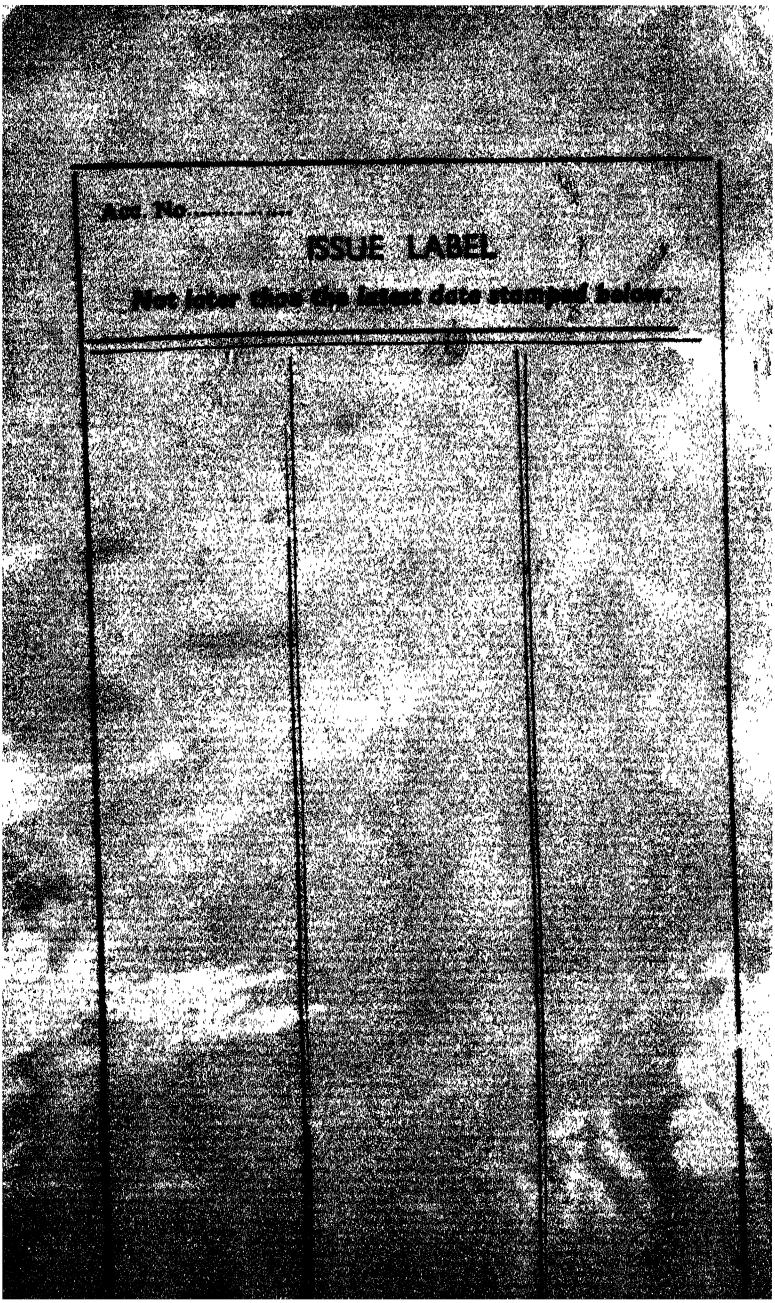
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WIRING OF FINISHED BUILDINGS

A PRACTICAL TREATISE, DEALING WITH THE COMMERCIAL AND THE TECHNICAL PHASES OF THE SUBJECT, FOR THE CENTRAL-STATION MAN, ELECTRICAL CONTRACTOR AND WIREMAN

BY

TERRELL CROFT

CONSULTING ELECTRICAL ENGINEER

FIRST EDITION
FIFTEENTH IMPRESSION

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PREFACE

It has been estimated, and probably the estimate is not very far from the truth, that only 8 per cent. of all of the houses in this country are wired for electricity. No further argument to justify the issuance of "*Wiring of Finished Buildings*" seems necessary. There is a splendid, lucrative field awaiting the central-stations, the electrical contractors and the wiremen that seek and install this finished-building business in a systematic, comprehensive way. This work has been prepared to assist them.

