and sanitarian, remarked, “The whole tendency of its action is toward disease, and it is impossible to say how much of good it has prevented.”

Smoker's Sore Throat.—The redness and dryness of the mucous lining of the mouth and throat so common with smokers, is the result of the direct irrita-



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tion of the hot fumes of the poisonous weed which are drawn in through the pipe or cigar. This cause of this chronic disease of the throat is so very common that "smoker's sore throat" has come to be recognized as a distinct malady. Some smokers pretend to smoke for the cure of throat difficulties; but the excuse is a mere pretense in most cases. Tobacco never cures sore throat. It may temporarily relieve local irritation, but can do no more, and always increases the disease.

Tobacco and Consumption.—The relation of impure air to disease of the lungs is everywhere recognized. It has been very clearly demonstrated that breathing impure air is the great cause of consumption, on account of the effect of poisonous elements upon the blood and the lungs. Even the impurities gathered from the blood itself exist in the air which has been once breathed, in such quantities as to render it unsafe to breathe again. This being the case, it will be readily seen that filling the lungs with the nicotinized smoke and hot fumes of tobacco from a pipe or cigar for several hours a day cannot but be a most certain cause of lung disease. Moreover, experience shows this to be the case. Dr. C. R. Drysdale, the chief physician to the Metropolitan Free Hospital of London, declared in an article in *Public Health*, that "smoking in youth is no uncommon cause of pulmonary consumption."

Tobacco a Cause of Heart Disease.—The effect of tobacco upon the heart is indicated by the pulse, which is a most accurate index to the condition of the heart. The pulse of the tobacco-user says, in terms as plain

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as any words could, that his heart is partly paralyzed, that its force and vigor are diminished, that it is, in fact, poisoned. Old smokers, and not a few of those who have indulged but a few years, often suffer with palpitation of the heart, intermittent pulse, *angina pectoris*, and other symptoms of derangement of this most important organ. There is, in fact, a diseased condition of the heart which is so characteristic of chronic tobacco-poisoning that it has been very appropriately termed "narcotism of the heart." Medical statistics show that about one in every four smokers has this condition. There is good reason for believing that not only functional but organic disease of the heart may be occasioned by the use of tobacco.

Tobacco and Dyspepsia.—Notwithstanding the fact that tobacco is very frequently recommended as a sovereign remedy for dyspepsia, we have become convinced by careful observation in hundreds of cases, that it is never a cure, and is in hundreds of instances a cause of dyspepsia. Tobacco is a narcotic. The effect of narcotics generally is to lessen the secretion of gastric juice, and to decrease the activity of the stomach. This tobacco does in a very marked degree. A man who is hungry may appease his desire for food by using tobacco if he is accustomed to it, or by the employment of some other narcotic. The desire is appeased, although the want still exists. It is through this same paralyzing influence that tobacco impairs digestion. Snuff-taking occasions dyspepsia by producing irritation of the nasal mucous membrane, which affects the stomach through sympathy.

Tobacco a Cause of Cancer.—There is no chance to doubt that tobacco-using is often a cause of this

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terrible disease. All eminent surgeons testify that they frequently meet cases of cancer of the lips and tongue which have been occasioned by smoking. A number of such cases have come under our own observation, and we do not doubt that a large share of cancers of the lip and tongue originate in this way. This view is further strengthened by the fact that in the great cancer hospital of London, where more than ten thousand cases of this terrible disease have been treated, the number of men suffering from cancer upon the lip and tongue was three times as great as the number of women so affected, although the female cancer patients outnumber the men, five to one.

Tobacco Paralysis.— Within the last thirty years there has been a great increase in the frequency of the occurrence of a peculiar form of paralysis which seems to affect especially the nerves that supply the muscles, causing gradual wasting and loss of muscular power, which is fairly attributable to the increasing use of tobacco, as it most often occurs in tobacco-users.

A form of progressive paralysis of the optic nerve, causing “tobacco amaurosis,” or blindness, is well recognized by oculists. These cases generally recover when the tobacco is discontinued, but will not get well so long as it is used.

Color Blindness, an affection which is increasing to an alarming extent, especially in Belgium and Germany, where smoking is more extensively practiced even than in this country, has been found largely attributable to the use of tobacco. This fact was first announced by an eminent Belgian physician, who made

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extensive investigations of the subject at the request of the Belgian government.

Nervousness from Tobacco.—Tobacco-users suffer much from nervousness, which is manifested in a great variety of ways. One person is easily startled; another unnaturally irritable, is cross and irascible; another cannot sleep at night; still another suffers trembling of the hands, which greatly discommodes him in writing. In scores of cases, we have seen these symptoms disappear when the use of tobacco was discontinued. Temporarily, tobacco seems to give tone and strength and steadiness to the nerves; but the seeming strength is deceptive. It is purely artificial, and the ultimate effect is to increase the very difficulty which it seems to cure.

We have often known wives and young children to suffer severely from various nervous disorders which were wholly due to the effect upon their delicate organizations of the poisonous fumes of tobacco which they received through the poison-laden exhalations of their smoking husbands and fathers.

Hereditary Effects of Tobacco-Using.— There is no vice or habit to which men are addicted, whose results are more certainly transmitted to posterity than are those of tobacco-using. A vigorous man may use tobacco all his life, and be able to convince himself all the time that he is receiving no injury; but the children of that man, who ought to inherit from him a vigorous constitution and high health, are instead robbed of their rightful patrimony, and enter upon life with a weakly vital organism, with a system predisposed to disease and destined to premature decay.

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The sons of an inveterate tobacco-user are not as robust as their father; and the grandchildren, in case the children are tobacco-users, are certain to be nervous, weakly, sickly creatures. This fact we have verified in so large a number of cases that we make the statement fully prepared to maintain it by indisputable facts.

Dr. Pidduck, an English physician of experience, speaks as follows from his observations on the effects of tobacco at the dispensary of St. Giles:

“If the evil ended with the individual who, by the indulgence of a pernicious custom, injures his own health, and impairs his own faculties of mind and body, he might be left to his enjoyment, his fool’s paradise, unmolested. This, however, is not the case. In no instance is the sin of the father more strikingly visited upon the children than in that of tobacco-smoking. The enervation, the hypochondriasis, the hysteria, the insanity, the dwarfish deformities, the consumption, the suffering lives and early death of the children of inveterate smokers, bear ample testimony to the feebleness and unsoundness of the constitution transmitted by this pernicious habit.”

In addition to the maladies already noticed, we might enumerate a large number of other diseases which are either the direct or indirect result of tobacco-using; but the facts we have adduced are ample to warrant the conclusion that the use of tobacco is one of the worst forms of intemperance, and one of the surest means of producing disease. Every proper means ought to be adopted to prevent the contraction of the habit by the young, and to induce those addicted to it to reform.

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“The Devil’s Own.”—Passing a London cigar store one day, we noticed the above words on a flaming placard as the name of a new brand of cigars just produced by the manufacturers. The name impressed us as exceedingly appropriate, and we wondered that so impressive a cognomen had not before been utilized. The cigar is undoubtedly one of the devil’s favorite instruments for converting boys who might become respectable citizens and useful men, into loafers, vagabonds, drunkards, and criminals of every description.

Notwithstanding the repeated exposures which have been made of the dangers to life and health incurred by the use of the filthy weed, the number of its devotees seems to be constantly upon the increase. The tobacco habit must be regarded and treated as a moral disease which has fastened itself upon society,—one of “the devil’s own” means for degrading and depraving humanity. How perverted, indeed, are the instincts of the human being who deliberately defiles the image of his Maker till every trace of the divine workmanship is obliterated by the scourge of the stinking weed, and he becomes fit only to be labeled “the devil’s own”!

How to Reform.—Stop at once. There are very few persons who possess the strength of purpose and power of self-control to “taper off.” The tapering-off process is far more difficult, and is attended by far greater inconvenience, both physical and mental, than the prompt and complete abandonment of the practice. No fear need be entertained that any risk to life will be incurred, although much nervous irritability and even pain may be experienced. Perseverance for a few days will bring victory and release from the tyranny of a vile and degrading habit.

HOW TO BE STRONG

AMONG the ancient Greeks and Romans, strength and symmetry of body were held in the highest esteem. Not infrequently, men were chosen to fill the highest positions of authority and influence, when the chief qualification which they possessed was unusual physical proportions and bodily strength. A Roman emperor, while on one of his expeditions, discovered a gigantic barbarian, whom he made one of his generals, and who afterward became himself ruler of the empire. It was natural that the ancients should esteem physical strength so highly, as in warfare the failure or success of an army depended upon the ability and endurance of its soldiers in personal combat. The invention of the fire-arms and artillery of modern times has entirely changed the mode of warfare, so that at the present time the size of a commander's guns and the length of his purse are of even greater consequence than the number of his soldiers.

Decline of Physical Culture.—So, also, the application of machinery to agriculture and to almost all the arts, has greatly diminished the necessity for physical exercise in nearly every branch of human industry, and to such a degree that there is comparatively little demand for mere brute force, and physical development has come to be considered a matter of little

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consequence. The decline of physical culture has undoubtedly had much to do with the loss of that symmetry of form which obtained its perfection among the ancient Greeks, as shown in the Apollo, the Venus de Milo, and other specimens of ancient Greek art.

The modern sculptor who wishes to produce even an approximation to the standard of excellence presented in the ancient models, finds himself quite unable to secure a living model suitable for his purpose, but must make a composite figure by combining the parts of a large number of different subjects, drawing a leg of one, an arm of another, a neck of another, etc.

This degenerative process is rapidly developing a race of deformed and decrepit human beings, who are so different from their ancestors of two or three thousand years ago that they might almost pass for a different species. Each generation seems a little weaker, physically, than the one that preceded it; and the puny, pale-faced boys of to-day, with lank, feeble bodies, active but unbalanced brains, irritable nerves, and precocious propensities, make a poor outlook for the generation to come.

Strong Muscles Win.—Notwithstanding the great and essential difference between the conditions of modern life as compared with the life of the Greek or Roman citizen of two thousand years ago, it is still true that the man of physical strength and soundness is the one who, other conditions being equal, wins the prizes in almost every department of human life. Notwithstanding the many apparent exceptions to this rule, such well-known examples as those of the English premier, Gladstone, M. Thiers, Victor Hugo, Will-

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iam Cullen Bryant, and others equally notable whom we might name, are sufficient to establish the principle.

Physical development is only to be obtained as the result of exercise. Throughout the whole animal world, exercise seems to be essential to growth and development. It is a universal rule in nature that an organ which is not used, gradually wastes away until it becomes useless, and sometimes disappears altogether; while an organ that is used develops in proportion to the amount of work required of it. Even the storm-beaten oak gains firmness and strength and increased vigor by the shakings it receives from the tempests and tornadoes which howl through its branches. Each time its massive trunk is swayed, its rootlets strike deeper down into the earth, thus not only securing a firmer hold, but providing an increased number of mouthlets through which nutriment may be received from the soil.

Effects of Exercise and Inaction.—The blacksmith with his right arm swings a heavy hammer, while with his left he holds with a pair of tongs a heated iron, which he beats upon the anvil. In the course of a day, many thousands of vigorous blows are struck. This enormous amount of work performed by the right arm causes its muscles to grow much larger than those of the left, which are little, if at all, larger than those of men engaged in ordinary occupations.

Notice, on the other hand, the effect of inaction upon the arm of the Hindoo devotee, which he supports in a horizontal position, and consecrates to his deity, keeping it absolutely motionless for years. In consequence of this inaction, it gradually shrivels up

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until it becomes a mere stick, simply bone covered with skin, the muscles having entirely wasted away.

We depend upon continued daily exercise for the ease with which we move about. If the hand is hung up in a sling for a few days, the whole arm speedily becomes almost useless. On removal of the sling, even after so short a time as one week, the elbow will be found to be stiff, and the muscles stiff and rigid, and any attempt to move the arm painful. We frequently find the muscles of the body in the same condition as that of such an arm when we undertake to make some unusual movement, such as bending backward or sideways. We discover that the muscles newly called into action are surprisingly weak, and that their use, even for a short time, may be followed by soreness and discomfort for many days. When little or no exercise is taken, the whole body speedily falls into the same condition of feebleness and uselessness.

A person who for any reason is confined to his bed for a number of days, quickly discovers this when he first stands upon his feet or undertakes to engage in the ordinary exercises to which he has been accustomed. He finds immediately, on assuming a perpendicular position, a strange weakness in his legs, perhaps a slight light-headedness due to a sudden flow of blood to the lower portions of the body, leaving an insufficient supply in the brain. Perhaps the limbs will tingle with the increased quantity of blood sent into them, while palpitation may lead the patient to fear that he is suffering with some grave trouble of the heart, which has been heretofore undiscovered. If such a person returns to bed, as is not infrequently

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the case, and waits for strength to come to him, he will grow weaker and weaker continually, until he may become permanently helpless. We have frequently had such cases brought to us for treatment, sometimes on beds, from long distances. In some instances the individuals had been confined to their beds for eight or ten years, during which time they had scarcely taken a single step. Careful investigation of each case showed it to be one in which the chief fault was weakness of the muscular system, the result of disuse. By a properly graduated course of exercises, the muscular power was gradually recovered, and the patient was restored to usefulness.

It is in cases of this sort that the so-called "magnetic healers," "mind healers," etc., so frequently obtain brilliant results. Recognizing a case to be of the sort described, they profess to perform some curative act for the benefit of the patient, thereby inspiring his confidence, and arousing his hope and expectancy to the highest degree, and succeed in getting him upon his feet; and, each time gaining a little strength, the muscles are soon restored so as to enable the operator to pronounce the patient cured.

Benefits to be Derived from Exercise.— Exercise is beneficial in a variety of ways.

As we have already seen, it develops the muscles. The muscles, as we have elsewhere learned, are composed of very minute fibers, each of which has the power to contract. In a muscle which is not used, these fibers become thin and pale, and lose, to a large degree, their power of contracting. In a well-developed muscle, they are large and ruddy, and possessed of

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a high degree of elasticity and energy. When a thin, feeble muscle is thrown into action by contraction, it soon loses its pale color, and acquires a deep red color, through the increased quantity of blood which flows through it during its activity. The supply of fresh blood brings with it new nourishment, from which the fibers may replenish themselves. If the exercise is repeated sufficiently often to bring to the muscle an adequate amount of nourishment, the growth may continue until a very unusual degree of development has been attained.

The famous Dr. Winship, by persistent, systematic exercise, succeeded in developing his muscles to such a degree that he became able to lift, by the aid of shoulder straps, fully three thousand pounds,—a load which the stoutest cart horse could scarcely stand up under. In his youth, Dr. Winship was so inferior in physical development that, when a student at school, he was obliged to bear patiently most provoking insults from his schoolmates, because unable to make a good physical defense. He himself said that it was this fact which gave to him the impulse to undertake the course of physical culture which resulted in his extraordinary development.

A good set of muscles is one of the most excellent qualifications which a young man can possess. There is no position in life for which they unfit him, and there is none which they will not enable him to fill to better advantage than he otherwise could do. There are a thousand and one emergencies in life in which strong, vigorous, and well-trained muscles are of enormous service, and in which their use may be of incalculable

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value. Proper physical culture gives, not only increased physical strength, but greater dexterity, suppleness, and grace of movement. The man who walks with a shuffling, swaying, and awkward gait, does so, not on account of any original defect in his physical make-up, but through the weakness of certain muscles which, by disuse, have become unable to do their part in the act of walking, and so render him unable to perform it in an easy and graceful manner. The trained gymnast exhibits a lightness and elasticity of movement impossible to an individual who has not had the benefit of physical training.

Round Shoulders and Flat Chest.—Proper training of the muscles also prevents or corrects various bodily deformities, such as round shoulders, flat and narrow chests, and crooked backs, and gives to the body an erect and graceful carriage. Many of these deformities are directly or indirectly productive of interference of the body in general through interference with the proper working of the various vital organs, particularly the lungs; and hence physical culture does more than simply add to the comeliness of the body and grace of movement; it really increases the vital capability of the body, and hence lengthens life, as well as rendering it more joyous.

A round-shouldered person is one who is simply carrying his chest behind instead of in front of him. This deformity is not necessarily indicative of a weak chest or small lungs, but rather of weak back muscles and the habit of sitting in a stooped or relaxed position. This habit naturally results from much sitting at study, writing, the keeping of accounts, and similar

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occupations. Most persons who sit much, or whose employment naturally tends to a stooped position, are round shouldered. This condition is nearly as common among farmers, whose occupation is chiefly out of doors, as among clerks, students, and business men, because of the careless habit farmers have of sitting in a stooped position in driving or when resting from active work. Even athletes are not infrequently very round shouldered. This deformity not only gives a person a weak and ungraceful appearance, but lessens the breathing capacity, and leads to inactivity of the upper part of the lungs, thus inviting consumption and other diseases, which arise from the lodgment of germs in contact with inactive and weakened portions of the lung tissues.

Persons who have flat chests or round shoulders should sleep on a hard mattress, on the back, if possible, with a very thin pillow or none at all.

Correct and Incorrect Sitting Attitudes. — When a person sits with the chest flattened, and the shoulders rounded, the muscles of the trunk are relaxed. The breastbone, or sternum, and the ribs are depressed in front, and the result is a pushing downward of the stomach, liver, and other abdominal organs. The abdominal muscles are relaxed so that they afford no support to the viscera, and the certain consequence is congestion. Sooner or later, serious disease of the liver, stomach, bowels, and other abdominal organs is certain to appear.

When one sits erect, as shown in the plate, the chest is elevated, the abdominal muscles are drawn in, the internal organs are held up in their proper posi-

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tions, and the movement of blood through these organs is active, and their functions normally performed.

The correction of an improper position in sitting, and the cultivation of an erect attitude, with full, deep breathing, will be found in itself sufficient to cure many a backache, sideache, headache, and a considerable part of the indigestion, heaviness, and the accompanying distresses from which multitudes suffer, and for the relief of which quantities of nostrums are swallowed in vain. A proper sitting position is of the highest importance as a means of correcting this deformity. Parents and teachers should admonish the children under their care to "sit tall," to reach their heads up as high as possible, and should take the advice to themselves.

In sitting, the seat should be of the proper height, so that the feet may be squarely placed upon the floor, and supported without undue pressure upon the under side of the leg. When the lower extremities hang over the edge of the chair, the blood circulation is interfered with, the nerves are pressed upon, and the limbs become numb and cold, or "go to sleep," to use the common expression. To avoid this discomfort, the occupant of a seat which is too high slips forward and reclines in his seat. This is an exceedingly bad position, resulting in relaxation of all the muscles of the trunk, and extreme flattening of the chest.

It is well to bear in mind that one should never lie down when sitting up, but should maintain an erect position. The chest should be well raised forward, and the abdominal muscles well drawn in. To do this will at first require attention and an effort. One must every

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few moments correct his position. After a while the habit of correct sitting will be acquired, and great advantages healthwise will thereby be gained.

One of the obstacles to assuming and maintaining a correct position in sitting is a weak, overstretched condition of the muscles of the back. Correct sitting is a splendid exercise for these muscles, but certain exercises aid greatly in developing them. It is worse than useless to say to a round-shouldered person, "Put your shoulders back." The proper thing to do is to instruct him to *put the chest forward*. His shoulders will then naturally fall back in the effort to balance the body. The shoulders may be put back without in the slightest correcting the deformity.

The correct standing position is shown in the accompanying plate. This position is easily acquired by a little practice. The improvement in health and personal appearance is so great as to make it worth while to make the effort to obtain a good poise and graceful carriage. First of all, it is necessary to get a correct idea of the erect position. With the aid of a teacher, this can be acquired in a few minutes. Having no teacher, one may employ a wall as a trainer.

Standing against the wall, facing the center of the room, place the heels, hips, shoulders, and back of the head firmly against the wall. Reach the arms downward as far as possible, holding them to the sides with the thumbs turned outward. The door, or the side of a doorway, is more convenient than a plastered wall, as there is no baseboard.

While keeping the heels and hips against the wall, bend the head backward as far as possible, keeping

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it also in contact with the wall, and pushing the shoulders and chest forward as far as possible. Holding the chest in the forward position which it has reached, raise the head forward, draw in the chin, taking care not to allow the chest to fall or the shoulders to come in contact with the wall. If this movement has been executed correctly, the proper standing position will be acquired. By noting the "feeling" given by this position, one may easily be able to instantly assume it without the aid of a wall.

A New Chair.—A chair has recently been produced in which the evils of the ordinary chair are overcome. The seat in ordinary use may be held responsible for a large part of these mischiefs. No one can sit in the ordinary chair without soon getting into an abnormal and disease-producing position. When one sits, it is either because he is tired and desires to rest, or because convenience or necessity demands the sitting position. Sitting in an ordinary chair soon becomes tiresome, so that, however erect and natural one's position may be when he first sits down, he soon relaxes into an abnormal and disease-inviting attitude.

It is impossible that the muscles should be relaxed when one is sitting in the upright position, without injury. Complete relaxation requires a reclining position, as otherwise the natural support of the organs being removed, they will necessarily fall out of place, as the ligaments which attach them to the back are not sufficiently strong to maintain their weight, except for very short periods. Each act of breathing, as the diaphragm descends, forces the unsupported organs further down, so that they descend more and more

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the longer the wrong position is maintained. In the cases of students, bookkeepers, editors, and those who do desk work, these organs are almost certain to be found out of place.

It has been said, "We should never lie down when we are sitting up." In the ordinary chair, complete relaxation results in distortion of the body and prolapse of the internal parts, and interferes with respiration. But the new chair renders it possible to relax without this distortion of the trunk and the evils which result, by affording the body such support as will maintain the natural attitude without the expenditure of too much muscular energy. This is accomplished by the introduction of three important principles:

1. By giving the back of the chair a special curve carefully compared to the natural contour of the human spine by means of hundreds of drawings made from living subjects.

2. By giving the back of the chair a special angle whereby the trunk is inclined backward to such a degree as to carry the head backward sufficiently to make it serve, in connection with the muscles of the neck, as a lever, acting upon the upper part of the chest and lifting it upward and forward. This lifting of the chest renders tense the muscles of the abdomen, whereby the abdominal viscera are lifted upward and held in their normal places. The efficiency with which this is accomplished is clearly shown by Figures 1 and 2, which represent the same person sitting in the Sanitas chair and in an ordinary chair. The center of the back is in contact with the chair in both cases. This is necessary in order that the chair

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should afford such support to the trunk as is required to give rest to the muscles. As soon as the muscles of the trunk relax, as they do necessarily when weary, the trunk being acted upon by gravity naturally falls into a position which may require mechanical support. The illustration shows the position of a person seeking to maintain the proper form of the trunk while at the same time receiving support from the back of an ordinary chair. The impossibility of maintaining such a position is apparent. The muscles soon become weary, the trunk relaxes, and the body falls into the position shown in the cut.

3. Still another principle which enters into the construction of Sanitas chairs is the angle of the seat. In most chairs, the seat is so nearly horizontal that as soon as a person relaxes his muscles in the sitting position, there is a tendency to slide forward. The farther the hips are removed from the back of the chair, the greater is the distortion of the trunk when the spine is allowed to come in contact with the back of the chair.

In the new chair, the seat slopes back sufficiently to prevent slipping forward. Care is also taken to see that the height is such as to permit the feet to rest squarely upon the floor. It is far better that the seat should be a little too low than that it should be a little too high. A too high seat compresses the blood-vessels and nerves which pass along the under side of the leg, interfering with the circulation and causing numbness and sometimes painful sensations in the lower extremities.

Muscular exercise not only improves the health and strengthens the muscles, but directly and indirectly

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affects in a favorable manner nearly every organ of the body. The muscles aid in supporting the various bones which compose the skeleton, in their proper positions. When the muscles become weak, they relax, and allow various portions of the body to drop into uncouth and unhealthful positions. It is thus that the shoulders become rounded, being allowed to drop forward through weakness of the muscles which are intended to hold them back in position. The ribs, which form the framework of the chest, not being properly pulled forward and outward through contraction of the muscles attached to them, gradually fall inward, thus flattening the chest, and compressing those important breathing organs, the lungs. By proper exercise, these physical defects may be prevented, and entirely remedied in most persons who have not yet attained middle age. Even in advanced years, much may be done to correct these physical deformities, by properly directed and systematic efforts.

Still more remarkable is the effect of exercise upon the activities of various internal organs. The effect of muscular exercise in increasing the action of the heart and lungs is well known. A brisk run will often double the activity of the heart, and much more than double the activity of the lungs. Although the number of respirations per minute may be only double in number, the depth of inspiration, the amount of air taken in at each breath, is also greatly increased, so that the total amount of work done by the lungs is very much more than doubled. This increased activity of the lungs produces a wonderfully beneficial effect upon the whole body.

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The heart is a pump which distributes to the tissues the vital fluid by which it is to be replenished. When the heart works more rapidly and vigorously, a larger amount of blood is furnished to every organ in the body, and the tissues are consequently more liberally supplied with nutriment, and more thoroughly renovated.

Not only is a larger amount of new material carried to the tissues, but the old, worn-out waste particles are removed much more thoroughly, being carried to the organs whose business it is to remove them from the body as they are eliminated, or thrown off. Thus the body is kept freer from the waste or effete matter which results from the wear and tear of the system.

The lungs, by their increased activity, introduce into the blood and veins of the whole system a larger quantity of oxygen, the great purifier, which vivifies the blood, vitalizes the tissues, and cleanses every nook and corner of the vital domain. Every activity is quickened. The whole system is infused with a higher grade of vitality. The bodily machinery runs at a higher speed, and with greater effectiveness for work. The brain, freer from the products of waste, and supplied with more highly vitalized blood, is able to do better thinking. The liver, having a larger amount of oxygen and a better blood supply, can do more bile-making. The stomach, having its activities quickened by a larger and richer blood supply, secretes a better quality of gastric juice, and more of it, and hence is able to digest a larger quantity of food, and to more perfectly elaborate it and prepare it for entrance into the blood.

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✓ **Exercise Assists Digestion.** — Exercise aids digestion by creating an appetite, promoting the secretion of the digestive fluids, and increasing the peristaltic movements of the intestines. When God said to Adam, ✓ “In the sweat of thy face shalt thou eat bread,” the command was given to the entire race to engage in active muscular labor. Those who seek to avoid sweating, or who neglect to take habitual active exercise, are punished by ill health. The apostle Paul said, ✓ “If any would not work, neither should he eat.” Nature says the same by removing the desire for food or the power to digest it. The inactive man who is still able to eat and digest, runs great risk from the accumulation in his body of unnecessary or unused material, which clogs the vital machinery and fills the blood with poisons whereby its resistance and that of the body are diminished. ✓ Nature takes away the appetite and lessens digestive vigor to avoid this danger. When an idle or sedentary man throws away this protection by stimulating the palate by means of condiments and a constantly renewed variety of stimulating foods, he is working at cross purposes with God, and will certainly suffer the penalty of disobedience.