Both the *commercial* and the *technical* aspects of the topic are treated in this one volume. The commercial man should know something of the details of finished-building wiring and the technician should be somewhat familiar with the business end. Frequently the contractor must know both ends.

In 1911 the author prepared for *The Electrical World* a series of articles on "*Wiring Old Houses*" that ran through a half dozen issues. The essential information from this series and from other articles by the author formed the basis of the present work. With this has been included much other data.

Criticisms and suggestions for the improvement and enlargement of the book will be welcomed by the author.

Terrell Croft.

University City,
St. Louis, Mo.
January, 1915.

ACKNOWLEDGMENTS

THE author desires to acknowledge the permissions granted by the editors of the American electrical magazines to use herein material from articles prepared by him and by others. Special acknowledgment is hereby made to *The Electrical World, The Electrical Review and Western Electrician, Electrical Engineering,* and *Popular Electricity.*

Acknowledgment is also accorded to Mr. Howard H. Wood, Superintendent of the Wiring Department of the Allegheny County Light Company, Pittsburgh, for much valuable assistance and the many suggestions that he gave in connection with the preparation of the original series on *"Wiring Old Houses"* which was printed in *The Electrical World* in 1911.

Data have been obtained from National Electric Light Association publications and special acknowledgment is made for material taken from the 1913 and the 1914 *"Reports of the Committee on Wiring Existing Buildings"* of that association.

Other acknowledgments are made in the text of the book.

Different central-stations throughout the country have kindly checked over figures relating to their own stations.

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WIRING
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FINISHED BUILDINGS

CHAPTER I

POSSIBILITIES AND RESULTS

1. Business Already Obtained. It is difficult if not impossible to secure authoritative figures relating to this matter. Probably the best data that have thus far been compiled are those contained in the 1914 *Report of the Committee on Wiring Existing Buildings* of the National Electric Light Association. The values therein given are undoubtedly accurate. They are reproduced in Table 6 and show that, in different sections of the country, the number of central-station customers ranges from 20 to 200 per 1000 population. However, as indicated by the table, in most of the cities there are at present somewhere around but 50 or 60 customers per 1000 population. Furthermore, the data were furnished by a "*selected list of reporters only*" and may or may not be representative of the entire country. The names of the cities referred to in the table have been concealed by the committee. It is altogether probable that, in cities and towns over the entire United States, the number of customers per 1000 population is considerably below 50. In Strassburg, Germany, and in Milan, Italy, the development has already reached a value well over 150 customers per 1000 population.

1a. Percentage of Houses, in Cities of 20,000 Population and Under, Wired for Electricity.[1] From returns made to the *Electrical World* by central stations in all sections of the country, the number of houses in cities of 20,000 and less inhabitants which are equipped to use electricity varies with the localities. Returns from 100 cities of a population of 5000 or less taken at random from all parts of the country indicate that 58 per cent. of the

[1] *Electrical World*, Oct. 17, 1914, page 774.

houses are wired. In cities with a population ranging from 5000 to 10,000 the percentage is 54. Thirty-two cities with populations of more than 10,000 and less than 20,000 show that 60 per cent. of the houses are wired. In the newer sections of the country west of the Mississippi the percentages are considerably higher than in the older sections. On the Pacific Coast the percentages run as high as 98, while in the Middle West the average is over 60 per cent. The Atlantic Coast shows the lowest percentage. These figures are not, however, absolutely accurate and would not be true of all of the cities in the country having a population of 20,000 and under. They are based on incomplete returns for the entire country and represent the conditions in progressive communities. If complete returns were available, the percentages would be doubtless lower. However, the returns for the Middle West and the Pacific Coast represent conditions accurately for those sections.

2. Business that is yet to Be Obtained in Finished Buildings. No absolutely definite and accurate information is available. In a few cities the number of illuminating gas consumers is practically 250 per 1000 population and there is no apparent reason why the electrical development should not at least equal this. It is altogether probable that the electric will exceed the gas development. It is apparent, from a consideration of the values given in Table **6** and in this and the preceding paragraphs, that any central station that does not now have at least 200 customers per 1000 population has splendid possibilities ahead of it. P. L. Miles is authority for the estimate that, considering the entire country, "only about 8 per cent. of all houses are equipped for electricity," the value including both urban and suburban homes. In Toledo, Ohio, there are approximately 55,000 homes and 9000 electric light users, a development of 16 per cent.

3. Rate of Growth. Table **6** shows that each central station consulted showed an increase in business for the year. This increase is, doubtless, general over the entire country. In cities where finished-building wiring campaigns have been or are being waged, the growth is much more rapid than elsewhere. In the National Electric Light Association *Wiring of Existing Buildings*

Report, previously referred to, it is brought out that the growth appears to be proportional to the number of existing customers. That is, the more customers a central station has, the more it may expect to get. This is attributed to the fact that the most effective solicitors that a central station has are its customers. If one family has electric light the neighbors want it too. Fig. 1 illustrates this fact very nicely. It is the map of a certain large city. Each black dot indicates the location of a wired finished building. The illustration shows conditions about three years after the inauguration of an aggressive finished-building wiring campaign. It

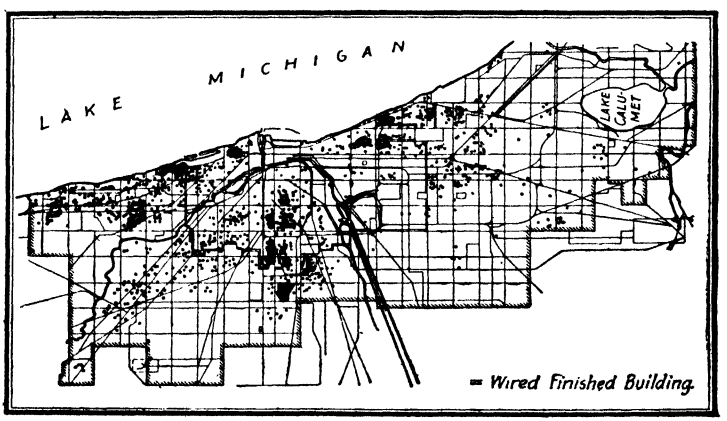


FIG. 1.—Illustrating the tendency of finished-building wiring installations toward grouping.

will be noted that the wired finished buildings tend to lie in groups or clusters in many instances. This is attributed to the effect of the gossip and of the gratuitous solicitation service of the people residing in the respective districts.

4. Possibilities of the Small Customer. It is from the small user that most of the future finished-building business will come. A large majority of the larger buildings are already wired. The average income from these small buildings may not exceed $10 to $16 each annually, but in the aggregate the revenue will reach a very substantial amount. Such consumers must be connected at minimum cost. Expensive service runs and expensive meters cannot be used. Considerable success has

resulted in Pittsburgh and in other places from charging the small consumer on a flat-rate basis and using a maximum demand indicator or a current-limiting device to protect the central station against theft of electricity (Par. **57a**). This arrangement eliminates meter-reading charges and minimizes the bookkeeping. It is probable (National Electric Light Association *Report*) that the average annual gross income from the finished buildings that are not now but will be wired will be something less than $12 each.