Thus we may see that the wise man uttered a profound physiological truth when he declared, “By much slothfulness the building decayeth.” Eccl. 10:18. The body temple is worn by work, but is at the same time renewed, so that work is a means of constant body change or renovation.

✓ The value of a brisk walk on a cold, frosty morning in developing the appetite for breakfast, is well known by every one. Life out of doors may be justly



INCORRECT AND CORRECT POSITIONS IN BUCK SAWING.

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regarded as one of the most important means of promoting health and securing sound digestion and proper assimilation of the food. Exercise also aids digestion by promoting activity of the bowels, whereby the body rids itself of waste matters, lack of attention to which may result in chronic poisoning, a condition from which thousands constantly suffer who might find complete and entire relief by the simple means indicated.

Exercise quickens the stream of life, increases the action of the heart, lungs, stomach, liver, and every vital organ; and by cleansing away the rubbish which accumulates in the tissues as the result of work, prepares the way for new material, and so is one of the greatest of all means of promoting life and health. All examples of extraordinary longevity which have been reported have been of persons who had led active, even laborious, lives, and whose habits in diet and in other respects were simple and regular.

Thus, every part of the body seems to take on new life and activity; and, to a person who has previously been in a state of inaction, with his system torpid and clogged by the products of wastes which have not been properly eliminated, the change is almost equivalent to a new birth.

After having once tasted of the delights of living on a higher plane, with all his sensibilities quickened, and his ability for enjoyment and appreciation of the pleasures and blessings of life so greatly increased, one could hardly be induced at any price to return to the old sluggish and inane existence.

“A “Good Wind.”— In these days of hurry and bustle, when a moment gained or lost may mean the

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loss or gain of a fortune, or even of a human life, the possession of a good "wind," which will support brief, or, if necessary, prolonged, active muscular exercise, as in hurrying to catch a train, running to a fire, or to rescue a person in danger, is a matter of inestimable value. Two things are essential for a good wind: (a) A sound and vigorous heart; (b) large and strong lungs. If either of these organs is deficient, a person, on trying to take a little more active exercise than usual, will speedily find himself "short of breath." The heart is a muscle, and the lungs are filled and emptied by means of muscles, which act upon the chest in such a way as to use it like a pair of bellows, alternately compressing and expanding its walls so as to make the air pass out and in. Muscular exercise causes the heart to beat faster, and by this means strengthens it, just as the other muscles of the body are strengthened. By special exercise, the muscles which operate the chest may be strengthened, and the chest itself may be enlarged so that it will receive an increased quantity of air, and will have greater freedom of movement in the act of breathing.

✓Soundness of wind is one of the essential qualifications for a good walker or a good horseman; and it is for the purpose of securing this reliability of the heart and lungs that the long course of training to which persons who are preparing themselves for pedestrian or rowing contests, are subjected, is entered upon. Time is required to enable the heart to grow large and strong enough to do the necessary amount of work required of it during the contest, and to allow the lungs to expand to such a capacity as to supply the greatly increased quantity of oxygen required.

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A Weak Heart.—Every now and then we read in the newspapers of a man who has dropped dead in hurrying to catch a train. Such an occurrence is the result of a weakness of the heart, arising from the want of proper training to enable it to support the activity of the other muscles of the body. The heart ought to be able to do its work as well as the other muscles, and should be capable of doing it well, even when the other portions of the muscular system are excited to the highest degree of activity.

A person who is not accustomed to exercise, finds almost immediately, on attempting to take a little exercise, that the blood rushes to his head. He is seized with a violent beating of the heart, and feels as though he were in imminent danger of death. All these inconveniences, however, speedily disappear under systematic exercise, gradually increasing its vigor as the heart and blood-vessels acquire greater tone, so that they are not so readily disturbed by muscular efforts.

How to Test the Heart.—If you feel the pulse of a person not accustomed to exercise, while he is sitting quietly, and then ask him to run quickly up and down the stairs two or three times, and count his pulse again, it will be found to have increased in frequency anywhere from thirty to fifty beats per minute; while the pulse of a person accustomed to vigorous exercise, counted after the same amount of exercise, may not have increased more than ten to fifteen beats per minute.

By these simple means, any one may test his heart strength, and while taking a course of muscular training, may discover the gradual increase in heart tone,

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as indicated by the lessened effect of exercise in increasing the pulse rate.

Probably more than half the business men of the country who have reached middle age could not run rapidly for a mile without incurring considerable risk, and certainly not without feeling afterward badly used up. Every man ought to be able to run two or three miles at the rate of eight miles an hour, without suffering any serious inconvenience.

✓ Physical exercise gives better command of the whole body; and when properly conducted, trains both sides of the body alike, and so almost doubles the efficiency of the muscles. A man who has been trained in the ordinary way, really uses his left side but very little. ✓ Everything requiring skill, strength, or dexterity must be done with the right hand. Even the right limb usually has enough more training to make it a little larger than the left. The extra amount of work done by the right side of the body results in increasing the strength of the muscles of this side, and in deformity of the spine, which is made to curve toward the left side, causing the right shoulder to drop a little. There is probably not more than one person in four who does not have this deformity.

With proper physical training, both sides of the body will be equally developed, and should be equally useful. A man who is ambidextrous, or able to use both hands equally well, will not only be able to do more work in a day or in a year than a man who can employ but one hand, but in the case of the loss of one hand, he does not meet with so utter and complete a loss as the man who loses his one trained hand.



INCORRECT AND CORRECT POSITIONS IN CROSS-CUT SAWING

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✓ Even the brain and nerves share in the benefits derived from muscular training. When a muscle contracts, it is in obedience to the impulses originated in the brain, sent to the muscles along a nerve trunk. Hence, muscular exercise also implies exercise of the brain and nerves. The same law which induces muscular growth as the result of exercise, applies also to the exercise of the brain and nerves. Hence, muscular exercise, instead of detracting from mental development, as might be supposed, actually encourages the development of the brain, and increases its capacity for action. This is undoubtedly the reason why muscular exercise has so marked an effect in steadying the nerves, giving to one self-command, mental equipoise, and readiness. Nothing so well prepares one for readiness of action in emergencies as thorough training of the muscles.

✓ The derivative effect of muscular exercise renders it one of the most efficient means of counteracting the effect of laborious mental occupation and such employments as are likely to cause an excessive flow of blood to the brain. When the muscles are active, they are capable of containing a much larger proportion of blood than when idle, and thus drain it away from the brain and nerve centers, which, through excessive and prolonged activity, may have become congested and surcharged with blood. On this account, regular, systematic exercise is of the greatest value to students and to professional men. Thousands of men break down before completing their education, or just after graduation; and thousands of clergymen, lawyers, professors, and other brain workers, make disastrous fail-

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ures in consequence of the onset of some nervous disorder, which might have been entirely prevented if the brain and nerve centers had been cooled and rested by regular systematic exercise.

✓Another of the valuable benefits to be derived from muscular exercise is to be found in its effects upon those portions of the nervous system which control the purely animal functions. An individual whose brain is excited and irritated by too much blood, the result of excessive brain work or worry, is vastly more likely to become a prey to the torments of propensities or passions clamoring for gratification, than he who, by active muscular exercise, relieves the brain of blood, thereby producing that gentle fatigue which is so conducive to rest and calmness of mind and body and soundness of sleep.

✓It is a noticeable fact that many wandering barbarous tribes, who depend for their sustenance upon the uncertain results of the chase and meager vegetable products, are vastly less addicted to gross vices, even though their food is largely of an animal character, than are more civilized people, whose mode of life requires of them less muscular exercise. This fact alone emphasizes the importance of encouraging muscular exercise among the youth of the present day, since the growing tendency to vice and licentiousness among all civilized people is one of the most conspicuous and lamentable features of the present time.

General Rules for Exercise.—1. Exercise, to be really valuable, must be systematic; that is, it must be taken in such a way as to bring into play all the muscles of the body in a natural and symmetrical

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manner, or, in case the exercise is taken to correct deformities or special weaknesses, it should be such as will be best calculated to accomplish the desired end.

2. It must be taken regularly. The way most business men take their exercise, going off on a hunting expedition once a year for one or two weeks, or now and then taking a very long walk or a tiresome rowing excursion, is not calculated to strengthen the muscles, but rather to make them sore and stiff, and to discourage efforts in this direction.

Exercise should be taken daily. The system requires its daily dose of muscular exercise as much as its daily portion of food; and it would be quite as sensible to undertake to do a month's eating in a single day as to take all of one's exercise for a month on a monthly holiday. Hence, exercise should be taken daily, and if possible, at a regular hour.

3. The best time for taking exercise is about ten o'clock in the forenoon; but for an ordinary individual, the best time is at such an hour as will enable him to take it at the same time every day, thereby allowing the system to accustom itself to periodical muscular work, and so acquire the greatest amount of benefit from it. As a rule, especially with weak persons, a large amount of exercise should not be taken before breakfast. Persons who have a weak digestion often suffer ill effects from taking long walks before breakfast, becoming so "faint" that the relish for food is lessened, as well as the power to digest it. For those who have active duties requiring their attention during the usual business hours, exercise may be divided between morning and evening, as half an hour before

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breakfast and an equal length of time before going to bed.

4. The amount of exercise should be such as will produce genuine fatigue. At the beginning, the exercise should be taken very moderately indeed, and the person should stop short of complete exhaustion. Weak muscles, in particular, should be exercised with very great care. Many persons become discouraged in their efforts in the direction of physical culture by attempting to do too much at first. In consequence of very violent exercise, the muscles are made sore and stiff, and they become discouraged, and give up the attempt in disgust.

At no time, during a course of physical training, should the exercises be so violent as to be exhausting; but they should be so gradually increased that the heaviest exercise at the last will be no more taxing than the very lightest at the beginning. This requires that the amount of muscular work done should be so carefully graduated that the muscles will have time to develop increased capacity as the work is increased.

A story is told of an ancient Roman who developed enormous strength by placing upon his shoulder a young calf, and carrying it around the ring of a great amphitheater. This he did each day; and as the calf grew in size, his strength increased proportionately, until at last he was able to shoulder the full-grown ox, and carry it about the great arena with almost as much ease as he had at first carried the animal when but a few days old.

5. Much greater benefit is derived from light exercises repeated many times, than very violent exercises

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repeated but a few times, or engaged in only for a brief length of time. By lifting heavy weights, or indulging in such exercises as are too heavy for the muscles, they may be strained and even permanently injured; while by the employment of light exercises, though the body becomes fatigued, no such mishaps can possibly occur, and no permanent injury will be likely to be done.

Conspicuous examples of the benefits to be derived from systematic daily exercise are afforded by a number of eminent men of modern times, some of whom have already been mentioned.

Gladstone as a Wood-Chopper.—Gladstone, for example, was almost as famous for his fondness for and dexterity in chopping wood as for his skill in diplomacy. Though he was upward of eighty years of age, the venerable statesman continued as active as ever, and the quality of his speeches in the House of Commons showed not the slightest sign of physical or mental deterioration. When worn with the labor and care of political life at London, he ran away to his home in the country, and spent a few days in hewing down the giant oaks for which the place is famous.

Dickens as a Pedestrian.—Dickens was almost as noted as a pedestrian as he was distinguished as a novelist. His daily habit was to walk nine or ten miles before breakfast, and he sometimes prolonged his walk to twenty-five or thirty miles before taking his morning meal. If he had not been given to great excesses in eating, it is probable that he might have prolonged his active literary life many years; but he was cut off at an age when most men of science are doing their best work.

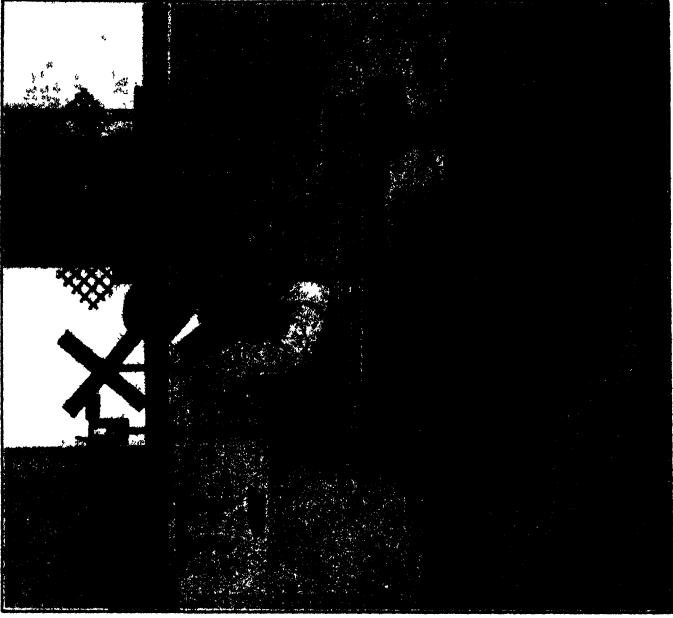
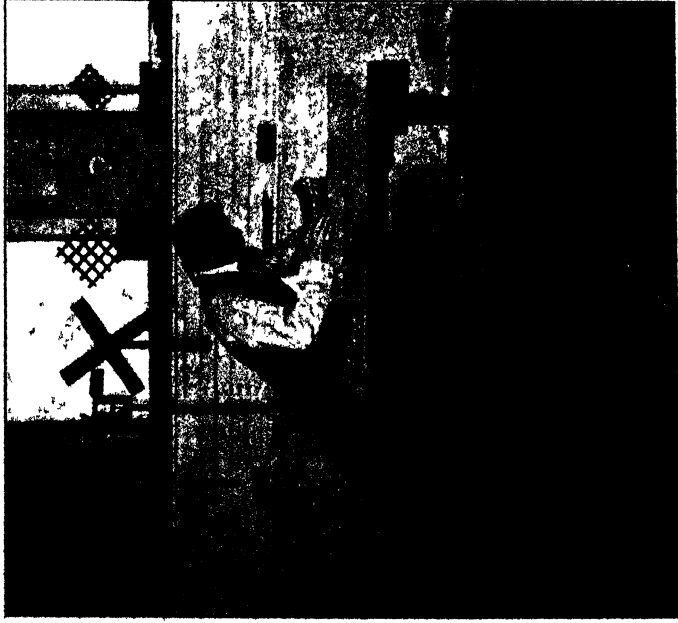
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Byron, though addicted to many vices, and even to the grossest dissipation, was a most faithful observer of the laws of health which relate to physical exercise, taking habitually a daily run into the country, and engaging in rowing, swimming, and other active physical exercises. He carried his physical training to such a degree of perfection that he was able to accomplish some feats in swimming which have rarely been equaled. It is quite probable that his attention to physical exercise, together with his habitual abstemiousness in diet, at least during long periods, enabled him to resist as long as he did the evil influences of the enormous excesses to which he was addicted.

Maclaren, the English apostle of physical education, in his excellent work on the subject, gives several illustrations of the remarkable effects of exercise in modifying the development of the body, a few of which we quote:

“Twelve non-commissioned officers, ranging in age from nineteen to twenty-nine years, were sent to me for training. I made careful measurements of the chest, arms, shoulders, limbs, etc., and repeated the measurements at intervals throughout the course of training, to ascertain the amount of progress made.” He states the result as follows:

“The muscular additions to the arms and shoulders and the expansion of the chest were so great as to have absolutely a ludicrous and embarrassing result; for before the fourth month, several of the men could not get into their uniforms, jackets, and tunics without assistance, and when they got them on, they could not get them to meet down the middle by a hand’s breadth.



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In a month more they could not get into them at all, and new clothing had to be procured, pending the arrival of which the men had to go to and from the gymnasium in their great-coats. One of these men had gained five inches in actual girth of chest. Now, who shall tell the value of these five inches of chest,—five inches of additional space for the heart and lungs to work in? There is no computing its value, no power of computing it at all; and before such an addition as this could be made to this part of the body, the whole frame must have received a proportionate gain. For the exercises of the system are addressed to the whole body, and to the whole body equally; and before this addition could be made to the chest, every spot and point of the frame must have been improved, every organ within the body must have been proportionately strengthened.

“But I tried another method of recording the results of the exercises. I had these men photographed, naked to the waist, shortly after the beginning of the course and again at its close, and the change in all, even in these small portraits, is very distinct, and most notably so in the youngest, a youth of nineteen, and, as I had anticipated in him, not merely in the acquisition of muscle, but in a readjustment and expansion of the osseous framework upon which the muscles are distributed.

“But there was one change, the greatest of all, and to which all other changes are but means to an end, are but evidences more or less distinct that this end has been accomplished,—a change which I could not record, which can never be recorded, but which was

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to me, and to all who had ever seen the men, most impressively evident; and that was the change in bodily activity, dexterity, presence of mind, and endurance of fatigue,—a change a hundredfold more impressive than anything the tape measure or the weighing chair can ever reveal.”

✓ **Exercise Encourages Growth.**—The same eminent authority also gives the following illustrations of the effect of exercise in stimulating growth:

“A remarkable instance of this came under my observation a few years ago. A youth whose growth had for some time been stationary at the height of five feet two and three-eighths inches, suddenly, from the practice of systematized exercise, began to grow at a fair and regular rate, and at the age of twenty-one, when he went to India, his height was five feet six and a fourth inches. Another instance is that of a schoolboy whose growth had been all but arrested from a severe fall in childhood. Almost instantly, systematized exercise started his latent powers of growth, and in nine months he had grown eight and seven-eighths inches.”

The eminent poet, William Cullen Bryant, who died a few years ago at the advanced age of eighty-four years, preserved his wonderful physical and mental vigor to the very last, by a system of regular physical exercise, which he thus described in a letter to Mr. Joseph H. Richards, a few years before his death, and which was published after his decease:

“MY DEAR SIR: I promised some time since to give you some account of my habits of life, so far, at least, as regards diet, exercise, and occupation. I

How to be Strong

am not sure that it will be of any use to you, although the system which I have for many years observed seems to answer my purpose very well. I have reached a pretty advanced period of life, *without the usual infirmities of old age*, and with my strength, activity, and bodily faculties, generally, in pretty good preservation. How far this may be the effect of my way of life, adopted long ago and steadily adhered to, is perhaps uncertain.

“I rise early, at this time of the year about half-past five; in summer, half an hour, or even an hour, earlier. Immediately, with very little encumbrance of clothing, I begin a series of exercises, for the most part designed to expand the chest, and at the same time call in action all the muscles and articulations of the body. These are performed with dumb-bells, the very lightest, and covered with flannel, with a pole, a horizontal bar, and a light chair swung around my head. After a full hour, and sometimes more, passed in this manner, I bathe from head to foot. When at my place in the country, I sometimes shorten my exercises in the chamber, and, going out, occupy myself for half an hour or more in some work which requires brisk exercise. After my bath, if breakfast is not ready, I sit down to my studies till I am called. . . .

“After breakfast, I occupy myself for a while with my studies, and then, when in town, I walk down to the office of the *Evening Post*, nearly three miles distant, and after about three hours, return, always walking, *whatever be the weather or the state of the streets*. In the country, I am engaged in my literary tasks till a feeling of weariness drives me out into the open air,

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and I go upon my farm, or into the garden and prune the fruit trees, or perform some other work about them which they need, and then go back to my books. *I do not often drive out, preferring to walk.*”

A former business associate gave to a newspaper representative the following, among other reminiscences of Mr. Bryant, with whom he had been acquainted forty years:

“During the forty years that I have known him, Mr. Bryant has never been ill,— never been confined to his bed, except on the occasion of his last accident. His health has always been good.

“Mr. Bryant was a great walker. In earlier years, he would think nothing of walking to Paterson Falls and back, with Alfred Pell and James Lawson, after office hours. He always walked from his home to his place of business, even in his eighty-fourth year. At first he wouldn’t ride in the elevator. He would never wait for it, if it was not ready for the ascent immediately on his arrival in the building. Of gymnastic exercises, he was very fond. Every morning, for half an hour, he would go through a series of evolutions on the backs of two chairs placed side by side. He would hang on the door of his bedroom, pulling himself up and down an indefinite number of times. He would skirmish around the apartment after all fashions, and once, he told me, even ‘under the table.’ Breakfast followed, then a walk down town; and then he was in the best of spirits for the writing of his editorial article for that day.”

In view of such facts, where is there a young man of energy and intelligence, and for such only we write,



INCORRECT AND CORRECT POSITIONS IN SHOVELING.

How to be Strong

who is not willing to devote the little time and effort required to develop for himself that soundness of body, that suppleness of limb, that hardness of muscle, that grace and dignity of carriage, that soundness of digestion, and that vigor of intellect which can be obtained only by regular, systematic, vigorous muscular training? The question may arise, "Will not ordinary labor answer the purpose as well as special exercises?" In reply to this question, we have to say, Many kinds of labor afford a sufficient amount of bodily exercise to secure a good appetite, a vigorous digestion, and many other good results of exercise; but there are very few trades which do not, to a greater or less degree, destroy the symmetry of, if they do not more seriously deform, the body. For example, the farmer, from the enormous amount of back-work he has to do in stooping forward and lifting with a fork and shovel, pulling the rake, swinging the scythe, etc., becomes round-shouldered. The back muscles become enormously developed, while the muscles of the front of the chest are neglected. Thus it is that we find so large a proportion of persons who are past middle age, presenting round shoulders, flat chests, and a backward curvature of the spine. The blacksmith develops one arm and one side of the chest enormously, but gives so little work to the other that he really becomes in time deformed. The oarsman develops the muscles of the back and forearm, and gives to the upper-arm and muscles of the front of the chest an insufficient amount of work; consequently, the shoulders become pulled forward. The fingers, also, in continually clasping the oars, become more or less permanently crooked and their bones stiffened. The

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average farmer also has an awkward gait, and is slow and awkward in his movements generally.

It thus appears that the laboring man, as well as he whose employments are sedentary, requires exercise for the purpose of counteracting the deforming tendencies of his particular vocation, and for preserving a well-balanced development of his body.

How to Make a Home Gymnasium.—The idea that expensive appliances and apparatus, and perhaps a building constructed expressly for the purpose, is required to enable a person to avail himself of the advantage of special exercise, has deterred many from undertaking a course of physical training. It is of the utmost importance in the interests of physical education that the public mind should be disabused of this erroneous notion. The truth is that the most essential and effective forms of exercise can be taken by the aid of little or no apparatus of any description, or at least other than that which can be afforded by any home, and which is accessible to any one under almost all circumstances. However, the expenditure of a few dollars and a little labor will provide a few simple devices by means of which the work may be made more interesting and in some respects more effective. Hence, we shall describe a few appliances which it is desirable that every home should contain.

Every home ought to have its family gymnasium,—a room set apart for daily exercise, which may be used by the members of the family. Such a room should contain:

1. Apparatus for pulley-weights, which consists of a long box set upright against the wall, and divided

How to be Strong

perpendicularly into two compartments, which are open in front. At the top of each compartment is placed a pulley, over which passes a rope, with one end attached to a wooden box about six inches deep and of sufficient size to fill the compartment. At the other end of the rope is placed a handle to grasp with the hand. Weights of different sizes can be put into the box so as to regulate the amount of work done in pulling them up and down. Chest weights can now be obtained so cheaply from various gymnasium supply houses that it is better to buy an apparatus than to make one. The expense will be found less, and the apparatus more satisfactory.

2. Erect two solid posts about three feet broad. Place between the two posts, properly secured at a point as high as can be reached by the hand, a round bar about one and one-half inches in diameter. The bar may easily be made adjustable, so as to accommodate persons of different heights. Secure on the inside at a point about opposite the waist, a stout round pin about one and one-half inches in diameter, projecting from the post about eight or nine inches. A doorway may be used instead of the posts.

3. Obtain a sound piece of ash or hickory about three inches wide, two inches thick, and six feet in length. Place this against the base board at one side of the room, and secure one end firmly to the floor. Above the free end of the strip, and high enough to be opposite the breast, fasten to the wall a block about four inches square and two inches thick. Obtain a fork handle about three feet in length. Bore a half-inch hole about one-third its length from one end, and

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pass a bolt through the handle into the block. By means of a stout rope, attach one end of the round piece to the free end of the strip upon the floor.

4. Obtain a dozen iron weights weighing from one to ten pounds each. If iron weights cannot be easily procured, stone or lead may be employed; or bags filled with salt or sand, with the weight marked upon each, may be used instead.

5. If possible, obtain two or three pairs of dumbbells, one pair weighing five pounds each, another weighing eight pounds, and still another weighing twelve pounds.

By means of these simple appliances a very large proportion of the muscles may be brought into full and vigorous action.

Many persons imagine that it is of very little consequence what form of exercise is taken, provided a person takes a sufficient amount to insure activity of the circulation, and secure an appetite for food. This is a grave error. A man might sit down by the road side, and spend ten hours a day breaking stones with a hammer, as men may often be seen doing on the roadways of England, and the active exercise may give him a good appetite, sound digestion, and strong muscles in his right arm; but the result would be that the rest of his body would, through neglect, become seriously deformed. His limbs would become stiff, and his gait feeble and awkward, and all symmetry of form and grace of movement would be lost.

In order that the body should be properly developed, it is important that each individual shall take such special exercises as are particularly adapted to



SWEDISH GYMNASTICS

(From "Swedish Movements or Medical Gymnastics," by Dr. Hartelius, of Sweden.)

How to be Strong

his case, and in such amount as the general system, or the organs specially involved, may demand. By this means, particular deficiencies or weaknesses may be corrected.

Forms of Exercise.—The limited space which we have to devote to this subject will admit only a brief description of a few of the simplest and most valuable forms of exercise. Fortunately, the most important forms of physical exercise can be taken with very little apparatus, and are very simple in character. Various forms of exercise and simple apparatus for use in taking exercise are illustrated in accompanying plates.

Walking.—This simplest of all forms of exercise is one in which a large number of the muscles of the body are brought into gentle action, in maintaining the erect position of the body, and propelling it forward. In ordinary walking upon a level surface, the body is not lifted, but is inclined forward in such a way as to make it necessary for the feet to be advanced, first one and then the other, in order to preserve the body from falling. Walking is a valuable form of exercise, but is so gentle in character that a large amount must be done, at least several miles a day, to constitute a fair amount of exercise.

Walking, to be beneficial, must be graceful. There are very few good walkers, since few persons have an equable muscular development, which is necessary for a graceful carriage in walking. If the limbs are weak, the gait is tottering. If there is weakness of the muscles of the waist, the body sways from side to side in walking. Weakness of the muscles of the front of

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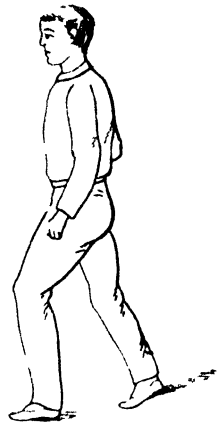
the trunk cause the head and shoulders to be thrown forward.