5. Results from Finished-building Wiring Campaigns. A study of the data given in the chapter "*Examples of Campaigns*" will convince one of the gratifying results that can be obtained by going after the finished-building business in a systematic way with proper advertising, solicitation and price schedules. As one example of what may be accomplished the following data, relative to the Duquesne Light Company of Pittsburgh, are given:

More than 6500 finished buildings have been wired. In dollars and cents the results are indicated by the following figures which show the amounts collected during various years for wiring: 1907, $2772; 1908, $4269; 1909, $15,198; 1910, $30,125; 1911, $68,586; 1912, $85,305; 1913, $72,962 and 1914, $65,000. Aggressive advertising and solicitation was started during the latter part of 1910. The figures show the result. See **61** for description of campaign.

6. Table Indicating the Status and Possibilities of Finished-building Wiring. (See following table.)

From 1914 Report of Committee on Wiring Existing Buildings, National Electric Light Association.

Key Number	Location	Population	Customers per 1000 population[1]	Residence customers per 1000 population[1]	New buildings per 100,000 population[2]	Per cent. of new buildings wired	Old buildings wired during a year per cent. to single dwellings already served at beginning of year
1	East	Over a million	45 **54**	19 **25**	95	90	8
2			20 **26**	19 **12**	108	51	5
3			26 **30**	12 **16**	88	90	2
4		Between 100,000 and 300,000	50 **70**	28 **44**	322	100	20
5			50 **62**	50 **62**	268	95	6
6			23 **27**	10 **11**	62	56	17
7			27 **35**	12 **18**	83	90	3
8		Between 50,000 and 100,000	37 **42**	25 **29**	202	85	21
9			26 **32**	11 **16**	44	90	36
10		Between 20,000 and 50,000	58 **66**	33 **38**	.....	.....	4
11			72 **78**	55 **60**	26	100	4
12			50 **61**	29 **40**	198	87	12
13			37 **46**	14 **20**	145	72	18
14		Between 10,000 and 20,000	49 **54**	36 **39**	263	70	3 10
15	West	Between 300,000 and 500,000	154 **158**	121 **129**	373	100	0
16			43 **62**	25 **40**	2000	83	3
17	Middle West	Between 300,000 and 500,000	42 **45**	.....	.....	.....	.....
18		Between 100,000 and 300,000	110 **135**	78 **96**	1229	50	10
19		Between 20,000 and 50,000	71 **79**	34 **41**	382	66	12
20			22 **28**	9 **11**	1192	60	.....
21		Between 10,000 and 20,000	72 **75**	40 **44**	300	83	.....
22	West	Under 10,000	209 **169**	105 **135**	1647	85	3
23			72 **78**	49 **52**	11	.....	2
24			108 **120**	77 **89**	267	67	2
25			82 **87**	72 **84**	555	96	10
26			71 **78**	..... **56**	167	67	14
27			126 **138**	....	381	75	.....
28			111 **109**	80 **82**	24	50	4
29	Southwest	Between 30,000 and 50,000	61 **88**	63 **77**	118	84	23

[1] The first figure is for one year earlier than the second.
[2] Single dwellings. Apartments and stores not always included.

CHAPTER II

ADVERTISING

7. Advertising is essential in successful finished-building wiring campaigns. It is obvious that unless the public knows that a campaign is being conducted and is generally familiar with the propositions offered and the advantages accruing through the use of electricity, the campaign can hardly be successful. Advertising will disseminate this knowledge. There appears to be no one means of advertising that should be used to the exclusion of the others. On the contrary, experience has shown that best results are obtained when several means are used conjunctively. For example: newspaper advertising, circular letters and window displays have all been used at the same time and coordinately, with splendid results. In some campaigns, practically all of the methods of publicity have been used simultaneously, with gratifying returns. The people who are not reached by one means may be by another. Some people are probably reached by all, in which case the cumulative effect is powerful. Advertising may assist in one of three ways: (1) It may get direct orders, (2) it may pave the way, rendering the solicitor's work easier, and (3) it may attract inquiries which the solicitor can follow up.

8. The Desideratum of Finished-building Wiring Campaign Advertising. The general object is to induce the owners to modernize the many thousands of unwired houses. They must first be convinced that electricity is cheap and efficient—even necessary for the ordinary comforts of life. Next, there is the problem of cost. The householder must be shown that neither the installation of wires and fixtures nor the use of electric current is expensive. Finally, the house owner and, more particularly, the housewife must be assured that the wiring will be installed without noticeable damage to the building and without creating much dirt.

9. A house-wiring campaign can often be effectively preceded by an educational campaign to overcome houseowners' prejudice

and to popularize the use of electricity. Nothing creates a desire to use electricity as effectively as does the introduction of labor-saving household appliances. These should be supported by the persistent arguments that they can be operated cheaply, that they solve the servant problem, that they eliminate drudgery and add to the comfort and efficiency of the housewife and her maid. The wiring of an old house often is traced directly to the desire of the housewife to use an electric iron, washing machine, vacuum cleaner or cooking appliance. The rapidly spreading desire for labor-saving electrical appliances has been indicated in several campaigns by the large number of baseboard outlets and floor receptacles requested.

10. Advertising cost of a wiring campaign varies with the conditions in the different communities. No data can be given. Newspapers with the best and largest circulations should be selected and the cost of advertising should be regulated according to the returns. To maintain the advertising cost at a minimum, the advertising department should be in daily touch with the contract department and the amount of advertising should be determined by the amount of business received.

11. Bringing the Bargain Feature into Wiring Campaigns. In the electrical business, as in the department store game, much may be gained by the inducement of cut rates. Due to department store advertising, the American public has developed the confirmed habit of bargain-hunting. Cut-price sales of electrical appliances not only will induce many housewives to ask for the installation of wiring in their homes, but will put the appliances on the central-station lines as consumers of electricity. A bargain in wiring may also be offered as an inducement to have the wiring done within a certain time limit. The standing of the illuminating company will assure its prospective patrons of first-class workmanship in the installation and the fulfillment of all the terms of the advertised offer.

12. The different methods or mediums of advertising may be listed as follows—the list may not be complete but it indicates the most important methods. The items in the list are arranged arbitrarily.

1. Newspaper Advertising.
2. Circular Letters.
3. Street Car Cards.
4. Posters—Bill-board Advertising.
5. Display Cards.
6. Window Display.
7. Circulars and Folders.
8. Handbills.
9. Electric Signs.
10. Personal Canvass.

Each of these different methods will be briefly treated in paragraphs that follow.

13. The relative values of the various methods of advertising probably differ in each community, with the nature of the proposition and with the class of people to whom the appeal is made. A very interesting tabulation relating to this subject is that of Par. **14,** which was compiled by Charles Munson, local manager for the Iowa Railway and Light Company, at Marshalltown, Iowa (*Electrical World*). As each contract was closed the customer was requested to state which method of advertising aroused his interest. The data of the table is the result of their answers. Probably the effect of window-display advertising would be less important in larger cities than in Marshalltown. In cities of populations up to possibly 20,000 inhabitants almost every one walks along the main street nearly every day, and an attractive window display can be made very powerful. It is conceded that newspaper advertising is practically always essential, particularly in the larger towns and cities. The personal canvass is also essential, though this method more properly should be classed under *Soliciting* and is treated elsewhere.

14. Table Indicating Relative Values of Different Methods of Advertising. This table records the results of a campaign, of one

Method of advertising	Per cent.	Watts	Amount
Window display	30	8829	$729.30
Handbills	10	2943	243.10
Newspapers	10	2943	243.10
Office employees	10	2943	243.10
Outside employees	10	2943	243.10
Personal canvass	15	4420	364.65
Neighborhood canvass	10	2943	243.10
Street car advertising	5	1471	121.55
Total residence wattage secured			34,285
Total contracts given to contractors			91
Total amount of contracts			$2,431.40

month's duration, in Marshalltown, Iowa, a city of 13,500 (1910 census) inhabitants. See **13.**