How to Walk.—To walk healthfully, first make the body erect by throwing the shoulders well back and the chest forward, holding the head erect and drawing the chin in a little. This will straighten the muscles of the back, and give to the body an erect carriage. Let the arms swing easily by the side, with the palms open and turned inward. In stepping forward, place the foot down firmly, letting the heel touch first, then the toe. Avoid a tottering gait by keeping the knees well set back. Put vigor and elasticity into the step. At the beginning, let the pace be moderate, and the distance not greater than can be accomplished without severe fatigue. Gradually increase the distance and the speed until able to walk four or five miles an hour. The amount of exercise obtained in walking may be regulated by the speed and distance of the walk. The amount of work done may be increased by carrying loads of different weights, either in the hands or upon the shoulders.

Running, leaping, and hopping are modifications of walking which afford much more vigorous means of exercise than ordinary walking. A person who has not been accustomed to violent exercise of any sort, should carefully avoid an excessive amount of this kind at the beginning of practice. In running, the gait should at first be very moderate, and the distance traversed short, so as to give the heart and lungs opportunity to become strong enough to sustain the increased effort required of them during this active exercise. The same observation holds good respecting



Fig 1



FIG



Fig. 3.



FIG 4

RUNNING.

How to be Strong

hopping and leaping. The proper positions in running are shown in the accompanying plate.

How to Swim.—Swimming is one of the most useful of all forms of physical exercise, for the reason that it brings into activity the muscles which are not ordinarily employed. Man seems to be the least adapted to progression in the water of any animal. Other animals, the dog, for example, is so naturally formed for swimming that he does not have to learn to swim. The horizontal attitude of the body and the natural elevation of the head above the line of the spinal column, together with the small size of the head compared with the remainder of the body, and the favorable position of the nose, which is lifted free from the water, while leaving almost the entire remaining portion of the body submerged, renders it very easy for an animal to keep afloat. The movement of the limbs of a dog in swimming are precisely the same as in walking; he simply walks in the water, holding his nose high, and does not have to trouble himself with modifying his movements to suit the element in which he is moving, whether in the air or in the water. With man this is different. In the water he must move his limbs in a way in which he has no occasion to move them when on the land. The consequence is that when he makes his first attempt to swim, he finds the muscles which he must necessarily use, weak and easily exhausted; therefore, learning to swim requires much practice and considerable time.

The great health advantage in swimming is in the fact that the head must be carried well backward, and the arms must be used in a way which will develop

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the shoulder retractors, or the muscles which draw the shoulders backward; hence it is one of the finest of all means for developing the chest, and overcoming the tendency which exists among all sedentary persons to become round-shouldered.

Swimming thus constitutes a most healthful form of recreation. It is refreshing, promotes appetite, and is one of the most valuable of all accomplishments. The majority of deaths from drowning are due to the lack of knowledge of this useful art. A few practical hints about how to learn to swim may be found of value, in connection with the accompanying cuts. The old method of teaching a boy to swim was to throw him into water deep enough to drown him, making it, with him, a case of "sink or swim." The modern method, however, is more humane. The following is the one commonly employed in teaching swimming in the modern swimming-schools:

The Movements.—There are three movements for the arms and two for the legs, the movements for the arms starting with the position for the arms shown in Fig. 1.

At the first movement, the arms are carried outward at the sides to the position shown in Fig. 2, the palms facing backward.

At the second movement, the arms are brought from the position shown in Fig. 2 to that shown in Fig. 3.

At the third movement, the arms are thrust directly forward to the position shown in Fig. 4.

The time occupied in movements 2 and 3 together is the same as that of movement 1 alone.

The two movements of the legs are as follows:

How to be Strong

During the first movement of the arms, the legs remain straight out, as in Fig. 4. During the second movement of the arms, by which they are brought to the position shown in Fig. 3, the knees are flexed, and the legs drawn up. For strong swimming, the knees are drawn well up under the body, a position which cannot be assumed except in the water, or with the body suspended by a belt. The second movement of the legs is executed with the third movement of the arms, the legs being thrust downward and outward, assuming at the end of the movement the position shown in Fig. 1.

By the aid of a teacher, these movements may be easily acquired by the following method: The pupil being placed in water not higher than his shoulders, seizes one end of a stick, the other end of which is held by the teacher, who stands in a boat or upon a pier. The first thing the pupil should do is to acquire the ability to balance himself in the water. A firm hold upon the stick enables him to maintain his position, and by degrees he learns to flex the back in such a manner as to keep the head above water and the heels near the surface.

Having acquired his balance in the water, and gotten the idea of the position to be assumed, the pupil takes his first lesson in leg movements. In swimming, the arm movements and leg movements are executed together, with the exception that the first arm movement is made without simultaneous movements of the legs, the two movements of the legs being executed only with the second and third arm movements. In order to establish the proper rhythmical movement,

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the teacher counts for these combined movements, "One—two—three, one—two—three, one—two—three," the time given to "two" and "three" being each one-half that given to "one." In counting for the leg movements, only "two" and "three" are counted, a pause of equal time being substituted for "one."

After practicing the leg movements for a few minutes, the pupil is supported in the water by means of a belt passed around his body in such a position as to balance him in the water. The belt is attached to a rope supported at the end of a stout pole, one end of which is grasped by the teacher, who thus supports the pupil in the water very much as he might a large fish attached by his back to a hook and line suspended at the end of a long pole. The pupil is now made to execute the arm movements, keeping time to the count, "One—two—three, one—two—three," the movements being made in the order above described. After practicing the arm movements for a time, the arm and leg movements should be combined, remembering that the leg movements are made only with the second and third arm movements, the legs resting in the position shown in Fig. 4 during the first movements of the arms.

After the pupil has acquired a little confidence, and has learned to combine the movements fairly well, he is provided with a swimming-belt and cast loose into the water to navigate himself. In a short time, if he has given good attention to his instruction, he will be able to move about in the water with ease and confidence. Then the floating power of the belt may be gradually decreased, either by lessening the number of corks, or, if an inflated rubber belt is used, by letting out, from time to time, a little air.

How to be Strong

It is well for pupils to practice the above-described movements by resting the center of the body upon a small raised platform or a camp-chair, as shown in the accompanying cut. By this means the muscles employed in swimming may be developed, and the ability to co-ordinate the proper movements may be increased, so that much more rapid progress will be made while the pupil is in the water.

Lessons in swimming should constitute a part of the regular course of education in our public schools; and if teachers would sometimes arrange to take classes of boys and girls separately, to a suitable place, being careful to surround the exercise with proper precautions, it might be made not only interesting and healthful, but the knowledge thus gained prove of much benefit all through life. There is not one boy, and probably not one girl, in a hundred who would not be delighted with the opportunity thus afforded them of engaging in a natural and healthful exercise, and at the same time becoming proficient in the art of swimming.

Dumb-bell Exercises.—The dumb-bell is a very useful appliance for exercising the arms. It was used by the ancient Greeks, who gave much attention to exercise of all sorts. Two systems of exercises are employed with dumb-bells, one requiring light bells made of wood; the other, heavy bells made of iron. For active and prolonged exercises of the arms, wooden bells are to be preferred; but for exercises intended to develop particular muscles, iron bells, properly adapted to the strength of the individual, are much preferable. In the use of iron dumb-bells, the weight should at first not exceed one-twenty-fifth that of the

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body. It may be increased until at the end of five or six months, the weight of each bell is one-tenth that of the body. Thus, a person weighing one hundred and twenty-five pounds should, at the beginning, use dumb-bells weighing five pounds each, and should gradually increase the weight to twelve and one-half pounds. For most of the exercises in which dumb-bells are used, bags of shot, cobble-stones, or other objects, the weight of which has been determined, may be used with equally good results, though they are far less convenient.

Exercises with Dumb-bells.—The positions of the arms in taking some of the various forms of exercise may be readily seen by reference to accompanying cuts. In using bells the following program may be followed:

Position: Heels together, knees well set back, shoulders thrown back, head erect, chest well expanded.

1. Grasp a bell in each hand (wooden dumb-bells); bring the hands to the sides, with the palms in front; twist arms half around and back four times, bringing hands to the hips with the last movement.

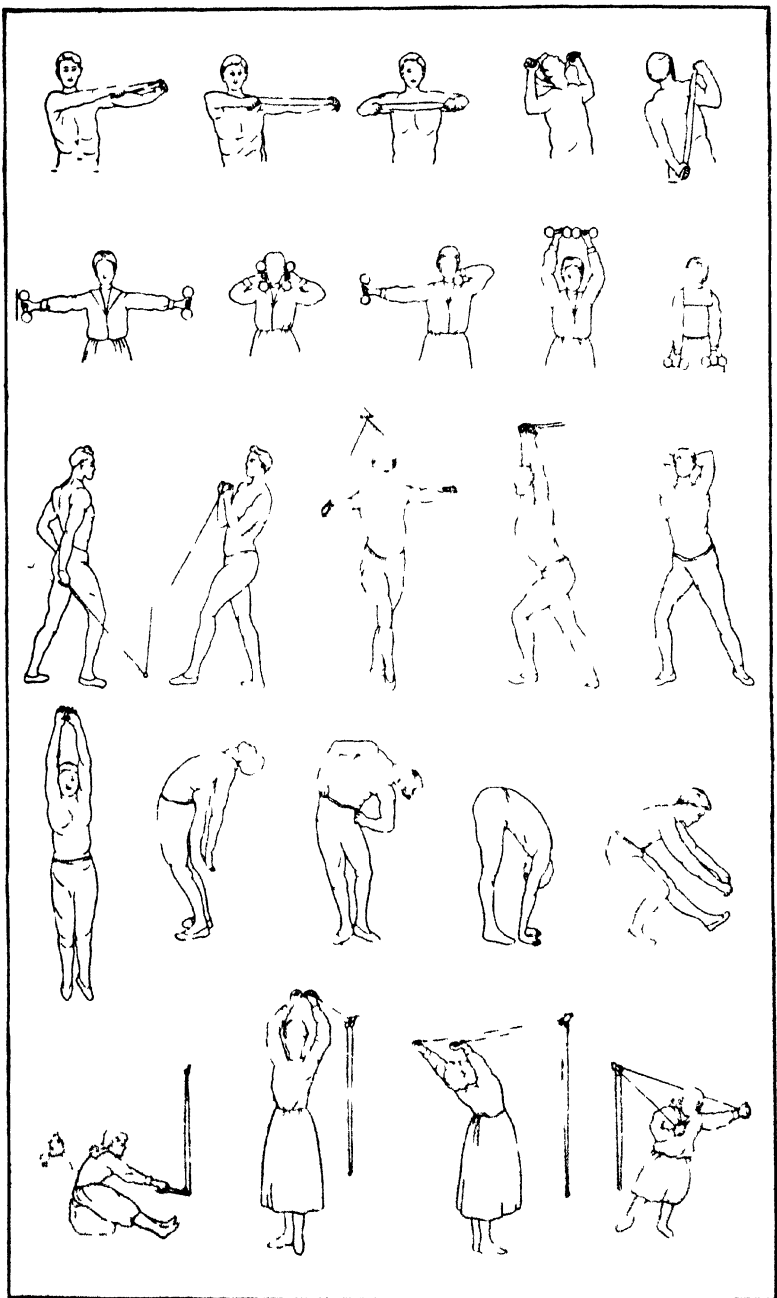
2. Arms extended at the sides, palms inward; turn bells and return four times.

3. Arms extended to the front; palms upward; turn bells four times.

4. Arms extended directly up from the shoulders, palms front; turn four times, bringing bells to the chest with last movement.

5. Bells on chest near the shoulders; thrust right hand down to the side and return four times.

6. Repeat with left arm, keeping the right in position.



ARM AND TRUNK EXERCISES

How to be Strong

7. Alternate the two hands, each twice.
8. Thrust both hands downward four times.
9. Bells at armpits. Thrust the right hand down to the side four times, keeping the left in position.
10. Repeat with left hand.
11. Alternate the two hands, each twice.
12. Thrust down both hands four times.
13. Place bells on shoulders. Thrust right hand up four times.
14. Repeat with left hand.
15. Alternate the two hands, each twice.
16. Thrust both hands upward four times.
17. Bells at sides, palms inward; swing each hand up to horizontal four times.
18. Repeat with left hand.
19. Alternate each twice.
20. Swing both at once four times.
21. Hands at sides, palms inward; bring right hand up in front to horizontal four times.
22. Repeat with left hand.
23. Alternate the two hands, each twice.
24. Swing with both hands four times.
25. Hands at side, palms inward; swing each hand backward as far as possible four times.
26. Repeat with left hand.
27. Alternate with two hands, each twice.
28. Swing both hands four times.
29. Arms horizontal, palms inward; swing right arm up to perpendicular.
30. Repeat with left hand.
31. Alternate with two hands, each twice.

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32. Swing both arms together to perpendicular four times.

33. Extend arms in front, palms inward; swing each hand up to perpendicular.

34. Repeat with the left hand four times.

35. Alternate the two hands, each twice.

36. Swing both hands together four times.

37. Hands extended in front, palms inward; swing right hand back as far as possible four times.

38. Repeat with left hand.

39. Alternate the two hands, each twice.

40. Swing both hands together four times.

41. Hands at the sides, palms forward; swing each hand to perpendicular four times.

42. Repeat with left hand.

43. Alternate the two hands, each twice.

44. Swing both hands four times.

Anvil Chorus.—A pleasant variation of the exercise with wooden dumb-bells may be made by striking the bells together, as indicated in the following program:

1. Extend left arm in front, holding the right bell touching the shoulder blade back of the head. Strike left bell down with the right, allowing the right bell to fall in same position as that of the left, bringing the left into the position previously occupied by the right. Repeat same with left bell, and thus alternate four times.

2. Hands at sides; palms outward. Swing arms to perpendicular, striking bells together over head four times.

3. Repeat No. 1.

How to be Strong

4. Strike bells in front, then behind, each four times.

5. Repeat No. 1.

6. Extend arms in front. Strike the upper end of the left bell with the lower end of the right bell. Repeat with left bell. Alternate thus four times.

The exercise should be accompanied by counting thus: One and, two and, three and, four and; and then repeating. The time may be kept by the aid of music, which is especially serviceable where several are taking the exercises together. Polkas, marches, or any well-accented instrumental music in two-four or four-four time is suitable.

Numerous other exercises may be taken with dumb-bells besides those described; and the exercises may be varied by assuming various positions, such as stepping out in front with one foot or to the side or behind.

Indian Club Exercises.—The Indian club, like the dumb-bells, has been in use from remote times.

Indian club exercises are less easily learned than exercises with dumb-bells, but well repay the trouble required to become familiar with them. We have not space here to describe more than a few of the simpler movements.

1. Grasp the clubs firmly, allowing them to hang at the sides, palms inward; swing the right club up to horizontal in front; repeat four times. Do the same with the left arm. Alternate the two arms, swinging each twice. Swing both together four times.

2. Hands at the sides; swing right arm up to horizontal at the side. Repeat four times with left arm.

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Swing with arms alternately, each twice. Swing both together four times.

3. Place both arms together, horizontally in front. Follow same order of movements, swinging clubs to the perpendicular.

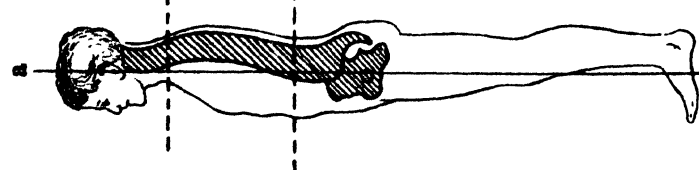
4. Placing the arms horizontally at the sides, repeat the same movements.

5. Place the clubs at the sides; swing right arm to perpendicular four times. Repeat with left arm. Alternate the two arms, swinging each twice. Swing both arms together, four times.

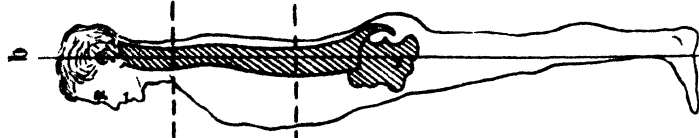
6. Hold the clubs in front horizontally. With the right arm make a sweep to the back as far as possible in a horizontal plane, and return to position; repeat four times. Do the same with the left arm. Alternate, swinging each twice. Swing both together four times.

7. Arms extended in front. Without bending the elbow, by a motion of the wrist bring the right club over toward the arm, allowing it to strike the arm, then carry it back into the original position. Do this four times. Repeat with left club, then alternate each club twice, and do the same with both together four times.

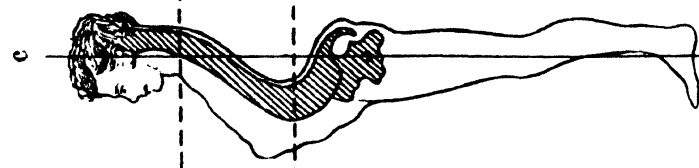
A very large variety of more complicated exercises with Indian clubs may be easily learned from works devoted to the subject. These exercises are specially serviceable in strengthening the muscles of the back and shoulders, expanding the chest, and correcting a tendency of the shoulders to fall forward.



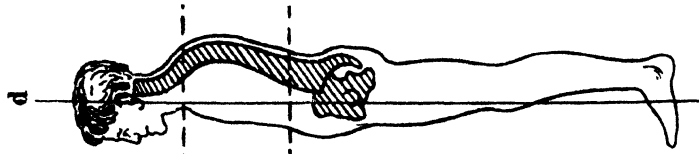
Flat Chest.



Correct Standing Pose.



Hollow Back.



Round Shoulders.

CORRECT AND INCORRECT DEVELOPMENT.

How to be Strong

1. The use of dumb-bells at arms-length, with the head thrown well back, and the face looking toward the ceiling.

2. Long and deep breathing, many times repeated, the effect of which may be increased by drawing in and expelling the air through a small tube.

3. Swinging by the hands from a horizontal bar, or from the top of a door.

4. Standing in a doorway, place the hands upon either side above the head. Raise one foot and place it forward, at the same time energetically throwing the whole trunk forward. Repeat the movement several times.

5. Arrange two pulley-weights so that the handles will hang from the ceiling at such a height above the head that they can be just reached by the hands when stretched perpendicularly. Grasp the handles with the palms outward, and lower the arms to horizontal, keeping them well extended. After holding several seconds, return to the original position, and repeat.

6. To increase the depth of the chest, no exercise is superior to the use of the single pulley. Attach a bar to the end of the rope. Grasp this with both hands placed about one foot apart. Draw the bar down from above the head to the chest, and return to position. The weight should be gradually increased until it amounts to one-half the weight of the body. All exercises with the arms enlarge the chest by pulling upon the ribs; but of all exercises described in this chapter, none are of greater importance than those which develop the breathing capacity.

Man · the Masterpiece

7. Grasp the top of a bedpost with both hands; extend the arms; slide the feet backward about one foot. Now by flexing the arms, while the whole body is held rigid, let the body fall forward until the forehead touches the bedpost. Hold this position while taking a deep breath; extend arms; take another deep breath; then repeat the movement. The exercise may be varied by swaying the body from side to side. This movement strengthens the muscles of the chest, abdomen, and back.

Another exercise admirably calculated to strengthen and expand the chest is the following: Lie down upon the floor in the prone position; bring hands forward up beneath the chest, palms downward; keeping the body rigid, extend the arms so as to raise the body. By alternately flexing and extending the arms, the body may be repeatedly raised up and down. Deep breaths should be taken after each movement, and the lungs should be inflated just before the arms are extended. The vigor of the exercise may be increased by holding the feet rigid, so when the arms are extended, the only portions of the body touching the floor are the toes and the hands, so that the whole weight of the body is sustained upon these parts.

Active exercise also greatly increases the rate of the breathing movements. At first, the breathing is slightly difficult, but after a short time, when the runner has his "second wind," respiration becomes easier, due to the fact that the entire lung surface has been brought into action by the complete distention of every part of the lungs. This fact has in it an important lesson, namely, that in ordinary breathing the entire

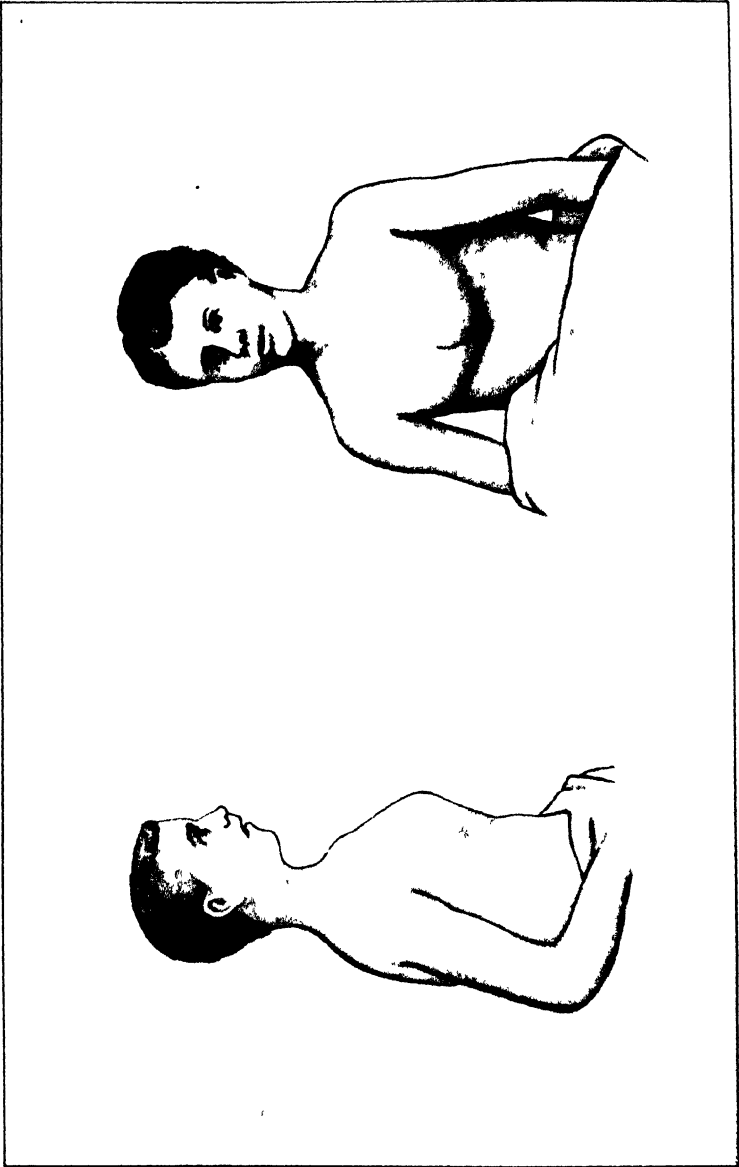
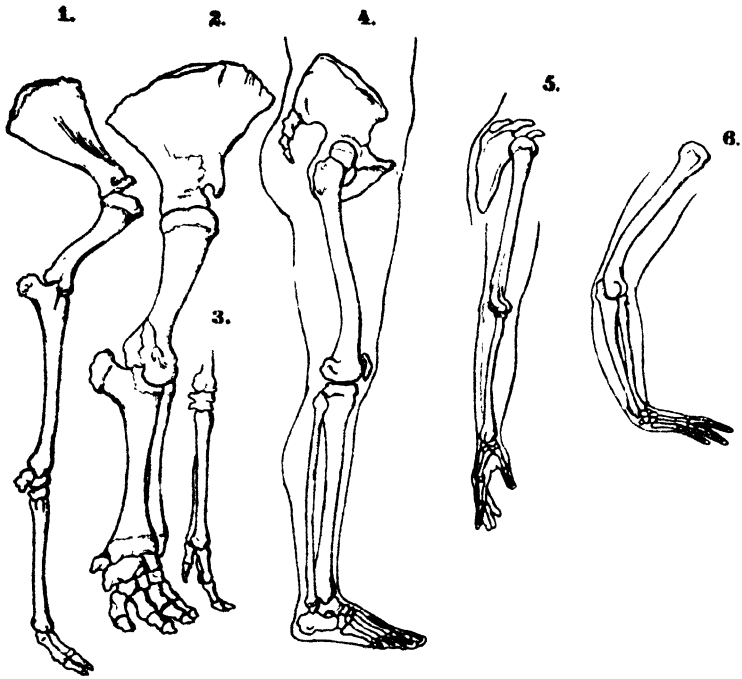
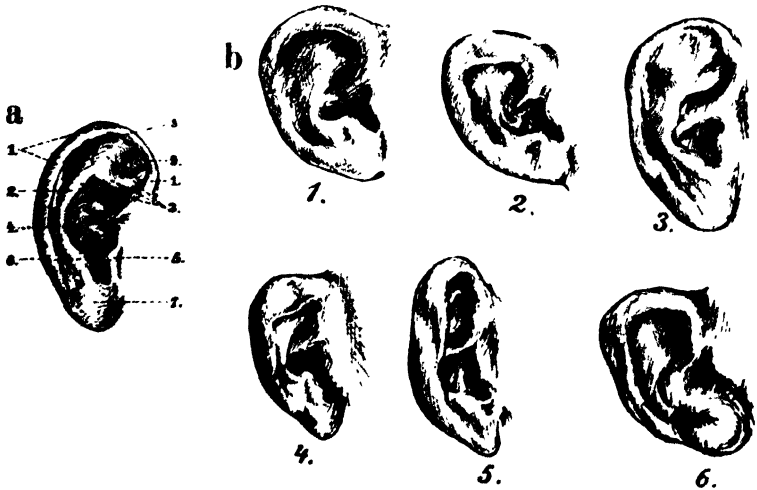


FIG. 10. BREAST



1. Right Foreleg of Camel. 2. Right Foreleg of Elephant. 3. Right Foreleg of Hog. 4. Right Leg of Man. 5. Right Arm of Man. 6. Right Arm in Leg Position.

COMPARATIVE ANATOMY OF THE LEG AND ARM.



a. External Ear.

b. 1 to 6. Normal Ear with Variations.

EARS.

lungs are not brought into use, and hence are likely to become diseased unless brought into full and active movement by taking daily exercises which necessitate deep and full respiration. Such exercises should be taken several times a day.

Running or rapid walking in the open air is the best means of securing the necessary lung capacity. If this is not convenient, however, the same results may be secured by exercise taken indoors with doors and windows widely opened so as to secure free ventilation. It is not even necessary to run about the room. One may "run in place," executing the movements of running by throwing the weight first upon one foot and then upon the other, lifting backward the foot which is not in use. Various other exercises may be employed to excite the lungs, but active movements of the legs are, on the whole, of the greatest service. Very rapid running, carried to the extent of extreme breathlessness, is likely to be injurious to persons who have passed the age of twenty-five years. So-called "sprinting" is injurious to the heart, and in time leads to other injuries. The deep breathing induced by running continues for some time afterward. Those who habitually walk or run much, or who engage in mountain climbing daily or several times weekly, breathe deeper even in sleep than do persons of sedentary habits, and in consequence introduce into their bodies a larger amount of oxygen, and live on a higher plane physically than do others.