15. Newspaper advertising will give results, particularly in large cities, that can be attained by no other means. It is impracticable, if not impossible, to give any rules as to how much space should be carried and as to how often the advertisements should be run. The class of people that the advertiser is trying to reach and the characteristics of his proposition are factors in

FIG. 1*A*.—A good newspaper advertisement.

the matter. In other paragraphs are given outlines of successful campaigns that have been waged. From these the reader can obtain suggestions as to newspaper advertising policies that have been adopted with good results. As a general rule "fine writing," flashy headlines and the like should be avoided. It has been found that plain, concisely-worded statements are the most effective and inspire the most confidence in the reader. Reading notices in conjunction with display advertising are often valuable. Line cuts of bold rendering should be used freely as they will attract attention where it can be gained by no other means. Fig. 1*A*

shows a good newspaper advertisement. Illustrations of typical newspaper advertisements are shown on other pages.

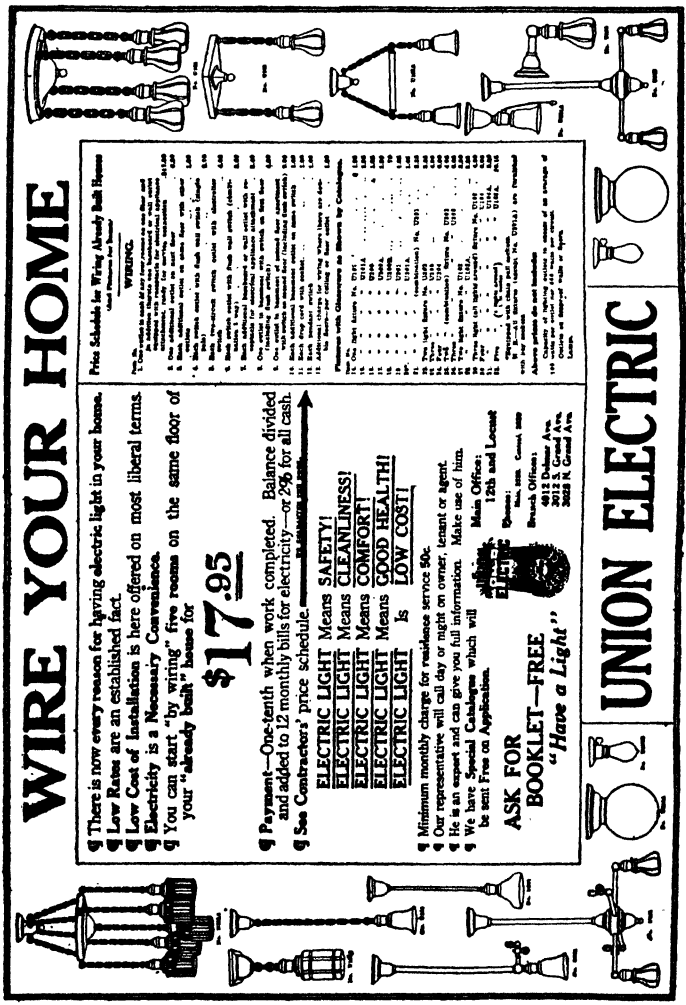


FIG. 2.—Half page (11 in. × 16 in.) advertisement used by the Union Electric Light & Power Company. (A detail illustration of the fixtures is given in Fig. 185.)

16. Some sample newspaper advertisements are shown in Figs. 2 and 3. These were used by the Union Electric Light & Power Company in its campaign which is described elsewhere.