To Develop the Legs.—1. The calf of the leg is not much used in ordinary walking, but by keeping the knees well sprung back, and making a little push

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with the rear foot at the same time that the forward foot is being placed in position, which may be termed "push-walking," the calf may be brought into very active and vigorous exercise. Running fast, hopping, jumping, and leaping also bring the muscles of the calf into active exercise.

A simple exercise which brings the muscles of the calf into vigorous exercise consists in rising slowly to a position known as toe-standing, then slowly lowering again and repeating. This movement should be repeated from fifty to five hundred times to secure the proper amount of exercise.

2. The muscles of the front side of the calf are not used in ordinary walking; but in fast walking, walking with the knees well sprung back, in stooping and in balancing, these muscles are powerfully exercised. They are also brought into full play by standing and walking upon the heels. Standing upon the heels and holding weights upon the toes is another means of giving these muscles special work.

3. The muscles of the front of the thigh are specially exercised in running, jumping, and fast walking. They may be well exercised by standing with the back to the wall, bending up one leg and placing the foot against the wall, and alternately contracting and relaxing the muscles of the bent leg, pushing the body away from the wall, and allowing it to fall back into position.

4. The muscles at the back of the thigh are exercised in push-walking, in bending forward with the knees well sprung back until able to touch the floor with the hand (this is an essential part of what is

a



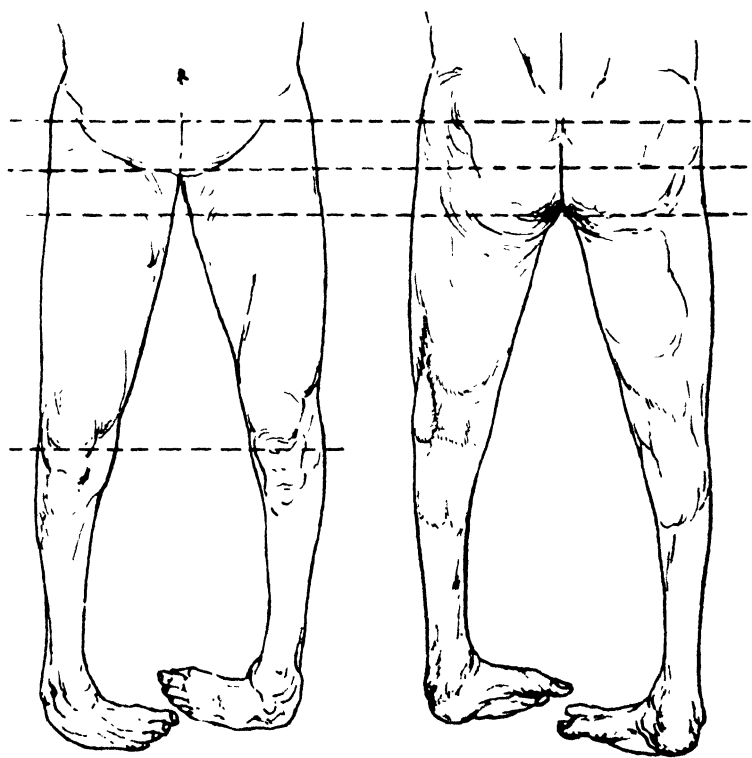
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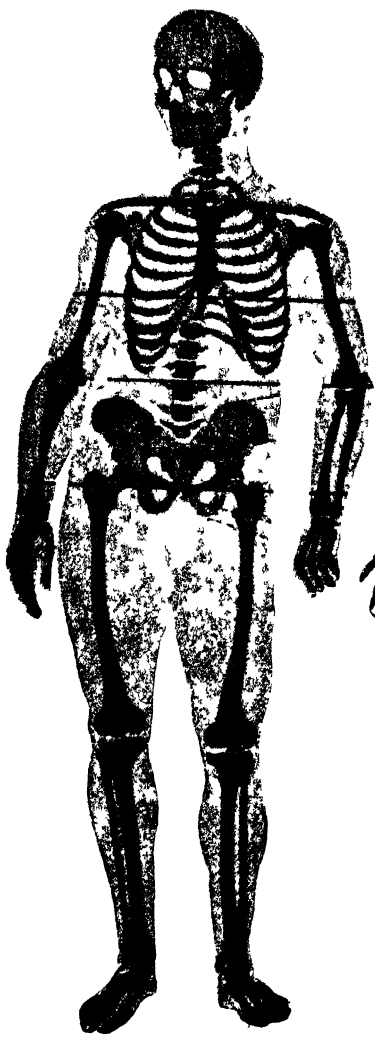
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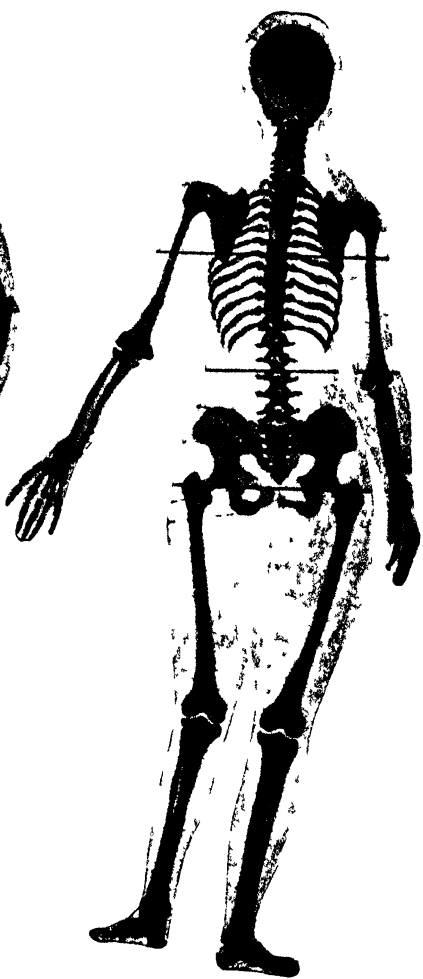
a. Normal Foot.

b, c, and d. Club Feet.

DEFORMITIES OF THE FEET.



MASCULINE FORM



FEMINE FORM

How to be Strong

EXERCISES TO DEVELOP PARTICULAR PORTIONS OF THE BODY.

To Strengthen the Arms. — The muscles of the arm are in more constant use than almost any other of the voluntary muscles; yet the amount of labor required in a great share of the exercises in which they are employed, is so small that they are often soft and flabby, and the arms poorly developed, notwithstanding their great activity. By the aid of special exercises, the arm may be developed to a very remarkable degree. A poorly developed arm lacks the graceful lines of beauty which are so conspicuous in the ancient Grecian models of the human form.

The Forearm. — The forearm, or that portion of the upper extremity between the elbow and the wrist, is used in all exercises which require holding objects in the hand. This part of the arm is especially used in such exercises as hammering, planing, chopping, and driving. Pulling one's self up by the hands requires a powerful effort on the part of these muscles. But this is too powerful exercise for a beginner. Twisting movements of the arms, such as Exercises 1 to 4 with dumb-bells and Exercise 7 with Indian clubs, are excellent means of developing the muscles of the forearm. Rowing, lifting, and carrying heavy weights in the hands are all exercises which strengthen the forearm.

The Inner Side of the Arm.—When the arm is bent, a mass of muscle can be felt by placing the other hand upon the arm between the shoulder and the elbow. When the muscles are relaxed, the flesh is soft; but

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when it is brought strongly into exercise, it is felt to contract and to harden under the hand. This muscle is known as the biceps. It is used in all movements which flex or bend the forearm, and is strengthened by nearly all exercises which develop this part. Exercises with dumb-bells are particularly adapted to develop this muscle:

1. Take in the hands a pair of iron dumb-bells about one-twenty-fifth the weight of the body. Place the hands at the sides, standing with the chest well expanded and the head up. Slowly raise the dumb-bells up from the sides to the shoulders, and return to position. Repeat. After a few moments, rest and repeat the exercises until the dumb-bells have been raised and lowered forty or fifty times. As the strength increases, make the dumb-bells heavier, until those weighing ten to fifteen pounds each are used.

Exercises 5 to 16, made slowly with iron dumb-bells, rapidly increase the strength of the muscles used.

2. Pulling weights, arranged so that the handles hang from the ceiling, may be used with excellent effect to strengthen these muscles. The handles should be high enough so they can be just grasped with each hand. The weights should be light at first, but should be gradually increased. Bring the right hand down to the shoulder and return four times. Repeat the same with the left hand, the two hands, and then use both together. Repeat many times until the muscles have had work enough to make them tired. A single pulley-weight, drawn from above the head down to the breast, using both hands, may be usefully employed in alternation with the double pulley-weights. Lifting weights

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with the hands, holding weights at arms-length, climbing a rope and hanging from a bar, or drawing one's self up by the hands, are excellent exercises for these muscles. The last-named exercise should not be attempted, however, until the muscles have been made strong by carefully graduated exercises, which may be advantageously taken with the single pulley, increasing the weights from day to day until a weight equal to one-half that of the body can be readily lifted with one hand; then the whole body may be lifted by grasping a horizontal bar placed high enough above the head so it can be just reached, drawing the body up until the chin is level with the bar. Repeating this exercise several times will give the biceps all the work they require.

The Outer Side of the Arm.—This portion of the arm is more likely to be neglected than any other. When these muscles are not properly developed, the arm lacks that symmetrical roundness and plumpness which a well-developed arm possesses. The following are excellent exercises to strengthen them:

1. Grasp the dumb-bells in the hands, and place them upon the shoulders. Keeping the left hand in position, carry the right hand to the horizontal and back slowly. Repeat four times. Do the same with the left hand. Alternate, and use both together, repeating as many times as desired.

2. Place a couple of chairs back to back and about two feet apart. Stand between the chairs, place one hand on the top of each chair, grasping them firmly. Draw the feet up from the floor. Now let the body down, bending the arms. Straighten the arms, thus

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bringing the body back to position, still holding the feet clear from the floor. Repeat the movement. This exercise is known as "dipping." It is one of the most efficient means of bringing the muscles of the outer arm into active exercise. At the first attempt, two dips will be sufficient to make the muscles thoroughly tired. The number should be gradually increased until forty or fifty dips can be made without touching the feet to the floor. When this can be accomplished, the muscles employed may be considered in good condition. Such exercises as pushing heavy weights and striking a sand bag with the fist are well calculated to develop the muscles of this part of the arm.

The Shoulders.—The front and sides of the shoulders are vigorously exercised in holding weights at arms-length, and swinging the ax in chopping. Dumb-bell Exercises, Nos. 17 to 44, and Indian Club Exercises, Nos. 1 to 6, are particularly useful in developing the shoulders. The upper and back part of the shoulders and upper part of the back may be developed by the use of dumb-bells, pulley-weights, and particularly by rowing. The following excellent exercises strengthen these muscles:

Grasp the dumb-bells (iron dumb-bells). Place them at the sides, carrying the arms backward as far as possible. Stooping work, combined with lifting, such as shoveling, breaking stone, and many other laborious occupations, develops these muscles powerfully. Lifting weights, when the body is erect, brings strongly into exercise the large muscle at the back of the neck.

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The Fingers.—The fingers may be strengthened by lifting weights, grasping by the thumb and fingers only, or holding the weight with one finger by means of a ring or loop; by the use of the pulley-weights, using one finger only, instead of the hand; by supporting the body in a hanging position, grasping the edge of a board, as a rafter in the garret, or a floor joist overhead in the cellar.

To Develop the Sides of the Waist.—A man who is weak at the sides of the waist sways from side to side as he walks, particularly when walking fast; hence these muscles may be strengthened by rapid walking. Hopping, first on one foot and then on the other, continuing the exercise until one-half or three-fourths of a mile can be traversed in this way, is an excellent means of strengthening the muscles of the sides of the waist. Walking on the edge of the top board of a fence, or the iron rail of a railroad track, or a tight rope, with a balance pole, gives these muscles very active and improving exercise.

Balancing a weight upon the head while walking is also an excellent means of strengthening the muscles of the waist, as well as of the neck and back. The erect carriage of the peasant women in Germany, Italy, and Southern France, and of many of the native negro tribes in Africa, is due to the practice cultivated from childhood of carrying burdens upon the head. Among the native Arabs erect carriage is a universal characteristic. Some years ago, in visiting Jerusalem, the author took great interest in watching the long lines of camels entering at one of the city gates, each surmounted by a turbaned Arab, sitting erect as a pillar,

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swaying back and forth with the long, lurching stride of the camel, but never once losing his erect poise. Mr. Floyd, the well-known tourist guide, informed the author that this erect carriage is greatly cultivated by the Arabs, and that in associating with the Arabs in their native encampments he had often heard the fathers reprimand the sons for not retaining the upright position when sitting, or a good carriage when walking.

The muscles of the sides are called into vigorous action in energetic walking, with body erect and shoulders back, especially if the feet are raised high in stepping.

To Strengthen the Muscles of the Abdomen.—The following exercises are particularly good to strengthen these muscles:

1. Sit on the side of a chair, placed close to the wall, so that the toes may touch the base board. Sit erect with the body rigid. Place the hands upon the hips. Let the body fall slowly backward, and after a few seconds, return to an erect position. After some practice, the body can be lowered to a horizontal plane and restored again to position with great ease. The exercise should be repeated a greater number of times as the muscles become stronger.

2. Fasten a couple of loops to the base board, each large enough to admit the foot. Place a low stool at such a distance from the wall that when one sits upon it with the limbs extended, the feet can be placed in the loops. Now place the hands upon the hips, and sway the body back and forth.

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3. Lie on the back on the floor or on an ordinary bench. Fill the lungs by taking a deep breath. Keep the legs stiff. Place the hands upon the hips. Raise the trunk slowly to the perpendicular, and slowly return to the horizontal. Repeat several times. The vigor of this exercise may be much increased by placing weights upon the shoulders.

4. Stand erect. Place the hands upon the hips, and bend backward as far as possible. Then bring the body to the perpendicular. This not only exercises the abdominal muscles, but stretches them when they have become contracted, and corrects flatness and posterior curvature of the spine, which are indicated by a sunken-in appearance of the lower part of the chest.

5. Other exercises, such as swinging clubs, using dumb-bells, chopping, pushing with the hands, etc., also strengthen these muscles.

To Strengthen the Back and Loins.—A person who is weak in the back needs such exercises as will strengthen the muscles on either side of the spine and the lower part of the trunk. These very important muscles are called into action in nearly all kinds of work. One who is weak very easily strains the muscles by some extra exercise, giving rise to much pain and suffering, which shows the importance of making them stronger by special exercise calculated to develop them.

1. Sit upon a stool with the feet secured by loops fastened to the floor. Place the hands upon the hips, and bend the body slowly forward and back to position several times. Bend the body backward in the same way, and to either side, repeating each movement a number of times. Or, stand erect, the feet half or two-

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thirds of a yard apart. Clasp the arms above the head, and sway the body back and forth and from side to side.

2. Standing against the wall, place the hands upon the hips and bend the head down as far as possible without bending the knees. If the muscles of the back are rigid, it would be well to have an assistant press the head down a little farther when the body has been bent as much as possible.

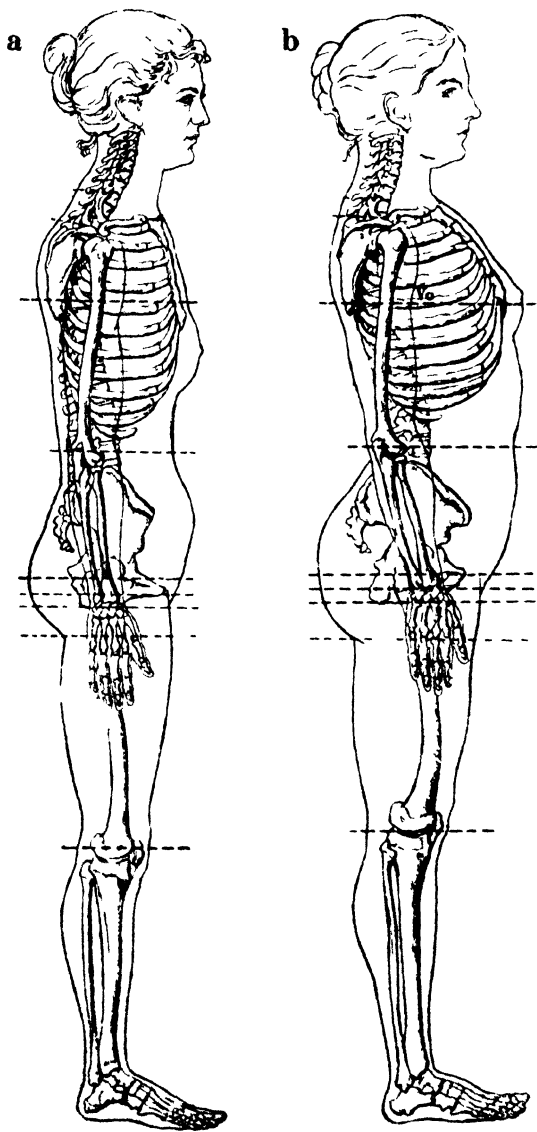
3. Stand a foot or two from the wall. Lean against the wall, supporting the body by the head, keeping the trunk and limbs rigid.

4. Place two low stools far enough apart so that the difference between them will be about six inches less than the height of the body. Now lie down, and place the feet upon one and the head upon the other, so that the body will be supported between the two.

5. Kneel upon the floor with the thighs and trunk erect, and the feet placed under the edge of a heavy sofa or some other similar support. Now inflate the lungs, and bend forward to the floor. Return to position and repeat.

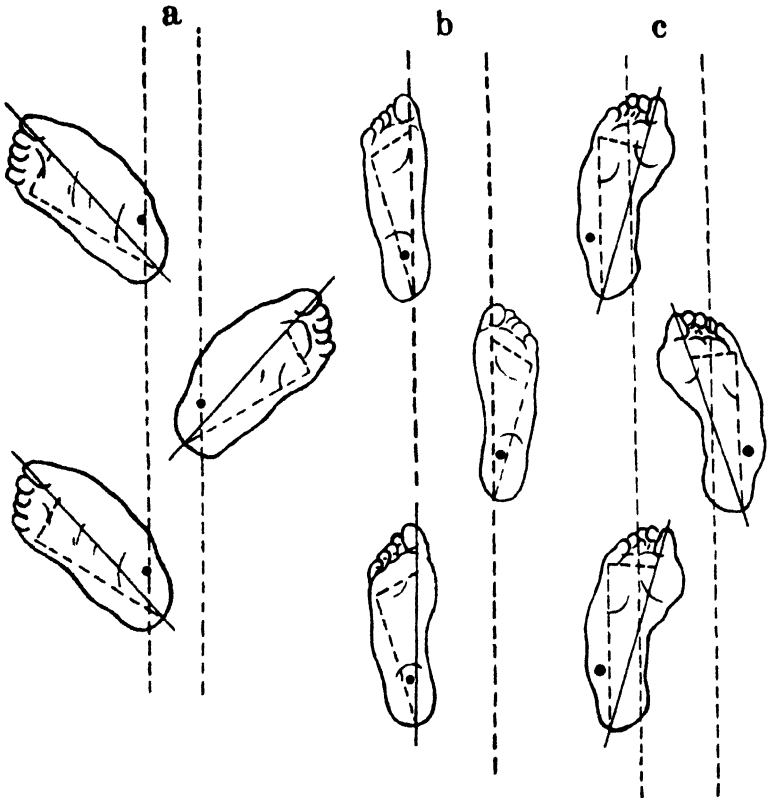
6. The muscles of the loins are developed by the use of dumb-bells, Indian clubs, and pulley-weights, as well as by such occupations as hoeing, shoveling, lifting, carrying weights, etc.

To Expand the Chest.—Attention should be given to the chest, in connection with all other exercises, by taking care to keep the shoulders back, and filling the lungs before taking any exercise. The following exercises are calculated to broaden the chest:



a Flat Chest from Improper Sitting Position b Normal Well Developed Woman

FEMININE PHYSIQUE



a. Flat Feet

b. Normal Feet

c. Hollow Feet

NORMAL AND DEFORMED FEET

How to be Strong

known as the "setting up drill," to which fresh cadets at West Point and other military schools are subjected), and walking with weights attached to the foot, or using the pulley-weights with the foot. In throwing the foot violently forward, as in kicking, these muscles are vigorously exercised.

Exercise for Flat Foot.—Flat foot is probably due in most cases to congenital weakness of the ligaments which support the arch of the foot. The development of this deformity is doubtless encouraged by long standing upon a hard, resisting surface. In very bad cases, this difficulty cannot be cured. The pain occasioned by it may be relieved by the use of a support worn in the shoe. Such an appliance can be obtained through any surgical instrument maker, to whom it will be necessary to send an outline of the foot made by placing the bare foot upon a piece of paper and marking the outline with a pencil. In young persons this defect can be to a very considerable degree remedied by the following simple exercise: Place the feet close together so that they are parallel, toes and heels touching. Firmly holding the feet in this position, rise upon the toes, contracting the muscles of the calf in such a way as to lift the heels from the floor. The heels should be raised as high as possible, and the position should be held while counting eight. Heels may then be allowed to sink. After resting a few seconds, repeat the exercise.

Exercises to Promote General Health and Development.—As before remarked, there is nothing better than labor for promoting muscular development and securing the advantages which come from exercise.

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But care should be taken continually to keep as nearly as possible in a correct poise. Ignorance, carelessness, or weariness often leads a person to assume awkward and unhealthful positions while engaged in work, which, in consequence of the irregular muscular development thereby induced, become fixed deformities. It should also be remarked that some employments give undue exercise to special muscles, and this leads to deformities. A carpenter, blacksmith, and cabinetmaker may be generally known from other artisans by the way in which they carry their arms. The strongly developed flexor muscles overbalance the extensors, so that the arms are constantly bent when at rest as well as at work.

For children, out-of-door play, light work, assisting in cultivating small fruits, doing chores, and similar occupations, are the very best kinds of employment. Elderly people require a considerable amount of exercise, but should carefully avoid violent exercise of all sorts. They should especially be careful not to become greatly overtaxed, or not to become greatly out of breath. The chest wall being rigid, the lungs cannot expand as in youth, and the heart may also be easily overworked. Elderly people who are accustomed to exercise do not so quickly experience a sensation of fatigue because of diminished nervous sensibility. They are consequently very liable to overwork, not being aware of the fact until a day or two later, when the symptoms of secondary fatigue appear. It is very important that elderly people should understand this fact, which applies to mental as well as physical work. An elderly man may be able to compete

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with a young man in exertion without apparent injury at the time, but will later suffer, while the young man will experience no injury, though at the time greatly exhausted.

Women as a class suffer more than do men in consequence of lack of exercise. Their exercises must be less violent than those of men, as they have but half the muscular strength, and are less accustomed to vigorous muscular exertion. Breathing exercises are especially important for women and aged persons.

Running exercises are not to be recommended for adult women nor for persons past middle age. Boys and girls of twelve to eighteen years of age may run until quite fatigued without injury. Their hearts and lungs are sound, and not easily damaged. Adults, unless from youth accustomed to running, must content themselves with a very slow pace, and should avoid exercising until extreme breathlessness is produced. The pulse and the respiration should return within a few minutes to the normal rate. When the pulse remains quick for half an hour or more after exercising, this fact is evidence that the exercise has been too violent, and must not be repeated until the body has been trained.

Elevation of temperature, as shown by the thermometer, after moderate exercise, as a walk of a mile or two, is a symptom which should receive immediate attention, as it indicates a possible beginning of tuberculosis of the lungs. Exercise should never be taken by a person who has fever. Persons who are just recovering from an attack of typhoid or other acute febrile disease, should begin exercising very carefully

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indeed, as there is great danger of producing a relapse. Even sitting up will cause an elevation of temperature in a recent fever convalescent.

The Amount of Exercise Required.—A working-man, as we have learned, may perform work equivalent to lifting nine hundred tons a foot high in a day. It is not probable, however, that so much work as this is required for the maintenance of health; but it has been calculated that at least one-fourth of this amount of labor, or work equivalent to walking nine miles, should be done daily by the average man in order to maintain normal and proper vigor and activity of the lungs and heart, and of the various functions which depend upon the action of muscles. It should be remembered, however, that the strength, health, and vigor of the internal muscles, those of the stomach, intestine, and bladder, as well as those of the heart, depend upon the strength of the external muscles. When the external voluntary muscles are weak, the internal muscles become weak also. There is known to be an association through the nerves of the muscles of the abdomen with those of the stomach, such as accounts for these effects. In the examination of hundreds of patients, the author has observed that those patients who have extremely dilated stomachs have extremely weak abdominal muscles. The maintenance of strong and vigorous external voluntary muscles must then be regarded as directly related to the health of the important organs of the trunk upon which maintenance of life primarily and immediately depends.

Exercise may be classified as gentle, moderate, and violent. Gentle exercise is that which does not pro-

How to be Strong

$7\frac{1}{2}$ miles, at the rate of 3 miles per hour ($300,000 \div 150 \times 20 = 40,000$). The same man practicing heel raising at the rate of 100 movements a minute, for 16 minutes, rising 2 inches each time, would do as much work as in walking a mile ($150 \times \frac{1}{2} \times 16 \times 100 = 40,000$).

He would have to continue the exercise for 2 hours to lift his 150 foot tons. As this would make the legs do all the work, it would be better to divide the work between the arms and the legs. This may be accomplished by making the arms assist, by resting the hands upon the back of two chairs, the foot of the bed, a table, or any other convenient support, and making a downward push with the arms each time the heels are raised.

A larger amount of work may be done in the same time by lifting a pair of iron dumb-bells with the arms at the same time the heel-raising movements are executed. For example, a person weighing 150 pounds, holding in his hands a pair of dumb-bells weighing 25 pounds each, making the total weight lifted 200 pounds, raising himself 2 inches 30 times a minute, would do work amounting to 1,000 foot pounds each minute, or 60,000 foot pounds in an hour.

If at each movement a pair of dumb-bells weighing 10 pounds each are raised 1 foot, the additional work thus done would amount to 21,600 foot pounds for the hands. The combined work of the arms and legs would be 39 foot pounds for each movement ($162 \div 6 + 12 = 39$). It is only necessary to divide the total work to be done, 300,000 foot pounds, by 39 to determine the number of times the movement must be executed ($300,000 \div 39 = 7,700$). At the rate of 20 movements

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a minute, the work could be done in a little less than $6\frac{1}{2}$ hours.

By combining knee-flexing movements with the arm-flexing movements and the heel-raising movements, the required work can be accomplished in a shorter time, although the greater length of time required for the execution of the movement lessens the advantage. For example, a person weighing 150 pounds, first raising his heels, then bending his knees, and returning to position, raising and lowering his body about 14 inches in so doing, would perform work equivalent to lifting his entire body 1 foot in the same length of time. Executing these movements at the rate of 16 times a minute for 2 hours and 5 minutes, would be equivalent to walking 8 miles, or a day's work of 150 foot tons, for a person weighing 150 pounds.

Fatigue.—When any large group of muscles—for example, those of the legs—is set in active operation, as in jumping or running, one becomes very quickly out of breath. This is a species of fatigue. It is due to the fact that when the muscle is at work, it throws into the blood which passes through it a large quantity of carbonic acid gas, which is poison to the body, and must be hastened out through the lungs. The greater the amount of this gas thrown into the blood, the quicker one becomes out of breath, and the more rapid and urgent the breathing movements. Under the influence of active exercise, the lungs are expanded to their utmost capacity by strong chest movements, which are made without voluntary effort, for the process of breathing is under the control of the higher will. The breathing movements induced by vigorous

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exercise are deeper than those that can be induced in any other way, because they are executed in obedience to an imperative command from the nerve centers through which the automatic will controls the lungs.

If the exercise is less violent and continued for a longer time, one may not get out of breath, but after a while the muscles will become wearied, so that movement is difficult, and may become impossible. This fatigue, or exhaustion, is due, not to the using up of the supply of energy with which the muscles are stored, but to the production of certain poisonous substances which result from the muscle work, and which have the effect to paralyze the muscle. If one rests for a time, the sensation of fatigue will disappear, the fatigue poisons having been washed out by the blood. The fatiguing exercise may now be repeated.

Secondary Fatigue.—After very prolonged and violent exercise, especially exercise to which one has not been accustomed, one may find himself suffering from muscular soreness, stiffness, together perhaps with great lassitude, and even fever, if the exercise has been very violent or prolonged. These symptoms do not generally appear until some hours, perhaps a day or even longer, after the exercise producing them. This is known as secondary fatigue.

The fatigue induced by a short period of exercise is very quickly recovered from, possibly disappearing within a few minutes. The longer and the more arduous the work performed, the longer the period of rest required for recuperation. Exertion may be carried to such a point that death may result from the fatigue induced. **Runners** have sometimes dropped dead at the end of

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a long course. Horses have been known to die suddenly from the same cause, also dogs when attempting to follow their master on a long and fast bicycle ride. Carrier pigeons not infrequently fall to the ground dead from exhaustion after a long and rapid flight. In such a case death is due to the rapid accumulation of the fatigue poisons formed by the overacting muscles. Fatigue may be said to be always a condition of poisoning, whether it be local or general fatigue.

It is interesting to note that exercise of a portion of the muscles may give rise to general fatigue. For example, one's arms become tired as the result of running, although not to any extent actually employed in the exercise.

The brain and nerves are also wearied as well as the muscles by prolonged muscular work. It is important to note the fact that one is more likely to become fatigued when performing exercise to which he is not accustomed. When he becomes used to the work, it can be done with less fatigue, or perhaps none at all, and the smaller amount of carbonic acid gas produced shows that the work done by the muscle is less.

Mental work requires much less food than does physical labor. Recent careful experiments which have been made, show that men engaged in active mental labor and abstaining from muscular exertion, require practically no more food than men at rest. This is a fact of very great importance for students, ministers, and other professional men whose occupation does not require any considerable amount of effort, since the taking of food in excess of that which is required results in the filling of the blood with poisons,

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and in consequence crowding of the tissues with tissue wastes and poisonous matters which interfere with all the bodily functions, and especially with the functions of the brain and nerves. Mental activity is clouded, sleep may be prevented, and all the effects of nervous exhaustion produced by a comparatively slight expenditure of energy, giving rise to languor, sometimes depression, and at other times irritability, confusion, and indecision of mind, even moroseness and melancholy.

The condition of lethargy produced by excessive eating or habitual drunkenness must be distinguished from fatigue due to work. Persons in this condition often decline to exercise because they "feel so tired." This state of lassitude and enervation cannot be overcome by rest. Carefully graduated exercises and regulation of the dietary are the proper remedies. There are many chronic invalids whose sufferings and disability are wholly due to this cause, and who may be readily restored to usefulness by a spare and simple dietary, combined with outdoor exercises, gradually increased in vigor and duration as the strength improves.

Persons whose habits are sedentary are very much subject to secondary fatigue. As we have already learned, one-fourth of the food eaten, or two thousand five hundred food units, should be consumed by muscular work. A sedentary person consumes in work only one-tenth part of the food eaten, or eight hundred food units, leaving the remainder to accumulate in the body in the form of unused material, provided the same amount of food is eaten. This would give rise to an accumulation of fat at the rate of about one pound a week; but after a time the limit of useful fat accumu-

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lation is reached, so that no more of the reserve material can be properly disposed of in this way; if the same quantity of food is still taken, the tissues are flooded with imperfectly burned material. If meat, milk, eggs, or other albuminous foods are used in considerable quantity, uric acid and other similar poisons accumulate in the muscles. Such a person on taking exercise, even though it may be very small in amount, suffers extremely from secondary fatigue. A slight cold, or any unusual digression in diet, such as is likely to occur on Christmas or other holiday occasions, may increase the amount of tissue poisons to the extent of provoking an attack of rheumatism or gout.

The soreness and stiffness which accompany secondary fatigue usually disappear in a few days, and unless the exertion has been exceedingly violent, so that the parts used have been strained or otherwise injured, the muscles are stronger than before, and able to endure more work, and the same exercise may be repeated without injury. The soreness and stiffness which follow the first attempts with any new form of exercise or any unusual amount of exercise, should not discourage one, but should be regarded as an indication that nature is preparing the muscles for better service by strengthening the muscular fibers and storing up a larger amount of energy.

Those who have not been accustomed to active exercise generally manifest a very great reluctance to engage in vigorous or prolonged muscular effort of any sort. The fatigue experienced is disagreeable, more or less distressing, perhaps; but perseverance will work such a change in the muscles and in the whole body

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as to make active muscular exertion a pleasure and a delight instead of a disagreeable task. All animals delight to work. A healthy child can with difficulty be restrained from almost constant activity when awake. Man is naturally constituted to be the most agile, enduring, and active of all members of the animal creation.

A Day's Work.— The amount of work which can be performed by the whole body is much greater than one would naturally suppose. The human body is, in fact, one of the most perfect working machines in existence. It makes more economical use of the food taken into it as fuel than does the most improved form of locomotive. The body is able to utilize one-fourth of its food-fuel in energy, three-fourths going to the production of heat, whereas the most economical steam engine ever constructed can utilize only about one-sixth of the energy of the fuel, five-sixths being wasted as heat.

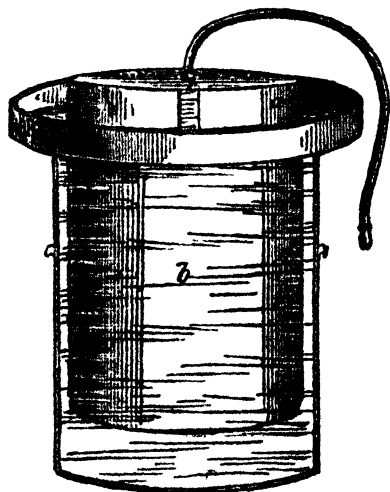
The total strength of all the muscles in the body of a very strong man, as shown by the dynamometer, an instrument by which muscle strength is tested, is about ten thousand pounds. The strength of the average healthy man is about two-thirds as much, or, we may say, six thousand pounds. Of course no person can lift a weight of ten thousand pounds. The figures given represent the sum of all the lifts, pushes, and pulls which the various groups of muscles of the body can execute. The anatomist knows each of the five hundred pairs of voluntary muscles by name. This great number of muscles is divided into about thirty groups, but for our purpose we may simplify still more,

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and divide the muscles of the body into five groups—those of the legs, arms, trunk, chest, and back.

It is interesting to note something of the relative strength of these several regions of the body. The strength of the legs is almost exactly one-half that of the entire body, and twice that of the arms; so the strength of the arms is about one-fourth that of the whole body. The combined strength of the trunk and the chest equals that of the arms. The strength of the average woman is about one-half that of the average man.

Vital Capacity.—By this is meant the number of cubic inches of air which can be exhaled after a deep inspiration. This has been found to have a direct



SPIROMETER.

relation to the height of an individual. A person who is five feet and one inch in height, has a vital capacity of 175 inches. Each additional inch in height adds eight inches in vital capacity. Thus, a person measuring five feet eight inches in height should have a vital capacity of 230 cubic inches. The lung capacity is easily measured by means of a spirometer.

An instrument of this sort, shown in the accompanying cut, and which will answer a very good purpose, may be made as follows:

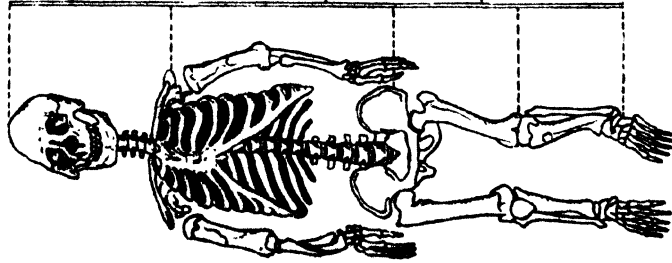


Fig. 1.
Dwarf.

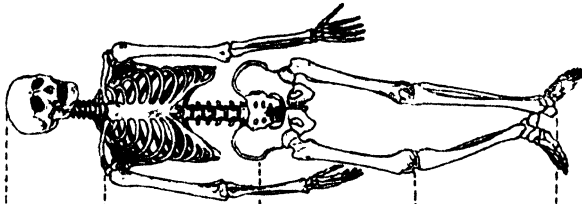


Fig. 2.
Well proportioned Man.

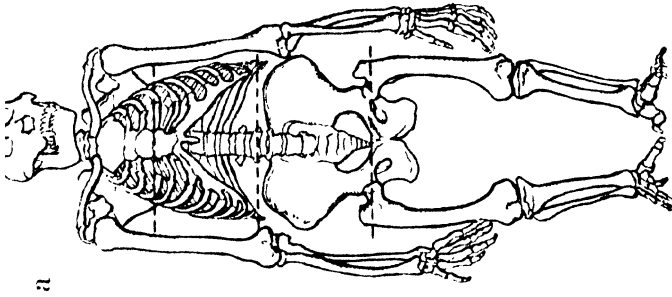


Fig. 3.
Gorilla.

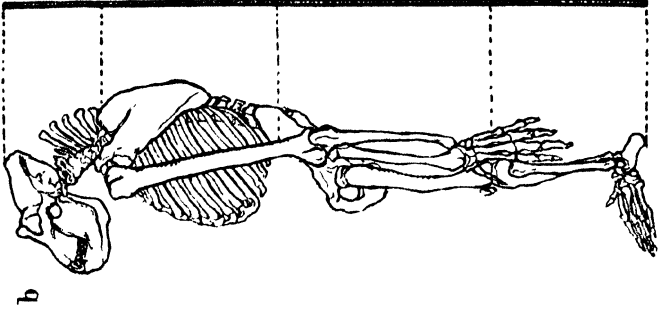


Fig. 4.
Gorilla — Side View.

How to be Strong

The instrument consists of two tin vessels, one inverted inside the other. The larger one should be nearly filled with water, and should have a small tube passing up through the center nearly to the top. This should communicate with a flexible tube outside, to the end of which is attached a mouthpiece, which may consist of a short glass tube with a good-sized bore. By blowing into the tube, the inner vessel will be made to rise, and the amount of air expelled will be indicated by a scale accurately determined by previous calculation or experiment, and marked on the outside. If the inner vessel is eight inches in diameter, a scale may be made with lines one-tenth of an inch apart, each of which will represent five cubic inches of air.

A person five feet high ought to be able to raise the scale three inches and a half, after taking a full inspiration. A person six feet high should be able to raise it five inches.

By the daily practice of the exercises described in the chapter on exercises, a person may increase his vital capacity very greatly.

When a person is exhausted from sedentary employment, the practice of deep and prolonged respiration, with the chest well expanded, the shoulders back, and the spine erect, will be found exceedingly refreshing.

Development of the Body.—A vigorous and symmetrical development is something worthy of the ambition of every man; and it is worth while to know that while all cannot become athletes, every man may greatly improve his physique by proper daily exercise.

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The following table represents, according to Maclaren, the proportions of the average healthy young man of nineteen, who has never had any special gymnastic training:

Height.....	5 feet, 8 $\frac{1}{2}$ inches.
Weight.....	133 pounds.
Chest measurement.....	33 inches.
Forearm measurement.....	10 inches.
Upper-arm measurement.....	10 $\frac{3}{4}$ inches.

All of these measurements may be considerably increased by a few months' training. The height may be increased from half an inch to two inches; the weight, from five to sixteen pounds; the chest measurement, one to five inches; the forearm, one-fourth of an inch to one and a quarter inches; the upper arm, from one-half an inch to two inches.

Measuring the Body.—Before beginning a course of training, careful measurements of the body should be taken, so as to form a basis for comparison with subsequent measurements, and thus to determine the rate of improvement. These measurements should be made as follows:

The Height.—Stand with the back to the wall, the heels, hips, shoulders, and head touching it, the knees well braced back, the shoulders square, and the chin up. The measurement should be made each time at the same time of day, and after the same amount of exercise, as a very noticeable difference will be found between measurements taken at night and morning, or before and after taking severe exercise.

How to be Strong

The Weight.—The body should be weighed each time in the same clothing and at the same time of day. The best time is in the morning, and before any food or fluid has been taken. Care must be taken to avoid any circumstances that may influence the accuracy of the observation.

The Chest.—Stand with the arms extended horizontally, and have an assistant take the measurement with a tape passed around the chest in the line of the nipple. Two measurements should be made, one with the chest empty of air, and the other after a full inspiration.

The Upper Arm.—Close the hand tightly, and bend the arm at the elbow, bringing the hand down near to the shoulder. Measure at the thickest part of the arm.

The Forearm.—Extend the arm, and close the hand tightly. Measure at the thickest part of the forearm. The difference between the upper arm and the forearm is usually one and a half to two inches. When the upper arm is weak, the chest is usually weak also.

The Thigh.—Stand upon tiptoe, the knees well braced back and the toes pressed down against the floor as hard as possible. Measure as high as possible in a horizontal line.

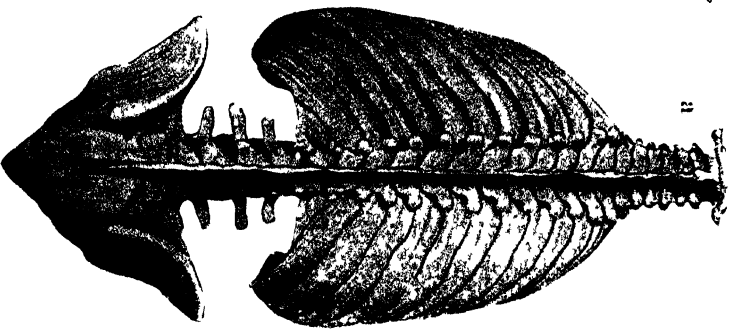
The Calf.—Stand as for the preceding measurement, and pass the tape around the thickest part of the lower leg.

To Correct Deformities in Development.—Many deformities in development, such as round shoulders, curvatures of the spine, hollow chest, stoop shoulders, etc., may be corrected by the employment of the appro-

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appropriate exercises. Lateral curvatures of the spine cause one shoulder to be lower than the other. The cause is weakness of the muscles of the back upon one side. The shoulder of the weaker side is higher than the other. This side should be exercised more than the other. In using dumb-bells or Indian clubs, the arm of the weaker side should use the heavier bell or club. The same principle applies to the use of pulley-weights and other exercises.

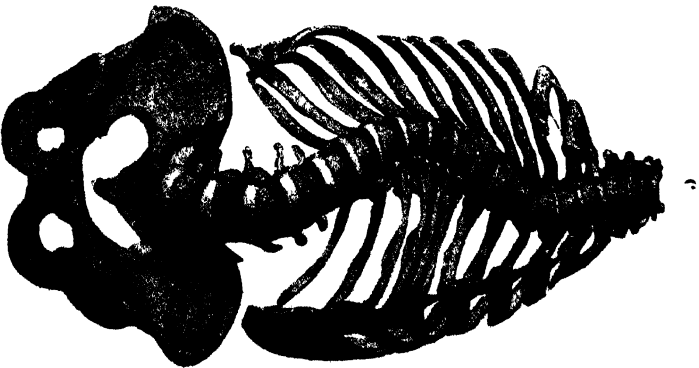
Dumb-bell and Indian-club exercises, hanging by the hands, and the use of the pulley-weights with the back to the weights, are all excellent means of correcting hollowness of the chest and stoop shoulders.



Normal Spine



Lateral Curvature



Lateral Curvature, Front View.

THE RELIGION OF THE BODY



THE essence of morality is right doing, or the practical recognition of the obligation to law. Man is a part of the great universe, and is as much under the domain of law as the planets, rocks, trees, and other natural objects, or as the pebble, which, when thrown in the air, falls to the ground in obedience to the law of gravitation. Destructive agents of every description affect man as readily as though he were of no greater value than a senseless rock or a decaying log.

In addition to the general laws which relate to all natural objects, and to which man is subject in common with all other objects, man is governed by various special laws which relate to his physical, mental, and moral welfare. For example, his digestive apparatus, from its very nature, is able to work well and easily and effectively under certain conditions; while under others its activity is imperfect and inefficient. In other words, there are certain laws which relate to digestion, the infringement of which is visited by the penalty—indigestion. So, also, certain laws regulate the activity of the muscles, the lungs, the heart—every portion of that delicately contrived machine which we call the body. It is also evident that the mind, which is intimately related to the brain, acts in accordance with certain well-defined laws; and a

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failure to observe this fact often results in serious and sometimes irreparable injury. If it were not for the penalties which nature has attached to the violation of her laws, man would often abuse his body in the most gross and shameless manner, wholly perverting its functions and objects from the original intention of his Creator.

Pain a Blessing.—When we violate a physical law, nature warns us that we must cease wrong doing, and mend our ways. If we might thrust any portion of the body into a fire without being burned, how long would we be likely to escape serious injury from this destructive agent, as the result either of neglect or carelessness? If we heed the first hints of warning nature gives us, we may be protected from the grave injuries which often result from neglecting her warnings; but if we ignore the friendly warning of danger which nature gives whenever we go astray from the path of physical rectitude, in the form of pain, discomfort, or other unpleasant symptoms, nature after a time ceases to enter protest against the abuse to which she is subjected, leaving the body practically defenseless against the enemies of life and health with which it is surrounded.

Moral Law.—The moral nature, as well as the physical and mental, is also subject to various laws, the observance of which is necessary for its well-being. What these laws are, we need not stop to define, as they are epitomized in the most faultless manner in that wonderful crystallization of all moral principles and precepts, the Divine Decalogue. Though graven in stone by the finger of the Almighty at Sinai,

The Religion of the Body

these rules for the moral direction of human beings were not there created, but, like those laws which relate to man's physical organism, were the outgrowth of his moral nature, the necessary consequence of the relations established between man and his fellow man by the fiat of the Creator which brought him into existence. The violation of one of these moral principles must as certainly result in injury to the transgressor, as the violation of those laws which relate to his digestion, or to the activity of any of his bodily organs.

The idea that the Almighty made man, and then laid down certain arbitrary rules by which his moral acts should be governed, is a mistaken one. The dire consequences of sin are as much the result of the infraction of the principles which are the natural outgrowth of man's moral constitution, as the pain which follows the exposure of the flesh to mechanical violence, or the action of a chemical agent, is the result of the violation of those laws which relate to his physical constitution, and which govern the relations of his body to external things.

Those who find fault with the Almighty for making men subject to pain and suffering, physically, mentally, and morally, would do well to consider for a moment what would be the consequence if all penalties for wrong doing were abrogated. The patient, groaning with distress, looks upon pain as a calamity which he would gladly escape from if possible. The wise physician recognizes pain as one of man's best friends, since it warns him of his danger when pleasure or fancy allures him from the straight road of physical rectitude. So, also, the moral physician looks upon

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the penalties of moral transgression, not as calamities, but as monitors, deprived of the influence of which, most human beings would quickly lose themselves in the mazes of moral turpitude.

Morality is generally looked upon as relating solely to those relations which are directly embraced in the injunctions of the ten commandments; but the view which regards man as a natural object, governed only by natural laws, and which defines right doing as being simply obedience to law, gives to the term *morality* an immensely broader scope, and makes it include all those laws and principles by which his entire being is governed.

This notion of morality is confessedly a modern one, or rather a revival of a primitive idea which was hidden so deep in the mental and moral darkness of the Middle Ages that it has only in modern times begun to reach the light. Less than a thousand years ago, physical and moral uprightness were supposed to be so far dissevered as to be actually antagonistic; and, indeed, it is asserted that the idea that the degree of a person's holiness was to some extent proportionate to his lack of cleanliness, was once so prevalent among a certain class of religionists that to be extremely filthy in habits was considered more creditable than to be scrupulously neat.

Bogus Religion.—According to a recognized authority, St. Ignatius was accustomed to appear abroad “with old, dirty shoes. He never used a comb, but allowed his hair to clot, and religiously abstained from paring his nails. One saint attained to such piety as to have nearly three hundred patches on his breeches,

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which, after his death, were hung up in public as an incentive to imitation. St. Francis discovered by certain experience that the devils were frightened away by such kind of breeches, but were animated by clean clothing to tempt and seduce the wearers; and one of their heroes declares that the purest souls are in the dirtiest bodies. Brother Juniper was a gentleman perfectly pious on this principle; indeed, so great was his merit in this species of mortification, that a brother declared that he could always nose Brother Juniper within a mile of the monastery, provided the wind was at the due point. Many stories are told of lions and other fierce beasts of prey rushing upon such holy men in the desert, but suddenly stopping in their career, and flying away with every sign of fear and terror; which may well be credited, the 'odor of sanctity' being too much for the olfactory nerves of a lion."

Genuine Religion.—A genuine morality is broad enough to take in the whole man, and demand self-respect, and obedience to all the laws relating to his welfare. This is genuine religion, pure and undefiled. The religion of Socrates, while embodying many and most excellent moral precepts, still gave license for the free gratification of the animal instincts, and ignored to a large degree the moral obligation to care for and discipline the body. The religion of Buddha, while stimulating its disciples to a high degree of self-control and self-abnegation, ignored the poor body as worthy but to be sacrificed or tormented, as a possible means of improving the soul. The religion of Mohammed, while imposing many sanitary obligations, pictures a heaven teeming with sensual pleasures. No-

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where else but in enlightened Christianity is there to be found a religion broad enough to embrace a whole human being, an entire humanity.

Religion includes something more than simply morality. It includes not only belief in a higher Power, and in personal and individual obligations to the same, but a recognition of an individual dependence upon the higher Intelligence, and faith in His ability and readiness to afford aid and succor in times of need and distress. One of the most unhappy tendencies of the times is the growing disposition to skepticism, which is apparent to every one. Too often the young, dazzled by the achievements of science, and perplexed by the apparent discrepancies between natural and revealed truth, are led to reject the simple revelation of inspiration, and to exalt beyond their real importance the dicta of men of science. Others are beguiled by the wily but blasphemous sophistries of Ingersoll and his followers. A few years ago, at a public meeting in London, at which an eminent American statesman was present, some of the speakers of the evening took occasion to sneer at religion, saying that they could get along without it, and depreciated its influence upon men. The admirable reply of the American was so effectual an answer to the arguments urged by those skeptics, that we take pleasure in quoting it as follows:

An American Statesman on Skepticism.—"I do not think it safe. I am formulating no creed of my own; I have always been a liberal thinker, and have, therefore, allowed others, who differed from me, to think also as they liked; but at the same time I fear

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that when we indulge ourselves in the amusement of going without a religion, we are not, perhaps, aware how much we are sustained at present by an enormous mass, all about us, of religious feeling and religious conviction; so that, whatever it may be safe for us to think,—for us who have had great advantages, and have been brought up in such a way that a certain moral direction has been given to our character,—I do not know what would become of the less favored classes of mankind if they undertook to play the same game. I wish only to enter the protest of one in whose veins runs the blood of Calvinistic ancestors, against the way in which Calvinism has been spoken of, and also to remind one of the speakers that the saint whom he quoted was the same who said, ‘The greatest of these is charity.’ Whatever defects and imperfections may attach to a few points of the doctrinal system of Calvin,—the bulk of which was simply what all Christians believe,—it will be found that Calvinism, or any other ism which claims an open Bible and proclaims a crucified and risen Christ, is infinitely preferable to any form of polite and polished skepticism, which gathers as its votaries the degenerate sons of heroic ancestors, who, having been trained in a society and educated in schools, the foundations of which were laid by men of faith and piety, now turn and kick down the ladder by which they have climbed up, and persuade men to live without God, and leave them to die without hope. The worst kind of religion is no religion at all; and these men, living in ease and luxury, indulging themselves in the ‘amusement of going without religion,’ may be thankful that they live in lands

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where the gospel they neglect has tamed the beastliness and ferocity of the men who, but for Christianity, might long ago have eaten their carcasses like the South Sea Islanders, or cut off their heads and tanned their hides, like the monsters of the French Revolution.

“When the microscopic search of skepticism, which has hunted the heavens and sounded the seas to disprove the existence of a Creator, has turned its attention to human society, and has found a place on this planet ten miles square where a decent man can live in decency, comfort, and security, supporting and educating his children unspoiled and unpolluted; a place where age is revered, infancy protected, manhood respected, womanhood honored, and human life held in due regard,—when skeptics can find such a place ten miles square on this globe, where the gospel of Christ has not gone and cleared the way, and laid the foundations, and made decency and security possible, it will then be in order for the skeptical *literati* to move thither, and there ventilate their views. But so long as these very men are dependent upon the religion which they discard for every privilege they enjoy, they may well hesitate a little before they seek to rob the Christian of his hope and humanity of its faith in that Saviour who alone has given to man that hope of eternal life which makes life tolerable and society possible, and robs death of its terrors and the grave of its gloom.”

Skepticism Not Safe.—The statesman well remarked, “I think it not safe,” referring to the position held by the skeptics to whom he was replying. Is skepticism safe for any one? Is it safe for a young

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man starting out to fight the battles of life? Can he afford to get along without the aid of a religion which can do him no possible harm, and which has evidently been a prop and a stay to thousands, and a source of comfort of inestimable value? Think for a moment, young man, what will be your condition if in the end it should prove that your unbelief was a delusion, and that in rejecting the claims of Christianity and religion, you have rejected the only means by which you can be rescued from the thralldom of sin, and secure participation in a life beyond the grave. Suppose, on the other hand, it should prove that the Christian is mistaken. What harm can come to him? His religion has been all his life a comfort to him, and he has lived a better life, a purer life, and really a more successful life than he could have lived without it. If there is no life beyond the grave, he has lost nothing by his belief in it. The risk is all on one side.

Neglecting all considerations but those pertaining to the present life, is it not evident that every young man who would make a true success of life, needs, first of all, the guiding, strengthening, subduing, and controlling influence of religion? Man is a curious compound. He has in him qualities which ally him to the divine and pure beings of another world, linked with gross animal qualities which he shares in common with the brutes. In other words, every man has within him a beast, with appetites and passions which clamor for gratification. A good part of the battle of life, with a man who fights truly and manfully, is to subdue the beast within him, which, when once it rises to the mastery, seizes upon the intelligence, smothers the moral

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faculties, and makes of the man, once an image of his divine Creator, a veritable fiend, more grossly brutish than the most savage beast that prowls the earth. With a nature full of inherited tendencies to vice and grossness, surrounded by temptations and incitements to evil on every hand, how can a man, even though his impulses may be good, contend single-handed against such fearful odds? Religion affords a means by which the beasts of appetite and passion may be subdued and chained—yea, even slain; and most unwise is he who, in his vain self-sufficiency, rejects this most essential of all aids, religion.

Influence of Habit.—The brain and nerves are so curiously fashioned that any act repeated many times comes at last to be performed with such ease and readiness that it is done with little or no voluntary effort. Such an act is said to be habitual, and may in time come to be performed quite unconsciously. In the formation of habits, the structure of the brain is actually modified in such a way as to enable certain acts to be performed much more easily than others. This explains why it is so difficult for habits to be broken, and why it sometimes seems absolutely impossible for the unfortunate victim of some wretched vice to free himself from a thing which, in his better moments, he thoroughly abhors. For such as these, particularly, religion affords a means of aid invaluable. But even with all the aids to be afforded by this and every other means, the battle for victory over habits long indulged is sometimes a most terrific one. Hence, the importance of forming in early youth such habits as will not need to be broken. The world is full of people whose use-

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fulness is nearly or quite destroyed by unfortunate habits contracted during youth. Let the young man who aspires to a noble and useful manhood watch carefully over himself during his early years, when the foundations of his character, which will influence his whole life, are being laid.

Ethics of Health Caring.—"But," says a young man who recognizes the importance of holding fast to the principles of morality, as related to other matters, "is it anybody's business what I eat or drink or wear, or how I use my body? Do not I belong to myself? and haven't I a right to do as I please with myself?" These and similar remarks are very frequently made to those who urge the moral obligation of health culture, and apparently in full sincerity on the part of those who make them, and with entire confidence that they are offering an unanswerable argument in support of their personal rights to do as they please respecting their own bodies, whether their actions are in harmony with the laws of health or not.

Let us see how much truth there is in the claim that individual rights include the right to treat the body in a manner not consistent with its interests—to abuse the stomach for the purpose of affording the palate a questionable gratification; to whip and goad the brain and nerves by stimulants to do more work than is possible for them to do without injury; to recklessly violate any or all of the laws of health.

Individual Rights.—The claim is not that disregard of the laws of health does not injure the body, but that a man has a right to abuse his body if he chooses. Let us see. Here is a man who has vast

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possessions,—houses, barns, well-filled granaries, collections of rare and curious natural objects, galleries filled with beautiful works of art, safes filled with paying stocks and government securities,—all sorts of wealth. Suppose this man takes it into his head to destroy this wealth. Possessed by this idea, he sets fire to his houses and barns and granaries, and into the flames hurls the contents of his costly collections; deliberately enters his art galleries, and demolishes the masterpieces of great artists which adorn the walls; opens the doors of his safes and vaults, and one by one commits his treasures to the flames. Hold on there! says the Law, and its strong hand is laid upon him as soon as his purpose is discovered. A man who thus recklessly destroys his property is regarded as either a criminal or a lunatic, and, in either case, unfit to be at large. The State recognizes the fact that the man's property is not wholly his own, or at least that others have interests in it. What he does not require for his own use belongs to his children or other surviving relatives; or, in case he dies without a will and without heirs, to the State.

The State recognizes the right of a child to inherit from his father his due share of the property which the latter may have acquired. Ought not intelligent men and women to recognize the fact that the child has an even greater right to inherit from its parents a constitution unimpaired by vicious or injurious habits or neglect of the requirements of physical law? What can any parent possess which the child may inherit, that can be estimated as of greater value than a sound constitution, and vitality unimpaired by disease in-

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duced by excesses or by disregard of the wants of the body? If the rights of a child to inherit a fair share of the material wealth of its parents are considered worthy of respect and attention, are not its rights to inherit a sound and healthy body equally worthy of consideration?

Human Omnibuses.—The man who injures his constitution by reckless disregard of health laws, not only impairs his own usefulness and real happiness, shortening his life, and bringing upon himself disease in various forms with all its attendant sufferings and inconveniences, but entails upon his children and his children's children, as well as all succeeding generations, the same diseases or tendencies thereto, and the same curtailment of life and happiness which he himself suffers. Indeed, the results of his follies may be felt even more keenly by his children and grandchildren than by himself. That quaint philosopher, Dr. Oliver Wendell Holmes, remarks that each one of us is an omnibus, in which ride all our ancestors. What right has any man by reckless habits of life to compel each of his children to carry about in his "omnibus" the results of the selfish gratification of depraved tastes and morbid appetites?

A Live Picture Gallery.—It may be said, and there is no exaggeration in the figure, that each man is a picture gallery, in which hangs the portrait of each of his predecessors; and among the pictures which hang upon the walls, may be seen some brilliant with beauty, others hideous with deformity; some beaming with health and vigor, others scarred and wasted by disease. Let every man who thinks he has a right to

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treat his body as he pleases, consider for a moment the fact that his portrait may sometime hang in somebody's picture gallery, drawn true to nature by an artist who never glosses over defects, or embellishes deficiencies. It is a matter of no small consequence to the owner of said gallery whether the picture which hangs there represents disease and decrepitude, or vigorous vitality.

In the grand palace of an Eastern prince stands the masterpiece of one of the greatest sculptors that ever lived. The grace and symmetry of form and pose give to the white marble a startling appearance of life. The delicate beauty of the artist's conception, and the accuracy of the execution, are beyond description. A reckless vandal sees the treasure, and deliberately proceeds to deface it, until no trace of its former beauty exists. We look upon such an act with horror akin to that excited by murder or sacrilege. The human body is the masterpiece of the divine Architect. How dare any man say he may deface and destroy it if he choose!

The highest type of morality requires obedience to all laws, ready recognition of and acquiescence in their requirements, and sturdy adherence to the right because it is right. The highest type of Christian will include in his creed the religion of the body as well as that of the mind and heart, and should accept for his rule of action a decalogue which recognizes every law essential to the physical and mental as well as the moral welfare of a human being.

Mind and Body.—Another consideration, which certainly is worthy of the thought of every young man,

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is the fact that the brain which does his thinking is a part of his body, and that whatever seriously affects his physical health, whatever lowers nerve or vital tone, directly affects, in a harmful way, his mind. The man whose vital tone is lowered by sedentary occupation, by dissipation, by any means which overtaxes or exhausts the nervous system, is in a condition of lowered nerve tone, which means lowered brain tone, lowered mental tone, and *lowered moral* tone. In such a condition of the body, acts which under other circumstances would be looked upon with horror, lose their ghastly loathsomeness, and may at first be tolerated—afterward indulged. A man who is worn out and exhausted physically cannot possibly appreciate with proper clearness and acuteness the bearing and relations of moral principles, as he can when refreshed by rest and recuperation. When one is exhausted and fatigued, the keen sense of propriety is lessened. Moral sensibilities previously acute are benumbed, and he is readily captured in the net which fortuitous circumstances or designing slaves to vice or crime may weave about him.

Thus it appears that health has a very important relation to morality, using the word in its common and narrow sense, and that no man who desires to live a pure and upright life can afford to run the risk of lessening his moral tone and his power of resistance to evil by impairment of his physical and mental vigor.

Millions in It.—Furthermore, it is the duty of every human being to make the very most of himself, and nothing is more important to a young man pre-

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paring himself for his lifework than that he should make the most of his life, by preserving the highest possible degree of health. There are millions in it—millions of happiness, usefulness, even of wealth. A man without health, even if his burglar-proof safe contains the wealth of a Rothschild or a Vanderbilt, is poorer than the ragged newsboy whose clarion voice resounds with robust health, and whose rosy cheeks tell of the richness of the vital fluid in his veins; or the Italian peasant boy whose daily toil gives him a vigorous appetite for the handful of chestnuts upon which he dines.

The millionaire is rich in cash, but often poor in comfort. He has a heavy pocketbook, and a heavier heart; a table spread with costly dainties, but no appetite; a palatial abode, and a pain-racked body in it. The hydra-headed monster, dyspepsia, glares at him from every savory viand at the dinner table. When he ventures out to walk over his domains, a vexatious rheumatism causes him to make wry faces at every step. If in his magnificent turnout he seeks invigoration in the morning air, a veritable fiend, which the doctors have named *tic-douloureux*, drives him back to his overheated chamber, writhing with pain. When he lies down upon his luxurious couch, he sleeps not the sleep of health and physical soundness, but rolls and tosses restlessly about until a horrid nightmare settles down upon him, and holds him in its deathly grip. The glorious morning sun beams not with joy and gladness upon such a one. He rises languidly from his couch of torture, and begins another wretched day. The woodchopper, with his brawny arm, his mag-

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nificent digestion, his sound rest, his ignorance of "nerves," nightmares, and neuralgias, is the envy of the millionaire, and justly so; he is the richer man of the two. The one has golden wealth, the other glorious health, and finds millions in it, though his pocket-book is thin, and his bill of fare a crust.

SOCIAL ETHICS

AMONG the obligations which human beings owe to each other, are courtesy and agreeableness. The man who robs his friends of the pleasure which they might derive from intercourse with him, by a coarse and brutish or otherwise disagreeable manner, is virtually a thief, for he deprives his associates of that to which they are rightfully entitled. We have elsewhere spoken of the value of courtesy as an aid to success, and need not here repeat what we have there said upon this point; and recognizing the fact that one of the essential requirements for agreeableness of manner in social intercourse is a knowledge of the customs and usages of good society, we append a few of the most essential rules of etiquette by which boys and young men should be governed in social intercourse among themselves and in polite society:

Introductions.—In matters of introduction, the proper form is to present the gentleman to the lady, a younger to an elder person, an inferior in social standing to a superior. It is the place of the person thus presented to open the conversation.

A slight bow is all the salutation which courtesy requires after an introduction. Shaking hands is optional, and it should rest with the one to whom the party is introduced to make the first advances. Shak-

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ing hands evinces greater cordiality and friendliness than a simple bow.

If several persons are to be presented to an individual, the name of the single party should be mentioned first, and the others enumerated in succession, each bowing slightly as his name is pronounced.

If an individual is to be presented to a company, an announcement of the party's name, and his title if he is a professional man or an official, is all that is required.

Friendly letters of introduction should be given only to intimate friends, introducing them to persons with whom the writer is also well acquainted. Letters of introduction to business or professional men should likewise be given only to and for parties well known to the writer, and even in these cases, only when the writer is perfectly satisfied that an acquaintance will be mutually agreeable or profitable to both parties.

FORM OF LETTER INTRODUCING A PERSONAL FRIEND.

J. H. Hooker, Esq.

Dear Friend,—This note will introduce to you Hon. Thomas Jones, a very particular friend of mine, who desires to meet you. Trusting the acquaintance will be mutually agreeable, I remain, as ever,

Your friend,

William James.

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FORM OF LETTER INTRODUCING A BUSINESS ACQUAINTANCE.

Messrs. Halloway & Co.

Gents,—I take pleasure in introducing to you Mr. Timothy Smith of this city, who visits New York for the purpose of purchasing goods in your line, and by my suggestion will call upon you. Mr. S. enjoys in this community the reputation of being a reliable and honorable business man, as well as a good citizen and a pleasant acquaintance.

Very respectfully yours,

John Richards.

Letters of introduction to and from business men may be delivered by the person introduced, and etiquette does not require the receiver to entertain the bearer as a guest or friend, though common courtesy will naturally suggest that such kind attentions as are practicable be shown him.

Letters of introduction of a friendly character should be sent to the person to whom they are directed, with the bearer's card and address. If the person receiving the letter feels favorable toward forming the acquaintance, he will call upon the party introduced, in person, or by note acknowledge the receipt of the letter with an invitation to call; or he may simply send his own card, when the bearer of the letter of introduction is at liberty to call upon him.

Upon the Streets.—An inclination of the head, a gesture of the hand, or mere touching of the hat is a sufficient salutation between gentlemen meeting upon

the street. A gentleman in saluting a lady or an elderly or superior gentleman, should raise the hat completely from the head.

A gentleman walking with a lady should bow to those who recognize her, even though he be unacquainted with them, thus showing respect for them out of respect for his companion.

Always bow to an acquaintance when meeting upon the street. It is a mark of ill-breeding to pass a friend unrecognized, and it is civility to return a bow, even if you do not recognize the person. He may be some one whom you have met and forgotten.

In bowing, it is not necessary to bend the body, simply an inclination of the head is sufficient. The recognition should be respectful, familiar, or cordial, according to circumstances, but never accompanied by a broad smile.

A gentleman walking with a lady should treat her with the utmost deference. He may take either side of the walk, the lady always being given the side least exposed to inconvenience, crowding, or danger. He should offer to carry any parcel she may have, and should adapt his pace to her pleasure. In a crowd, the gentleman should always precede the lady. Two gentlemen accompanying the same lady should allow her to walk between them.

It is not customary for a gentleman to offer a lady his arm, except when walking in the evening or upon an occasion when her safety, comfort, or convenience seems to demand it.

A gentleman should not join a lady acquaintance upon the street for the purpose of walking with her,

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without first ascertaining whether his company would be perfectly agreeable to her. A gentleman wishing to converse with a lady whom he meets upon the street, should not stop her, but turn and walk with her until he has said what he wished, and should then, lifting his hat, bow and leave her.

On entering or leaving a store, house, or room with a lady, the gentleman should hold the door open and allow her to pass through first. A gentleman meeting a lady in a doorway, should stand aside, lift his hat, and wait for her to pass; or if the door be closed, should open it, and hold it open until she has passed.

Do not shout across the street to an acquaintance. All loud talking, laughing, or staring upon the street or in public places is decidedly vulgar. *Gentlemen* do not stand upon street corners, or lounge about hotels and stores, and talk about and stare at ladies as they pass.

To eat fruit, nuts, confectionery, or anything else on the streets, is not in good taste.

Looking back, after one has passed a person or an object, is not considered proper, unless the occasion be an extraordinary one.

Calls.—In making a short formal or business call, a gentleman should carry his hat and gloves, which are considered part of his toilet, in his left hand, but should not place them on the chairs or parlor table. If found necessary for some cause to use both hands, the hat should be placed upon the floor beside his chair. Umbrellas should be left in the hall or at the door.

In making informal calls or visits, the hat, gloves, cane, and overcoat should be left in the hall.

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An informal call may be at least fifteen minutes long, but should not be so long as to be tedious.

Upon entering a drawing-room where a number of people are present, a person should bow slightly, as a general salutation, before speaking to any one.

Choose a time to withdraw when there is a lull in the conversation; and after taking leave of the hostess, bow to those in the room, not separately, but to all at once.

Upon rising to take leave, go at once; do not start and then linger.

Never call upon a professional man or woman in office hours, except on business, and always make the interview as brief as consistent.

In calling upon parties living in a hotel or boarding-house, it is customary to wait in the general parlor, and send up your card to the room of the person on whom you have intended to call.

Always be punctual in keeping an engagement. One has no right to waste the time of others by keeping them waiting.

Do not ask the price of any article you may observe belonging to another, except from intimate friends, and then only on asking permission to do so.

Do not walk about a room while waiting for your host, examining pictures, handling articles about the room, or striking upon the keys of an open piano.

Conversation. — Do not intrude business or professional matters into general conversation unless questioned by those participating. Long and heated discussions should always be avoided.

In conversation, aim to acquire the habit of talk-

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ing sensibly and with facility on all subjects of general interest; and when in company with others, let the topics brought up be those in which all are interested.

Avoid, especially, all gossip and scandal.

Neither correct nor appear to notice an error in pronunciation or grammar made by a person with whom you are conversing.

Do not try to force yourself into the confidence of others, nor pry into their private affairs by questioning; but if they give their confidence, never betray it.

Do not feel it incumbent upon yourself to carry your point in conversation; and when avoidable, do not discuss topics which arouse feeling and heated argument.

Never parade your accomplishments, nor affect superiority in any particular. In the company of an inferior, never endeavor by your conversation or manners to cause him to feel other than your equal.

In your conversation and conduct, adapt yourself so far as possible to the persons in whose company you chance to be (providing, of course, that you do not choose to throw yourself into low or disreputable company). Make it a rule to study the pleasure of those you are with, and listen to and talk about the subjects of conversation which most interest them.

Never attract attention to yourself by loud talking or a dictatorial manner. Allude to personal affairs as little as possible, and do not parade the fact that your friends or family may be wealthy, of noble birth, or possessed of any superior advantages.

Never answer another curtly or impatiently, and

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never hesitate to offer an apology at once when one is due.

Do not monopolize the conversation, nor engage in a whispered or private conference in the presence of others, or converse in a foreign language not known to all present.

Never ridicule others, nor seem to notice by word or look any peculiarity of dress or person of another.

Do not read newspapers, books, or letters in company. If necessary to do so, beg to be excused.

Avoid all slang. Do not laugh at your own wit.

Avoid mimicry.

Do not interrupt another while speaking.

At Table.—Never lean upon the table with the elbow, or drum with the fingers, and do not toy with knife, fork, or spoon. Never make use of a napkin in place of a handkerchief, for wiping the face or nose.

It is considered contrary to etiquette to shovel one's food into the mouth with a knife. Everything that can be eaten with a fork should be taken with that utensil alone. If necessary to use a knife, use it only for dividing the food, and convey it to the mouth with a fork.

Bread should be broken, not cut. Use a spoon for soup and puddings. In eating large fruits, like apples and pears, divide the fruit with a knife, partaking of it in small portions.

Keep the mouth closed while masticating food. Both eating and drinking should be performed slowly and noiselessly.

If a plate be handed you at table, always retain it, unless asked to pass it to your neighbor. It is to be

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supposed that the host knows whom he desires to serve first, and to pass the plate is considered a reproof upon his selection. If a dish is passed you, serve yourself if desiring any, and then pass it on.

The napkin should be placed across the knee, and not hung about the neck like a bib.

Never reach across your neighbor's plate for a spoon or other articles, but ask him to pass them to you.

Do not take salt or bits of sugar from the bowl with the fingers, or help yourself to butter or other food with the knife or fork you have been using.

Never pick the teeth at table. If such a thing be absolutely necessary for comfort, do it behind a napkin. Avoid sneezing, coughing, and expectorating if possible.

A gentleman attending upon a lady at a dinner party will see that she is helped to all she wishes, with as little trouble to herself as possible.

Do not find fault with the food; and if by chance anything unpleasant is found in it, the attention of others should not be called to it either by remark or manner, even though one's own appetite be spoiled.

Eat moderately, never fast, and never put large pieces of food into the mouth, as this is an evidence of greediness.

Do not crumble bread or other food about your plate, and strive to keep the cloth as clean as possible.

All beverages should be sipped from the cup or glass, but without noise.

Never tilt back in your chair, nor sit too far from the table.

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Having finished the meal, if at home, fold your napkin, when done, and place it in your ring. If at a hotel or away from home, leave the napkin unfolded by your plate.

Do not leave the table before the rest of the family without begging leave, except at a hotel or boarding-house.

Do not scrape your plate for the last atom of food, nor tilt your sauce-dish and turn out the last drop of juice into your spoon; and do not help yourself to an unusual quantity of any single article.

General Rules of Conduct. — The same respectful deference due from a gentleman to a lady should at all times be shown by a younger to an elderly gentleman.

When in the company of others, every action should be marked with respect for those present.

Nothing can be more adverse to good manners than sitting with the hat on in the house, lounging upon the chairs, tipping them back on two legs, yawning and whispering in company, sitting cross-legged and hugging one's knee or foot, fumbling with the watch chain, biting or tearing the nails, taking the best seats in the room and keeping them when ladies or elderly people enter, standing between others and the fire, spitting into the fire, and various similar practices which are generally conceded to be characteristic of the free and easy way of the American people.

Coughing, sneezing, clearing one's throat, scratching the head, picking the teeth, cleaning the nails, etc., should be avoided in company. Never fidget. If you are bored by the uninteresting conversation or lengthy

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speech of another, do not allow it to be apparent by any visible sign of uneasiness.

Avoid loud talking and gesticulation. If necessary to indicate an object, do so by a slight movement of the whole hand or head, but never point with the finger.

Neatness of attire and cleanliness of person are especially essential, if we desire to be considered agreeable in society. A person may have any amount of goodness and ability; but if his appearance bespeaks the sloven, his presence will not be desirable to persons of refinement. Especial care should be taken of the hands. They may be stained and roughened by honest toil; don't be ashamed of that, but take off all that soap, warm water, and a good nail-brush will remove.

Never exhibit the weakness of supposing that people of refinement will find your presence welcome or desirable if your hair and clothing are saturated with the filthy odors of spoiled hair-oil and perfumery, to say nothing of tobacco, cigars, and alcohol, or a neglected skin.

If one would be polite in public, he must be so at all times and with all persons. The man who is uncivil to a washer-woman or kitchen maid, will be in great danger of being impolite to those whose good opinion he desires to possess.

Do not speak of persons outside the family circle by their Christian names, nor address them by such when in the company of others.

In addressing persons, avoid undue familiarity, such as the use of nicknames, patting a person upon the back, etc., remembering the familiar rhyme—

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“The man who calls you Tom or Jack,
And proves by thumping on your back,” etc.

Treat the religious beliefs of others with the utmost respect; and in talking upon religious topics, avoid cant and exhibitions of bigotry.

Always hand a chair for a lady, pick up any article she may have dropped, and do any other little service she may seem to require, but do not press attention upon her.

If differing from another in opinion, do not directly contradict him, but courteously beg pardon, and say, “I think you have been misinformed,” or “are mistaken,” or in some like phrase modify the bluntness of a contradiction.

Gentlemen should always precede ladies in entering a church or other audience room.

The basis of all true politeness is the Golden Rule, “Whatsoever ye would that men should do to you, do ye even so to them.”

A French writer has said, “To be truly polite, it is necessary to be at the same time good, just, and generous.”

No true gentleman will use tobacco in any form, or indulge in alcoholic drinks under any circumstances. The use of these poisons is inconsistent with real gentility, and benumbs the finer sensibilities of those addicted to them.

Special Rules for Boys.—Always remove the hat upon entering a house.

Never enter a private room or the room of a guest without knocking.

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Always offer your own seat to persons entering a room, and never keep a seat, either in a house, church, or public conveyance, when a lady or an elderly gentleman is standing.

Never slam doors. Do not run up and down stairs. Do not slide down the banisters. Step lightly, quickly, and orderly at all times within doors.

Never be rude or boisterous to your sisters or playmates. Avoid loud shouting and rude merriment; never indulge in slang phrases, and never jostle nor push in a crowd.

Always clean the boots or shoes well before entering a house or schoolroom.

Never throw hat, coat, boots, or school-books about the room for mother or sisters to take care of; but have a place for everything, and keep everything in its place.

Never go to the table nor sit down in the presence of ladies with unkempt hair, soiled clothing, or muddy shoes.

At all times show as much deference to mother and sisters as to any other ladies.

Never elevate the feet upon tables, cushions, sofas, or chair backs.

Never laugh at nor ridicule a person in any way because of patched clothing, deformity of person, or peculiarity of any sort.

Never stare at people, and never interrupt when another is speaking.

Never try to appear clownish, nor use vulgar, indecent language.

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THIS is a question in which most young men sooner or later become interested, and which is worthy of the most careful and candid consideration. The formation of a partnership for life is a transaction of no small importance, and demands cool, deliberate judgment, and the careful weighing of numerous considerations, rather than rash obedience to the dictates of a blind and impetuous passion. Marriage is an institution which involves in the most important manner all the relations of life, physical, mental, moral, and social. The brief space which we have to devote to the subject compels us to confine our considerations chiefly to its physical relations.

Relation of Marriage to Health.—It is clearly shown by the statistics of various countries, that married persons of both sexes enjoy longer life than single persons do. This is probably due, in the case of males, to the greater regularity of life and freedom from those disorders which are the penalty of those profligate habits to which a large proportion of single men are addicted. In the case of women, who incur greater risks in the marriage state than men, the longer life is probably due to the relief from mental strain and worry which most women experience, especially in later years, though it must be admitted that quite too large a pro-

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portion of married women do not find in marriage that quietude and satisfaction which they have been led to expect. On the whole, however, there is no question that the tendency of marriage is to prolong life, and to conduce greatly to individual welfare and happiness when its ends are not perverted and its privileges abused.

Traces of the marriage institution are to be found in the social usages of all nations, even the most barbarous tribes exhibiting some knowledge of the advantages to be derived from the establishment of the family relation. One of the distinguishing features of nations of the highest grade of civilization and intelligence is the high degree of regard in which the marriage institution is held. When a nation begins to deteriorate, one of the first symptoms of social degradation is neglect and disregard of marriage obligations. The growing infrequency of marriage in this and some other civilized countries, and the increasing multiplicity of divorce cases which crowd the courts, especially in some parts of the United States, are evidences of disease in the social and moral life of nations, which demand the earnest attention of all workers for the good of humanity.

The Object of Marriage.—The primary object of a union of the sexes is the propagation of the species. Marriage, however, involves much more than this. It is an institution peculiar to humanity, and, in its highest form, is characteristic of the most enlightened grade of humanity. It involves a union of other and far higher than mere sensual interests,— a union by which both of the contracting parties retain their individu-

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ality and all their individual rights, notwithstanding the community of aims and purposes which characterize a genuine matrimonial alliance.

Men sometimes view their wives very much as they do fine houses, lands, horses, or other valuable possessions. It is needless to remark on the gross selfishness of this view of marriage. The natural, inalienable rights of every human being render it impossible for any one to become proprietor over another. There is no rite or ceremony, no law, human or divine, by which the natural rights of a woman may be abrogated in favor of a man. It is important in the interest of men as well as women that men should consider this fact, and grant to their wives as great liberty of conduct, opinion, and conscience as they themselves claim.

A man who looks upon his wife as a mere chattel, or simply as a means of sensual gratification, entertains too base a view of marriage to be worthy of any woman, unless she is as gross and sensual as himself. While marriage gives opportunity for unbridled gratification of the animal instincts, morality and the recognition of the physiological objects of marriage, restrict such gratifications within very narrow limits. The man who most thoroughly appreciates and enjoys the marriage relation, is he who restrains and controls the animal passions within the limits of physiological law.

Who Have No Right to Marry?—The idea that every man has a right to marry any woman who chooses to accept him as a husband, is a mistaken one. Two parties are mutually interested in the marriage relation, and each has rights which must be considered. It

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is evident that all men are not prepared to become desirable husbands. This may be due to inherited or acquired defects and diseases, or to the possession of various other undesirable qualities. The man who marries, expects, at least, to obtain a woman who will be a desirable wife, and if disappointed, considers some one blameworthy. A woman, in marrying, has an equal right to expect in a man desirable qualities as a husband. We do not say that a man, to be fit to marry, must be possessed of the highest grade of qualification; but he ought, at least, to possess merits sufficient to be worth marrying. There is still another party whose interests must be considered, namely, the offspring. Under ordinary circumstances, a man who is incapable of begetting healthy children, ought not to marry. The world is full of the offspring of worthless fathers, and it is high time that the obligation of parents to beget healthy children was recognized as a moral duty, and the voluntary begetting of children infirm in body and mind, as a crime against humanity and civilization. But let us notice a little more particularly the qualifications of those who have no right to marry.

Boys Should Not Marry.—Though the laws of nations differ much respecting the age at which marriage is permissible, anatomy and physiology most emphatically assert that persons who have not attained complete physical development have no right to marry. The law of heredity stamps upon the offspring the image of the parent. If the father has not yet attained maturity, in other words, if he is still a boy in mind and body, his boyishness will be indelibly stamped upon

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his child. This fact undoubtedly accounts for at least a great number of individuals, who, though old in years, exhibit such puerilities of character as to completely negative, in their cases at least, the adage, "Gray hairs bring wisdom." A man who wishes to obtain a vigorous and hardy horse, would certainly not select one that he knew had been sired by a colt. Boys who contemplate marriage, ought to know that the same laws which govern the propagation of other members of the animal kingdom, hold good respecting the propagation of the human species as well, and should consider seriously whether the sons and daughters of a boy-father will be a valuable addition to the human race.

When to Marry.—The age at which it is proper for a man to marry is indicated by that at which he attains maturity, which is about twenty-five years. Prior to this age, he is really a boy; his bones have not yet completed their development; the character is not yet completely formed through the development of the mental faculties, and the whole body is immature. Among certain ancient nations, marriage was not permitted until some years later than the age named; and it must be admitted that the people among whom this practice prevailed, attained a higher degree of physical development than any nation known to ancient or modern times.

Old Men Ought Not to Marry.—Perhaps this statement is a little too sweeping, but all intelligent persons who have had opportunity for observing the results of marriage in old men, will testify that in nine cases out of ten they are anything but desirable. This is espe-

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cially liable to be the case when the old man marries a woman much younger than himself. Nothing is more obnoxious to good sense, and we might perhaps say morality, than the union of an old man just entering upon his second childhood with a young and blooming girl. Such a matrimonial alliance means, in most cases, speedy death for the one, and infinite misery for both. If the old man must marry, let him take a wife about his own age, who is prepared to lead a calm, quiet life, which is natural to the aged as well as essential for their physical, mental, and moral welfare. The old man who contemplates taking a young girl for a wife, should reflect that such an action is contrary to natural instincts, and that it is likely to be prompted by animal desires which, for his mental happiness and his physical and moral safety, should have been long ago extinguished. On the other hand, the young lady has probably been led to consent to such an unnatural union by the allurements of wealth, social position, or some other motive foreign to that real affection which constitutes the basis of true marriage. The relation which such a woman sustains to her legal husband in the eyes of natural, and, we may almost say, moral law, is that of a mistress rather than that of a wife. The old man who values his peace of mind, and who would avoid the unhappy fate of him whose gray hairs go down in sorrow to the grave, will wean himself from the extravagant, and, for him, dangerous excitements of love, and content himself with those mild and quiet enjoyments, which, while less fascinating and intense in character, are vastly more enduring, and, in the end, afford greater satisfaction.

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A Worthless Man Should Not Marry.—A man who is “good for nothing,” who is unable to add anything to the world’s store of knowledge or wealth, or to contribute to the happiness of his fellow-beings, who is slovenly, debased, groveling, shiftless,— such a man not only has no right to marry, but commits a crime in doing so. What must be the lot of the wife of such a husband! The woman who has been betrayed into marrying such a man, is condemned to a life the most wretched imaginable. Some such women we have seen, —women who, under favorable circumstances, might have been lights to society, who might have wielded a mighty influence in the elevation of their fellow-men, but who were bound hand and foot by the cruel ties of an unfortunate marriage, chained to a worthless clod who is incapable of usefulness himself, and a most efficient hindrance to the usefulness of others.

The man who contemplates marriage and wishes to marry a good and worthy woman, should consider, first, whether he is himself worth marrying; and if a candid introspection convinces him that he is not worthy of such a wife as he desires to marry, let him at once begin such a work of self-culture and discipline as will elevate him to the standard by which he would measure the woman he desires to win.

A Wicked Man Should Not Marry.—Recent investigations respecting the causes of crime have revealed the fact that the disposition to crime, as well as other mental and physical qualities, is hereditary. A man who is a thief, a robber, or a murderer, begets children with the same evil propensities. The inter-marriage of wicked and vicious persons has resulted

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in the production of what is known in every country as "the criminal classes." Through this means, notwithstanding the continued efforts of "reform schools," "homes," "asylums," and a great number of other reformatory enterprises, crime is continually increasing, and in a ratio far greater than the growth of the entire population. Something ought to be done to check this propagation of vice, this most efficient means of recruiting the class of men and women who oscillate between the brothel and the almshouse, the gutter and the prison. The marriage of such persons ought to be prohibited by law. It certainly ought to be discountenanced by society. The clergyman or the justice of the peace who knowingly performs a marriage ceremony by which a wicked man is made a husband and a possible father, does a wrong to society, the commission of which ought to annul his authority to administer so important a rite.

Young men who have spoiled themselves by a career of vice or crime, are usually of all men most particular respecting the character of those whom they seek to marry, and are particularly fond of selecting for wives, young, pure, and unsophisticated girls, who know nothing of the evils or vices of the world. Sometimes such a union seems to result well enough, the influence of purity and virtue in the one predominating over the tendency to vice in the other; but this is by no means universally the case. If the young woman, once pure and good, is not contaminated by contact with one who is thoroughly defiled by sin, and gradually demoralized, her existence is one of perpetual wretchedness. Instead of those noble qualities of mind and heart which she

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might admire and respect, she finds only selfishness, sensuality, and moral rottenness.

Young women are not infrequently led to marry men whose characters are known to be bad, with the idea that they may reform them. Sometimes, indeed, this Herculean task may be accomplished; but quite too frequently the reformation, even if apparently accomplished, is only transient, and the man who in the days of his courtship promised to be his wife's highest ideal of pure, noble manhood, lapses into the pit of moral corruption where the vile practices of years have dragged him. The young man who offers to a woman, as an inducement to marriage, the opportunity to reform him, is, in ninety-nine cases out of a hundred, a hypocrite of the deepest dye. A man who really wishes to reform, will reform himself; and until a thorough reformation has been effected, he has no more business to ask a pure woman to marry him than if he were suffering with the smallpox or the leprosy. The fact that there are women so unwise or so inexperienced as to be willing to accept such a man for a husband, does not remove the responsibility from the place where it belongs, on the shoulders of the man who has made himself, by his vices or his crimes, unfit and unworthy to be the husband of a good woman.

Epileptics Should Not Marry.—There are few forms of nervous disorders more horrible in their agency, or more certainly destructive of the mind, than epilepsy; and to the terrible effects of this disorder upon the individual is added the almost mathematical certainty of its transmission through heredity. An epileptic father or mother begets insane or epileptic children. A

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person afflicted in this way for many years should abandon all thoughts of marriage, even though the disease may be temporarily stayed through the influence of powerful remedies. If the disease has occurred as the result of some injury to the nervous system after maturity has been attained, or has been produced by functional disturbances of the stomach or liver, or from nervous exhaustion from some cause, and has been cured by the employment of the proper measures, the individual need not be forbidden to marry, provided the lapse of two or three years has proved the permanency of the cure; but when the disease is the result of heredity, or has existed since early childhood, the prospect of a permanent cure is exceedingly small, while the probability of transmission by heredity in case children are begotten, is almost a certainty.

Persons of Insane Temperaments Should Not Marry. — Cases have undoubtedly occurred in which persons who were really insane have married and reared families, but there is probably no one who would defend the propriety of such a marriage. The children are apt to exemplify the old adage, "Like father, like son," and at an early age are found in our reform schools, prisons, or lunatic asylums. These cases are, however, not sufficiently common to be the source of any great amount of harm. The greatest danger lies in the propagation of a tendency to insanity through the marriage of persons possessing what is known as "the insane temperament." These individuals are generally found in families in which insanity has developed in one or more members. They are usually peculiar, crotchety, and eccentric. Familiarly known

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as "cranks," they are made the butt of ridicule. Their erratic utterances and conduct are laughed at by unthinking people, who consider them simply as amusing and peculiar people, entertaining no suspicion that in the crotchety brain of the crank lies the germ of that most terrible of all human maladies, insanity. The children of a crotchety man are likely to be still more unbalanced than himself, and what is in the father simply an eccentricity, develops in the child into some one of the various forms of mania.

The young man who is aware of the fact that insanity is a prominent feature in his pedigree, and who has not the most indubitable evidence that his physical and mental characteristics follow the line of a healthy and well-balanced ancestor, rather than that of the mentally disordered one,— such a man commits a crime when he takes upon himself the responsibility of marrying and bringing into the world recruits for prisons and lunatic asylums.

Should Consumptives and Scrofulous Persons Marry?— The rapid increase of consumption, as indicated by the mortality from this disease, which constitutes nearly one-fifth the total number of deaths in old-settled countries, points unmistakably to the fact that some potent cause must be in operation, causing the propagation of this malady. The observations of scientific physicians have fully established the view that the tendency to consumption, as well as the disease itself, is hereditary, and the evidence that the same is true of scrofula is too strong to be doubted. When one considers the terrible ravages of these two constitutional maladies, can there be any doubt as to

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the impropriety of the marriage of those who have a clearly marked tendency to these diseases, at least unless such a tendency has been thoroughly extinguished by a careful regimen and a proper course of physical culture?

May Syphilitics Marry?—The horrible hereditary effects of this frightful malady ought to be sufficient to deter any one in whose breast all sense of obligation to his fellow-men has not been obliterated by long years of slavery to vice and crime, from incurring the risk of inflicting such wretchedness and suffering as is almost certain to be experienced by his offspring. Certainly, no man who has suffered from syphilis has any right to offer himself in marriage to a woman who is not, like himself, contaminated by the physical and moral taint of this disease.

Innocent and unsuspecting women often suffer lifelong injury through marrying men who by fast lives have acquired gonorrhœa, or gleet. This disease, sometimes even when apparently cured, or when existing in so slight a form as to be hardly noticeable in the man, may give rise to most painful and distressing disorders in a woman. We have met a number of cases in which women who, until the day of their marriage, had enjoyed perfect health, had since marriage never been one day free from pain and suffering from this cause. The author holds that a man who has suffered from even the milder forms of venereal diseases, has no right to marry without acquainting his intended wife with the full facts as to his condition, and then not until several months have elapsed since he has been pronounced by a competent physician to be free from the last trace of the disease.

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May a Drunkard Marry?—The man who is a slave to drink has no right to ask any woman to share his shame, or to aid him in rearing children who are stamped at the moment of conception with a morbid craving for alcoholic drinks. The man who is determined to destroy himself with drink, should be content to destroy himself alone, and not insist upon dragging others down to his own degraded level. Hundreds of thousands of women's lives have been wrecked by being beguiled into marrying young men addicted to drink, by the promise of reform upon condition of doing so. In by far the greater number of these cases, six months do not elapse after the ceremony before the young man returns to his cups, and the young woman is left to repent her folly during a life of wretchedness.

Should an Improvident Person Marry?—Will any one question the assertion that a man who is not able, through mental or physical incompetency, to support a wife, has no right to marry? Thousands of young men rush blindly into matrimony without stopping to think of the ways and means by which a family is to be provided for, trusting to luck, or perhaps to the efforts of the wife, to provide bread for hungry mouths which they are themselves incompetent to feed. No young man has a right to marry until he has acquired a trade or a business which will insure at least a comfortable livelihood for those dependent upon him. The author is of the opinion that it would be wise if young men were required by clergymen and other parties authorized to administer the rite of marriage, to produce evidence of the ability to support a wife and family before the performance of the marriage ceremony.

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Whom to Marry.—The young man who desires a wife will certainly not wish to select a young woman possessing any of the characteristics pointed out as undesirable in young men. As a rule, young men are far more particular respecting the personal character of those whom they seek in marriage than are young women. Nevertheless, impetuous though worthy young men not infrequently commit serious blunders in the selection of a life partner; hence the following suggestions may prove serviceable:

1. Be careful to become well acquainted with the young woman whom your fancy may have chosen, before asking her to become your wife. An acquaintance formed at a party, picnic, sociable, or during moonlight walks, or evening parlor chats, is of very little value in forming the basis for a proper estimate of character. Young ladies who are in search of husbands, naturally do their best to appear to good advantage, and are very likely to appear so if the thing is possible for them, when on exhibition, as on such occasions as those referred to. A thorough knowledge of a young lady's character will necessitate a thorough acquaintance with her conduct at home, her behavior toward her parents or brothers and sisters, her personal habits, etc. Is she respectful to her parents and thoughtful of their wishes? Is she kind and gentle in her behavior toward her associates? Does she respect religion, or is she irreverent and irreligious? Is she quiet or boisterous? Is she haughty and overbearing? Is she simple in her tastes, or does she love pomp, display, and excitement? Has she pure, refined, and womanly sentiments, or is she flashy and vulgar? Is

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she cheerful and happy in disposition, or gloomy and morose? Is she neat and tidy in personal appearance, or lax and careless? All these are questions, the answers to which decide whether your married life is to be happy or wretched, peaceful and enjoyable, or in the highest degree infelicitous.

2. Do not marry a flirt. A young man who is seeking a wife should avoid, as he would a scorpion, the professional flirt. A woman who has made a pastime of breaking hearts, carries in her breast a heart as incapable of genuine love as the hardest rock. Do not waste any affection on such a woman, no matter how great her accomplishments, or how alluring her charms. If your feelings have become in the slightest degree entangled, make haste to effect your escape from the snare. Such a woman can no more make a happy home than she can fly. Her conscience is seared, her sensibilities blunted, her affections decayed. If you have been deceived by her, consider yourself fortunate in having escaped the greater calamity of marrying her.

3. Do not marry a woman of fashion. A woman whose life is devoted to following the ever-changing fashions of the day, has no room in her heart for domestic love, and no time to devote to the business of home-making. She may possess many excellent traits, and many admirable qualities, but she has been spoiled by erroneous education. She knows nothing of the simple arts by which a home is made comfortable and happy; and if you should be unable to supply all the demands of her morbid and artificial tastes, she will soon cease to love you altogether, and render your life wretched by her importunities or her reproaches.

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4. Seek a healthy wife. In this degenerate age, among civilized nations at least, health, especially among women, has become an exception rather than a rule; and so long as men are willing to accept as wives pale, puny creatures who, though very "interesting," are very helpless when brought face to face with the stern realities of life, women will continue to attach little importance to physical culture as a preparation for wifehood and motherhood; but if all the young men in the country insist that the young women whom they select as wives should possess good health, gymnasiums for young ladies will quickly start up in every corner of the land; piano thrumming, embroidery, daubing with water-colors, and sentimental poetizing will fall into disrepute; the homely art of housekeeping will supplant some of the so-called fine arts which are now cultivated so assiduously by persons who have really no more taste or natural genius in this direction than a backwoodsman or a blacksmith; and young women will become as proud of depth of chest, largeness of waist, and hardness of muscles, as they now are of their small arms, *petite* figures, and general helplessness.

A young woman who has emasculated her womanhood by tight-lacing and wearing French-heeled shoes, and who is given to fashionable dissipation, is no more fit to marry than she is to perform as an acrobat or a pugilist. No young man possessed of average good sense will marry a woman who has squeezed her liver out of shape, compressed her stomach out of place, and, to use a printer's phrase, made a "pi" generally of her "internal arrangements" by tight-lacing.

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Don't Be in a Hurry.—When “head over heels in love,” a young man is almost always in a desperate hurry to press his suit to a favorable culmination. Don't be too fast, young man. Wait a little while for the impetuosity of the first tender passion to wear off. Then you can take a calmer view of the case, and will be better prepared to form a deliberate and correct judgment. Love at first sight is very apt to be as blind and unwise as it is impetuous. Keep fast hold upon your feelings, and wait until sure that you will not be making a terrible mistake in following your impulses. The love which is most enduring is not one which is simply a sentiment; but is the result of sentiment re-enforced by reason and judgment, deliberately exercised. Such a love does not wane with the honeymoon, but grows fuller, richer, and stronger with the lapse of years.

What about Temperaments?—Much has been said about the proper adaptation of temperaments in marriage. One recommends persons of like temperaments to marry; while another, who claims to be equally wise, declares that opposites constitute the proper combination. The only word we have to say on this point is that, irrespective of temperaments, persons should be congenial. It is folly to lay down rules by which people should “fall in love.” Such rules would never be followed, and would be very likely to cause more mischief than good. People whose tastes are unlike, if possessed of real affection for each other, will naturally approximate their tastes until a happy and congenial mean has been reached. It is wise, perhaps, that those who are constitutionally feeble should seek to remedy

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the defect for their children by selecting a partner possessed of a high degree of physical vigor. By this means, marriage may become the means of improving the race. The inter-marriage of feeble persons would naturally tend to deterioration.

Should Cousins Marry?—Experience indicates that the children of cousins are far more likely than others to be afflicted with deafness, idiocy, and other physical and mental defects. This is particularly apt to be the case if both possess the characteristics of a common ancestor. In view of this fact, it is evident that cousins ought not to marry, certainly not unless there is evidence of the most positive character that they follow different ancestral lines.

Lastly, if you wish to obtain a good, pure, noble, lovable woman for a wife, be careful to make yourself a good, noble, lovable man. If you do this, you may be sure that sooner or later you will have the good fortune to meet the woman who will exactly embody your ideal of a wife, and who will recognize in you her ideal of a husband.

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PHILOSOPHER has said, "To be well born is the greatest of human felicities." Unhappily for the human race, this good fortune comes to but a small proportion of the human family. Not every one is so unfortunate as poor "Pip," the hero of "Great Expectations," who said that he was always treated as if he "insisted on being born in opposition to the dictates of reason, religion, and morality;" but certain it is that if reason, morality, and common sense were allowed to dictate the matter, many thousands of poor, wretched, unhappy human beings would never have been born at all. Thousands of miserable beings received from their parents a heritage of boundless wealth in the line of lands, houses, and bank accounts, but the direst poverty as regards that most valuable of all treasures, health. The child who inherits from its parents a frail and feeble constitution, incompetent to cope with the exigencies of life, without the physical vigor necessary to sustain the effort required to prepare for or to lead a life of usefulness, has an evil heritage for which no amount of money, "good name," or worldly wealth can possibly compensate. On the other hand, the man who inherits from his parents a sound body and a large fund of vitality, may well consider his legacy a rich one, although he may be born in obscurity and left penniless.

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We have spoken of a good constitution; let us consider for a moment what a constitution is. One man, we observe, is able to perform a great amount of labor, to endure hardships, to withstand the attacks of disease, and to live to a good old age in enjoyment of health and physical strength; while another man wilts under physical conditions far less adverse, like a delicate flower beneath the scorching rays of the sun. One has a good constitution; the other has a feeble one. The human body is in many respects much like a machine. Like a chain, its real strength is simply the strength of the weakest link; or, like a complicated apparatus, its actual strength is the strength of the tiniest wheel, or the most delicate pinion. A machine constructed with all its parts properly adapted to each other, none stronger and none weaker than they should be, each capable of doing its duty regularly and without undue friction—such an apparatus may be considered as a machine with a good constitution. It will many times outwear a poorly constructed or unbalanced machine, in which undue strain is allowed to fall upon parts not prepared to bear it safely.

How Constitutions Are Ruined.—That a boy inherits from his parents peculiarities of temperament, complexion, expression of countenance, even peculiarities of gait, are matters of common observation. If a boy has an unusually large nose, a prominent chin, a special genius for music, poetry, or mathematics, we expect to find the same characteristics in his parents or somewhere among his recent ancestors. No one questions that these physical and mental traits may be readily transmitted from parents to children. “Like

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father, like son," is a trite proverb which applies to grandfathers and great-grandfathers, grandsons and great-grandsons, as well as to fathers and sons. If external features are thus transmitted, who can doubt that the internal likeness between children and parents is equally as great? In other words, can it be questioned that a father transmits to his son his quality of lungs, liver, heart, brain, and nerve, as much as his external form?

A father once brought to us a son for medical examination. A moment's glance at the lad showed that he was a boy of feeble constitution. In reply to our question, "Was your son a healthy infant?" the father replied, "No; he was such a puny baby we thought we could not raise him." And what wonder? The reeking fumes of tobacco plainly told that the father was a tobacco slave. The cigar or the quid was his constant companion during his waking hours. He said he was "tough as a knot." Never had a fit of sickness in his life. Could eat anything he liked, and usually did. Had smoked and chewed ever since he was a little boy, and "knew it didn't hurt him." It seemed to him very strange indeed that he should have for a son such a puny, dwarfed specimen as was the twelve-year-old lad whom he presented for examination. There are thousands of fathers who have just such sons, and thousands of sons who are so unfortunate as to have just such fathers.

Some years ago a man in the prime of life applied to us for an examination of his heart. Investigation showed great irregularity. He complained of palpitation, sudden faintings, and other very serious symp-

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toms, which indicated great weakness of the heart. An examination with the stethoscope fully confirmed the evidence of the pulse and other symptoms. It was evident that he was suffering from narcotism of the heart, the result of tobacco-using. When the true nature of the case was explained to the patient, he at once exclaimed, "How is it possible that the small amount of tobacco which I have used should affect me so seriously, when my father and mother both used tobacco all their lives, and it didn't hurt them? They are healthy old people now." Here was the secret. His father and mother had squandered their heart strength in tobacco-using, and the young man had inherited a weakness in this particular, which rendered it impossible for him to use the weed without speedily suffering serious consequences.

Some Bad Legacies.—The transmission from parents to children of actual disease is perhaps infrequent; but the transmission of constitutional weaknesses and tendencies to disease are exceedingly frequent. It may perhaps be questioned whether acquired morbid conditions are readily transmitted by heredity; but no one who has been a close observer of men from a medical standpoint will hesitate to accede to the affirmative view of the matter. If further evidence than that which is presented by common observation were needed, it is afforded by a curious experiment made some years ago by Dr. Brown-Sequard, of Paris. This celebrated physiologist, in the course of a series of experiments upon guinea pigs, found that by irritating a very small spot in the brain of the guinea pig, a disease was produced which exactly corresponded to epilepsy in human

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beings. The general health of the animal did not seem to suffer greatly, but it became subject to those frightful convulsions which constitute the leading symptom of this most horrible of all nervous disorders.

Continuing his observations, Dr. Brown-Sequard discovered that the disease was transmitted to the offspring of the animals operated upon, proving beyond any possible question that an acquired disease or morbid condition may be transmitted from parents to children. Let us devote a little space to the consideration of some of these unfortunate inheritances.

Consumption.— That consumption runs in families is a fact familiar to all. One of the first questions asked the candidate for life insurance by the examining officer is, “Did your father or your mother die of consumption?” No insurance company considers it prudent to insure the life of a man whose father or mother or any other near relative died of this disease. A consumptive tendency is one of the worst of the physical legacies which a child can inherit from its parents. With such a heredity, a man has ever staring him in the face the prospect of an early death, of being cut down by the great destroyer just as he is prepared to engage actively in the earnest duties of life.

A tendency to consumption may be inherited from a father who was not himself a consumptive, and did not die of the disease. A man whose lungs are naturally strong and whose constitution is vigorous, by sedentary habits, by insufficient exercise, by confinement in poorly ventilated rooms, by a general neglect of the laws which govern healthy action of the lungs, may so weaken and deteriorate these important vital organs

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that their inherited weakness may be transmitted to his children. Thus a disposition to lung diseases of various types may be originated.

Weak Stomachs and Livers.—America is reputed abroad to be a nation of dyspeptics. Said an English physician to the author one day, while chatting in a pleasant drawing-room in London a few years ago, “I suppose, Doctor, in your practice in America, a large share of your patients are dyspeptics?” This unfavorable opinion regarding the American digestion is perhaps a little exaggerated; nevertheless, it is undoubtedly true that fully one-half the entire population suffer more or less with digestive disturbances.

Among the rising generation, in particular, it is difficult to find a dozen young men among whom at least three or four are not confirmed dyspeptics. The almost universal use of “pills” speaks of the unhappy condition of the average American liver. Overburdened with sweets in the form of sugar, preserves, confections, and candies, clogged with fats in the form of pastry, rich gravies, fat meats, etc.; goaded by pepper, mustard, pepper-sauce, vinegar, Worcestershire sauce, and every other sort of burning thing called condiments; gorged by habitual excess in eating or holiday gormandizing,—the poor organ, after struggling years to do its duty well, abandons the task in hopeless despair, and settles down into that condition of stubborn debility called torpidity. The child of a man with such a liver is born with the same organ weak and torpid. Almost from the moment of his birth, the regular daily dose of castor oil, or “Castoria,” or some other abominable drug, begins; and thus the

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inherited torpidity of the liver is aggravated. Is it any wonder that the child of such a parent grows up to manhood a chronic hypochondriac, a confirmed misanthropist?

Disordered Nerves.—Visit the primary department of a large school. Look over the little faces turned up to the visitor, and observe how few of them do not show unmistakable evidence of an inherited debility of the nerves, which threatens to mar the usefulness, and undermine the happiness, and perhaps make entire shipwreck of a mind which, backed by a well-balanced body and sound nerves, might be capable of attaining to the highest usefulness. The sparkling eyes, restless manner, abnormal irritability, or perhaps remarkable precociousness—all suggest that the early maturity will be followed by an equally early decline, and that the individual's entire career will be marred by the evidences of the impulsiveness and deficient judgment which are characteristic of so many young men of the present period. It is these forms of nervous excitability which produce the speculative disposition, and which incline a man to become a stock broker or a dealer in "margins," or predisposes him to various crimes and vices, as intemperance, gambling, etc.

Some years ago a mother brought to us her son, a beautiful boy of six summers, who was suffering with that most terrible of nervous maladies, epilepsy. Almost daily the little fellow was thrown headlong upon the ground by his disorder, often injuring himself, sometimes seriously, notwithstanding the careful and almost ceaseless watching of his mother. Strict

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inquiry showed no cause whatever for the strange disease in the personal history of the child. The mother was a strong and healthy woman, but the father was excessively addicted to the use of tobacco and to some other vices. Here was a marked cause for the peculiar affliction of the child; and yet the father was loath to believe that his indulgence in tobacco, liquor, etc., could possibly bear any relation to his child's misfortunes.

Insanity.—Most distinctly hereditary in character is that other terrible malady of the mind, insanity. A father narcotizes his brain with tobacco, or excites it with alcoholic drinks, and the mother depraves her nerves by the habitual use of chloral or opium. Is it any marvel that the boy who happens into the world through such a parentage, shows symptoms of mental unbalance? that his mind often trembles upon the brink of mental dissolution? or that he ultimately ends his days in a madhouse? The alarming increase of insanity has become so noticeable within the last quarter of a century that many eminent men have devoted themselves assiduously to the discovery of the cause; and still the problem is partially unsolved, and the great army of lunatics is yearly augmented in this country alone by insane persons sufficient to fill a city.

Yet the asylums contain but a small portion of those whose minds are really disordered, and who can scarcely be considered perfectly sane. There are, unquestionably, many thousands of persons—borderliners, as an eminent nerve specialist has called them—outside of our asylums and insane hospitals, who are always hovering close upon the brink, full of idiosyncrasies, whims, and oddities, and ready to be driven,

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by some slight circumstance, over the narrow line which divides them from the class of patients who are patently insane.

Depraved Appetites.—A father uses whisky and tobacco regularly, year after year, until the poisons become fairly ingrafted into his body, and enter into his physical constitution. Is it any wonder that his children take as naturally to the use of liquor and tobacco as a duck takes to water? Sometimes the appetite for these poisons is so strong that it is practically irresistible, and the poor victim, though much against his will and better impulses, is dragged down to a drunkard's grave, powerless to stem the tide which is sweeping him away to physical, mental, and moral destruction.

Libidinous Blood.—Sensuality, or sexual grossness, is also one of the recognized and most deplorable results of bad heredity. The sons of the dissolute monarchs of Europe followed in the footsteps of their fathers' laws, not more on account of the evil example before them than as the result of physical tendencies implanted within them by their sensual progenitors. Even the Bible affords examples of transmission of sensual tendencies from father to child through a long line of direct succession. The young man who, after attaining to years of maturity, becomes a rake, may perhaps be less responsible for his lapse from virtue than those from whom he received the immoral bias and bad physical proclivity.

A Way of Escape.—The victim of an evil inheritance need not despair, though he must struggle against obstacles which are planted in his very constitution.

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There is a way of escape if he will avail himself of it. Let us consider what may be done to reverse the natural result of morbid tendencies:

1. The individual who has inherited morbid physical, mental, and moral tendencies, should acquaint himself with the real nature of his weakness, and earnestly set to work to fortify himself in that particular. If his parents have transmitted to him physical conditions which predispose him to consumption, let him carefully avoid every exciting and generating cause of that dread disease. While his body is still growing, let him pursue such a course of physical culture as will expand the chest, and develop the breathing powers to their fullest extent. Let him carefully avoid such exposures as are likely to produce catarrh, sore throat, cold on the lungs, etc. Let him carefully secure an ample supply of fresh air at all times. In the selection of a life occupation, let him avoid sedentary employments, such as bookkeeping, teaching, and other occupations which require confinement indoors, often in a vitiated atmosphere. Let him select some light but active muscular employment which will take him largely in the open air; and let him remember all through life that he has a weak point, that he cannot afford to run any of those risks of injury to his breathing organs which many others seem to incur with impunity. By this extra care, he may not only avoid the natural result of his constitutional tendency, but may so far eradicate it that in his children the weakness may be much less apparent, if not wholly obliterated; and by a similar course on the part of each successor in the line of descent, the evil heritage may at last be wholly wiped out.

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In the same way, a scrofulous tendency may be kept in abeyance, and finally eradicated. A man whose heritage entitles him to lifelong suffering with scrofulous maladies of various characters and various degrees of loathsomeness, may, by scrupulous attention to all the laws of hygiene, by means of which his vitality may be re-enforced and his physical stamina established, go through a long lifetime without realizing the results of his morbid inheritance, and transmit to his children a better constitution than that which he himself inherited. Such a person should carefully avoid excesses of every description, particularly excesses and errors in diet.

The dietary should consist chiefly of fruits, grains, milk, eggs, and the better class of vegetables. Flesh food should be sparingly used, and gross animal fats should be wholly discarded from the dietary. An abundance of nourishing but simple food, such as may be easily digested and rapidly converted into good blood, should constitute the bill of fare of such an individual. Special attention should be given to cleanliness and exercise in the open air; and temperance and moderation in all things should be assiduously practiced by such an individual.

The young man who finds himself an inheritor of a weak digestion or sluggish liver should scrupulously avoid all those causes which are recognized as efficient producers of stomach and liver disorders. Simplicity in diet should be the rule of his life. The avoidance of sweets, fats, condiments, excesses in the use of animal food, and excessive eating, even of wholesome food, he should consider as binding upon him as the pre-

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cepts of the moral law. He should lay down for himself the most rigid rules for the government of his dietetic practices, and religiously adhere to them. By this means, the digestion may gradually be made stronger, and even inherited dyspepsia finally outgrown.

The man whose inheritance is a weak nervous system, who has irritable or sensitive nerves, should at an early period in life set about caring for this part of his bodily organization by avoiding excesses of every sort. His stock of nerve force is low, and he must economize his expenditures in every possible manner. Extravagant drafts upon his nervous system should be most scrupulously avoided. By this means, he may hope to counteract the effect of the bad heritage, and save adding one more to the great army of sufferers from a wrecked nervous system, to be found in every civilized land. Such a person should above all cultivate evenness of temper, calmness of mind, coolness of judgment, and self-control. By the aid of such efforts as these, he may hope to keep at bay the multifarious foes which threaten to assail him in the guise of neurasthenia, or nervous exhaustion, and numerous forms of nerve disorders.

The man who knows that he is born with a mental drift toward the madhouse should industriously cultivate a bias in the opposite direction. Let him avoid excitements of every description. Let him hesitate long before undertaking any enterprise which demands severe and continued mental strain. Let him recollect that his physical machine has a weak spot in it, and that it must be run at a low pressure. He must learn

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to be quiet, to go slow, to be moderate, to take the world easy, and to keep cool. Such a man may go through a long lifetime without a mental breakdown, by the use of proper precautions; whereas, if he neglects them, a sudden and unusual strain may at almost any time destroy his mental equilibrium, and send him to a lunatic asylum.

The Liquor Appetite.—A boy who is born with a natural taste for liquor or for the indulgence of other stimulants, should know that the natural liking for these poisons does not in the slightest degree lessen their injurious effects upon the body. The appetites themselves indicate a morbid condition of the nervous system, which, while it produces an intense craving for stimulants and narcotics, renders the system less able to withstand the deleterious effects which their use invariably produces. No man, no matter how strong his hereditary liking for stimulants, is absolutely compelled to resort to their use. If such a man will contend against the disposition with sufficient vigor, he may thoroughly master the morbid appetite; the conflict may be a bitter one, but one who makes an honest and persistent fight will be a victor in the end.

The youth who finds himself the unfortunate inheritor of strong and clamorous passions, which, unrestrained, will lead him down to physical and moral death, certainly has before him a physical and moral conflict, compared with which the bloodiest fight in ancient Roman days was but a playful game. By nature, he is destined to be an easy prey to the siren voice of the tempter. For such, One has said, "My grace is sufficient for you." A life of temperance,

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sobriety, and purity will gradually subdue the evil demon; but if physical means fail, religion affords a source of never-failing strength to him who devoutly seeks its aid.

Thus it appears that even he who is heir to disease, infirmity, and vice may by persistent efforts escape the dire calamities which are the natural results of the physical bias of his constitution.

MAKE LIFE A SUCCESS

TOO many boys, possibly the majority, grow up to manhood, and allow themselves to drift on through life without any definite purpose to make a success of anything, and, indeed, without any very clearly defined idea of what success really is. It is not for this class that we are writing. This chapter would probably do such persons no good. This is written for the benefit of those young men who aspire to real success in life, and who desire to leave behind them some mark to indicate that they have not lived in vain.

What Is True Success?—First let us inquire, What is real success? One may answer, Success is to become the owner of a large farm well stocked with horses, cattle, and farm utensils, supplied with capacious barns, and ornamented by lawns and trees and a beautiful dwelling. In the estimation of another, the man who becomes the owner of a bank and has vaults filled with gold and silver and thousands at interest with good security, is the really successful man. Still another considers him most successful who becomes famous as a lawyer, an orator, or a politician who attains to some eminent position in the State, and whose name is in everybody's mouth.

They who succeed in these various ways may be looked upon in a certain sense as successful; but the

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possession of lands, or gold, or fame, or a high position in society or in the State, cannot be considered as true success. Indeed, to fail in the effort to secure some ends which are considered essential to success, may be far more successful than to succeed. Success in all the directions mentioned may be attained by ways and methods by no means calculated to make a man happy in possession of that which he sought. For example, wealth is often obtained by dishonest means, by oppression, and by neglecting and ignoring the rights of others. Political honors are perhaps most frequently obtained by the employment of questionable means. Honor is often won by men who have secured it only by depriving others far more worthy than themselves of their lawful rights.

True success can never be realized by a man who seeks for success alone. A man who has before him no higher aim in life than simply to attain success, will not be likely to succeed in the truest sense. Such a man, being actuated chiefly or solely by ambition, will be almost certain to descend to the employment of means for the attainment of the desired end which are inconsistent with the character of one who truly succeeds.

True success is never sought for, but comes as the glorious reward of a life spent in devotion to duty, the steadfast adherence to true and noble principles which in their triumphal march carry with them all who have given to them their full and true allegiance. The man who thoroughly succeeds is he who finds his triumph in the victorious success of the principles to which he has attached himself. He may have endured

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hardships, braved dangers, and suffered persecutions; but all along he has stood steadfast for what his manhood and conscience taught him to be right and true, never thinking of success, but only of his duty, and is at last rewarded by finding himself elevated to the galaxy of heroes. He finds his triumph in the triumph of the glorious truths to which he has so steadfastly adhered.

All men are not so fortunate as to enjoy in this life the realization of what may be considered by the world as success; but all may yet feel that life has not been a failure, but has instead been in the highest degree successful, if they have sturdily adhered to true and genuine principles, and have earnestly fought against error, vice, and sin in every form.

It thus appears that a man who seems to be successful may not always in the truest sense have been such; while a man who seems to have made life a failure may in reality have made it a genuine success. Again we say, the man who will make life a great success will not be he who works and lives for success alone, but he who seeks with earnestness and true loyalty to do his duty, always and everywhere to stand up for truth and pure principles. Such a man will himself be loved and respected for the principles which he upholds, and elevated to the topmost round of the ladder of real and genuine success.

Have an Aim.—While the whole energies should not be devoted to the simple attainment of success, it is necessary that every person who desires to succeed in life should first of all possess some aim or purpose, some well-defined object toward which his efforts shall

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be directed. A man without an aim is like a ship at sea bound for no port or country in particular, and with no rudder, or no helmsman at the wheel, at the mercy of the winds and waves, and liable to be driven upon shoals and rocks, or stranded upon some strange and desolate shore.

Singleness of purpose has been the characteristic of nearly every man who has made his mark in the world. Columbus, Napoleon, and Washington succeeded only through steadfast adherence to a single purpose, and the bending of every energy to the accomplishment of that object. It is of the greatest importance that the object, whatever it may be, shall be clearly defined. One who has simply a vague aim at something great, a vast mysterious something, without definite outline or substantial form, is like a desert traveler following a mirage, or a marksman shooting at a fog. The aim should be definite, distinct, and sharply outlined, and must be sufficiently elevated and noble to call out the highest and noblest efforts of which the individual is capable.

It must be premised, however, that the aim shall be one within the possible reach of the individual. Every man cannot be a president, a governor, or a silver-tongued orator; and it would be a misfortune if every boy or young man should build up in his imaginary future a presidential or a gubernatorial palace. Indeed, it is quite doubtful whether it is best for any one to start out in life with the distinct purpose of seeking political preferment or official position. The professional politician is almost necessarily a wire-puller—a purchaser of votes, and a purveyor of official

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perquisites. No man of high and noble instincts can afford to devote his life to the business of running a political machine or manipulating caucuses. Let the general aim be to be a good citizen, a useful member of society, a genuine man, and as much more as circumstances and opportunity may permit.

Concentration of Purpose.—Having selected an object worthy of one's best efforts, let a man devote his whole energies to its attainment. Let him, with true singleness of purpose, seek by every legitimate means to secure the accomplishment of the purpose upon which he is determined. If patient, laborious preparation is required, let him unflinchingly devote himself to the work. If moral courage and mental firmness are the requisites, let him fortify his soul for the conflict. Let him not weaken his strength by dividing his energies among divers conflicting matters; in other words, do not try to grasp too much at once. In so doing he may fail entirely. The power of concentration is one of the most difficult attainments of all mental qualities. The ordinary mind is readily diverted by new scenes and objects of interest; but the mind which has undergone the discipline essential for the attainment of true success, fixes itself upon the single object with a grasp so firm that nothing but death can release its hold.

Perseverance.—We need not dwell upon the need of perseverance for the accomplishment of any great purpose. The great number of human beings whom we see all about us, who have failed to make life a success, have, in the great majority of instances, been driven from the road which leads to sure success by

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the shifting winds of vacillation. Yet most of them have been once well started upon a promising road, but have been driven from the safe highway into the mazes and quagmires of uncertainty by some will-o'-the-wisp of great expectations, brilliant and alluring in the distance, but vanishing in thin air when just within hand reach. Nevertheless, a simple, plodding sort of dogged, unreasoning perseverance must not be considered a sure passport to success.

The old adage, "Let well enough alone," is probably quite as often misapplied as otherwise, as there are plenty of people who do not know what "well enough" is. Some are well content with the most meager measure of success; while others are never satisfied even with the most bountiful harvest or the most generous returns from their labors. And that other old adage, "A rolling stone gathers no moss," is equally liable to harmful application; for the man who stupidly pecks away all his life in a barren hole in the hillside, in the hope that he may strike a vein of rich ore if he perseveres long enough, is certainly no more likely to succeed than the one who hurriedly skims along the surface, turning up a clod here and overturning a rock there, but never stopping long enough in one place to discover the precious metal, even though it may have been hidden from his eyes by but the merest film of earth. If after an honest effort to succeed in any direction, the obstacles presented prove to be really insurmountable, better turn at once to something more promising than beat one's brains out against the dead wall of impossibility.

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Thoroughness.—“Whatever is worth doing at all is worth doing well,” is an old adage, the truth of which has never been denied, although now and then, it must be confessed, an apparent success may be obtained by the most imperfect and superficial work. In many respects, the American people are far inferior to those of some other nationalities in the execution of enterprises specially requiring the exhibition of this trait of character. The average American loves to accomplish the desired end by one supreme effort, by a grand, dashing display of his powers. The phlegmatic German, however, sits down to his task, quietly gathers about him the means by which it is to be accomplished, efficiently and methodically develops each feature of his work, and finally presents it a perfect and complete whole, symmetrical in all its particulars, and a model for all workers in the same line who may succeed him. Place the product of his genius alongside that of the brilliant, dashing worker. The contrast is that of a marble statue chiseled by a Carnova or a Michael Angelo, compared with one of the rude wooden images set up in the roadside chapels of an Italian highway.

Napoleon won his great battles by his thorough attention to all the little details of preparation. He anticipated every possible contingency, and was prepared for every emergency. So it is in the battle of life; the habit of giving earnest attention to details, of “taking pains,” even in the doing of things seemingly of trivial importance, will often secure the prizes which the brilliant but haphazard and irregular efforts of others may fail to reach.

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Yet it must be conceded that even this quality may be so greatly exaggerated as to become an impediment to progress, rather than an aid to success. The man who spends all his energies in elaborating and perfecting non-essential details, is like the man who busied himself in driving the cows out of his garden to save his cabbages, while his dwelling-house, with its valuable contents, was being consumed by fire.

Faithfulness.—Reliability, even in matters of small consequence in themselves, has often proved the stepping-stone to rapid advancement and business prosperity for young men who could boast no special talent, and possessed no special qualification for the place they were called upon to fill. Merchants, bankers, and business men of every rank are daily inquiring for young men who can be relied upon, and in whose hands important trusts may be reposed without danger that they will be betrayed. The want of this characteristic is what leads to the shameful defalcation of bank cashiers and presidents, and the general feeling of distrust and insecurity which has arisen from the great commercial panics growing out of the dishonesty of men in whose hands great pecuniary trusts have been placed. Any young man, no matter how meager may be his natural abilities, if he will improve his opportunities, may win for himself a useful and an honorable place in society by the unwavering cultivation of trustworthiness.

Be Practical.—Half the bad failures in life are due to a want of practical ability, of that combination of traits of character which enables a person to discriminate between useful things and those which are of

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no consequence; between things of great import and those of trivial importance; to determine promptly what is best to be done in emergencies, and to be able to adapt one's self with readiness to changing circumstances. The visionary dreamer never succeeds, because his whole energies are devoted to the elaboration of schemes which can never be carried out, and which, if they could be, would be of little or no practical value to the world.

In the patent offices at Washington may be seen many thousands of ingenious mechanical devices, not one in a hundred of which has ever been put to any practical use, and never will be seen outside the rooms where they are stored for exhibition. Most of these are the result of days, months, and even years of labor on the part of men whose inventive faculties ought to have enabled them to render valuable service to their fellow-men, but which, unfortunately, not being balanced by the necessary qualities to render them of practical value, have been squandered in the invention and construction of machines for doing what nobody ever cares to have done, or what can be accomplished by much simpler and better means. Every neighborhood has its perpetual-motion maniac, who ought to serve as a living example to all to whom he is known, of the futility and folly of spending time and efforts in trying to accomplish impossibilities.

The term usually applied to practical ability is "common sense." Every one is supposed to have a share of common sense; but our experience with the world has led us to the belief that this is of all mental qualities the rarest, and would be more properly

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termed "*uncommon sense.*" Fortunately, it is a quality which can be developed, though the man must be considered fortunate indeed who inherits a large share of this element in his mental make-up. Persons who have common sense always reason about things. They never act without considering the why and wherefore of what they are about to do, and are continually inquiring the reasons for what they see transpiring about them. A large fund of common sense is of vastly more value to any man than the most finished course of instruction at a university; and one who is lacking in this essential quality will find that no amount of "book learning" is a substitute for it.

Learn by Experience.—All persons, even the wisest and most cautious of men, will sometimes make mistakes, but the wise man takes care that he does not frequently repeat the same error; while the man who is lacking in the quality which we have termed common sense, goes on committing the same blunder again and again, utterly regardless of the consequences which his experience has told him will invariably follow. A philosopher once said, "Experience keeps a dear school, but fools will learn in no other." Unfortunately, there are those who will not learn, even by experience. When we find that we have made a blunder, we should carefully consider the causes which have led to the calamity. When discovered, they should be carefully noted in our minds, and due care should be observed that we do not fall into the same error a second time.

Many things we may learn and must learn by personal experience. Some, perhaps, cannot be so well

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learned in any other way ; but life is too short to enable us to try every experiment possible, and we can ill afford to suffer the loss which would result by the constantly recurring blunders of a life wholly devoted to original experiment. Hence, it is wise for us to profit, as far as possible, by the experience of others whose lives may have fallen in the range of our observation. He is certainly a wise man who will appropriate to himself, as far as possible, the experience of his fellows and his predecessors ; and, thus equipped, with the accumulated knowledge of the world, he will be able to accomplish vastly more and do his work far better than one who trusts simply to the uncertain results of his own individual experience.

Genius and Luck.—How often do we hear the remark, “He was a genius,” “He was bound to succeed,” or, “What a lucky man he was!” It is a mischievous popular error that genius and luck are the two magic influences which have enabled the majority of successful men to rise so far above their fellows in the particular lines in which they have attained eminence. It is not to be denied that some men are specially adapted for certain walks in life. Then it is certainly a matter of importance that each one should, if practicable, occupy the position to which he is best adapted, and in which he is most likely to succeed ; but those who have given the greatest amount of study and thought to this question are unanimous in the opinion that the qualities which constitute genius are by no means uniformly extraordinary brilliancy of intellect, but far more commonly consist in an unusual ability and disposition for close and continual application. A man

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of genius succeeds where another man fails, not simply because he has greater intellectual powers, but because he applies his mind to the subject which he has in hand with greater intensity, and pursues it with greater perseverance and more searching, penetrating thought than his unsuccessful colleague.

So with luck. So-called luck rarely consists simply in the occurrence of favorable circumstances; but far more frequently the secret consists in the fact that when the particular circumstance occurred, which was thought to bring the fortunate man luck, he was prepared to embrace the opportunity, and make the most of it, while his unsuccessful rival was engaged in a preliminary preparation without which he could not avail himself of the opportunity offered. The lucky man is not the man who, like "Micawber," is waiting listlessly for "something to turn up," but the man who is industriously preparing himself for anything that may turn up, and persistently working to turn something up whereby he may succeed in accomplishing the purposes at which he aims.

Promptness and Energy.—Whatever you undertake to do, put your whole soul into it. The world is full of half-hearted men,—men who are not quite certain whether they are wide awake or dreaming,—men who have latent energies sufficient to raise them to the loftiest heights of human greatness, but whose dull sensibilities allow them to lead lives scarcely higher in their aims and purposes, and little more effective in their results, than those of the dumb brutes, beside whom they toil in the fields and along the highways. It is easy enough to drop into this great army

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True Merit Wins.—We meet people every day who are complaining that the world does not appreciate them. Their friends fail to recognize their abilities, according to their view of the matter, and they are not afforded the opportunity for displaying their talents which they deem they ought to have. These persons have been very truly called “chronic grumblers.” The merits which they possess, as a rule, are present in their own imagination alone. If they have any special ability, their anxiety that they should be appreciated and recognized so disgusts those with whom they come in contact as to prevent such a recognition. If, after giving the world a fair chance to form a judgment of our abilities, we find no recognition of the special claims to distinction on our part, we should feel pretty well convinced that we have been duped by our own self-complaisance, and that we have no such extraordinary merit as we had come to believe. In the long run, and in the majority of instances, the world puts a man where he belongs. If a man has true merit, some person or some circumstance will find him out, and bring him to the front. He has only to bide his time, patiently developing his talents and enlarging his resources; and when the proper time comes, he may depend upon it there will be a place for him. Nothing affords a more unpleasant spectacle to people of common sense than a man of meager abilities elbowing his way through the world, running hither and thither, proclaiming to the world his talents, and begging that he may be recognized, and that room may be made for him in some position for which he imagines he is peculiarly fitted. The world is naturally,

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and very properly, suspicious of such persons, and they should not take it hard if they are now and then severely snubbed. It usually takes a large amount of snubbing to convince these pretentious and pompous blusterers that there is an essential difference between "brass" and brains, or that a man may have a great amount of "cheek" with very little intrinsic merit.

Self-Respect.—Few traits of character are more repugnant to the refined and cultivated taste, and more opposed to genuine good sense, than overweening conceit, or self-esteem; but self-respect is a quality of character which excites respect in others, and it may be said that the amount of respect ordinarily accorded an individual will be largely in proportion to his own respect of himself. Self-respect and conceit are two very different traits of character. Conceit leads an individual to think himself to be something more than he is. In his own estimation, his qualities are exaggerated to a degree often positively ludicrous. Self-respect, on the other hand, leads a person to fairly estimate his own qualities, rather underrating them than otherwise, but leads to a knowledge of his own qualifications and real merits; and his genuineness of purpose and self-reliance will constitute the most essential elements of his success. Without self-respect and a degree of confidence in one's abilities, one's course in life is apt to be cowardly and vacillating. A healthy self-confidence is one which is the result of a thorough recognition of the thing to be attained, of the means and efforts required for its attainment, and the consciousness of an honest and thorough preparation for the undertaking.

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Self-respect is one of the most powerful incentives to virtue and purity of life. That was a noble reply made by the lad who was tempted by another to commit a wrong act by the plea, "No one will know it," "But, sir, I shall know it myself." The consciousness and self-condemnation of wrong-doing is to a man with self-respect a very powerful protection from it. Cultivate self-respect by avoiding most carefully every act or thought which lowers your own esteem of yourself when you sit in judgment upon your own heart and life, and in so doing you will make yourself worthy of the esteem and respect of others, and you can depend upon it that your true value will be in due time appreciated.

Genuine Gentility.—Last, but not least, we mention, as an essential element of real success, the character and the manners of the true gentleman. We do not propose to lay down specific rules for conduct, but to urge the importance of cultivating civility and courtesy of manner toward others. The boy who is gentle and kind of heart, no matter how rough his exterior, will be regarded by those with whom he comes in contact, with kindly feeling, which is always inspired by real purity and genuineness of character. The place for a boy to begin to cultivate true courtesy and gentleness of manner is at home. Respectful deportment toward his parents, kind and gentle treatment of his brothers and sisters, and a courteous manner toward all, under all circumstances, if assiduously cultivated at home, will establish a charm of manner which will accompany the individual through his entire life, and will constitute a very important element in leading

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him to that success which a person who adopts these suggestions, most highly deserves. A man whose manner is suave and affable, makes friends even of his enemies, and at once disarms prejudice by the evidences which his outward manner gives of real gentleness of heart. A fawning sycophancy of manner is wholly unworthy of any one who claims to be a gentleman; but real courtesy is always becoming in all persons and under all circumstances.

Boys are apt to think that while they should be courteous to strangers, with their relatives and friends, and especially their schoolmates and "chums," they may neglect the little courtesies and civilities which they would promptly accord to a stranger. This is a very great mistake. This very neglect often leads to the destruction of friendships which have existed for years, and might have been lifelong, and frequently gives rise to hardness and even bitter enmity. Besides, in order that one should possess that grace and charm of manner which a true gentleman exhibits, he must keep in constant practice, by treating all his associates with the same kindness and civility with which he would treat them if meeting them for the first time as strangers, upon whom he might wish to make a favorable impression.

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