Larger illustrations of the fixtures offered are shown in the chapter on *"Fixtures."*

17. Circular letters reach certain people, particularly women, who, apparently, can be reached by no other method. Typewritten letters are preferable, but if printed ones must be used they should be printed in typewriter type by a concern that is

FIG. 3.—Newspaper advertisement (9 in. × 9 in.) used by the Union Electric Light & Power Company.

familiar with the preparation of imitation typewritten letters. The ink used in the printing should be matched with the typewriter ribbon that is used for writing in the names and addresses. Each letter should be signed in ink—by a clerk—with the name of some department head or official. Each letter should go out in a sealed envelope under a two-cent stamp. Every effort should be made to make the letter appear a personal communication. The

text of the letter must be determined by circumstances. If preliminary to a campaign it may be educational. If during a campaign it may direct attention to the company's proposition or it may suggest that the prospect should have a solicitor call. When the name of an individual who has shown interest in a wiring proposition is once on the "prospective" list, follow-up circular letters can be sent to him to supplement the calls of the solicitor. Some typical circular letters are shown in the appendix to the commercial section of this book.

18. Circular letters in a Boston, Mass., campaign were used to good advantage. The Edison Electric Illuminating Co. of Boston sent out broadcast to prospective customers individually ad-

FIG. 4.—Street car card used by the Union Electric Light & Power Company

dressed letters showing what could be accomplished for the basic investment of $14.35. On the border of the letter were reproduced ten photographs showing the different forms of service which might be obtained from a single outlet—with from one to three sockets. See **60** for outline of the Boston Company's proposition.

19. Street Car Cards. A standard street car card is 21 × 11 in., but double cards, that is, 42 × 11 in., are sometimes used. Street car advertising must always be supplemental because the lettering should be large to be easily and quickly read, hence there is not enough room to tell much of a story. Street car announce-

ments serve to hammer in and clinch statements made elsewhere and they should not be used for anything else. It has been stated that, in large cities, street car advertising brings a statement before a greater number of people, or before the same people a greater number of times, than is possible with any other form of advertising. Rental charges for street car card space vary from 25 cents to 60 cents per month per card. The price is determined by the class of community the car line traverses, the size of the city and by other considerations. The Union Electric Company used car cards like that shown in Fig. 4. While it was impossible to trace the direct results of these, the opinion is that they were very helpful. Table **14** shows that in the

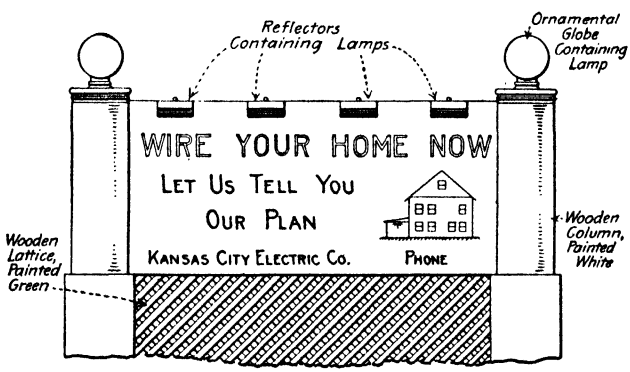


FIG. 5.—Illuminated sign.

Marshalltown campaign only 5 per cent. of the orders were directly traceable to street car advertising.

20. Posters and bill-board advertising has been used in finished-building wiring campaigns. It is no doubt very effective when used in conjunction with other mediums but no definite data appear to be available as to just how valuable it is.

21. Illuminated Sign Advertising at Kansas City, Mo. (*Electrical World*, July 5, 1913). The Kansas City (Mo.) Electric Light Company effected an agreement with the Thomas Cusack Sign Company whereby the electric-service company lighted 250 lineal ft. of signboard (Fig. 5) upon which its advertisements are painted by the sign company. As soon as one display space is

sold to a customer desiring a lighted board the lighting company's sign is transferred to another board, still retaining 250 ft. of space. The success of the plan has been marked, for no sooner has the electric service company occupied and lighted a board than it has been demanded by some prospective advertiser.

22. Display cards and "To Let" cards are cheap and, apparently, are splendid supplementary mediums. Properly worded display cards can be tacked on the lighting company's poles or hung in the windows of vacant houses that are wired and are to rent. The cards should feature the idea that no one should rent an unwired building as any building can, through the illuminating company, be cheaply, safely and quickly wired. See Fig. 6.

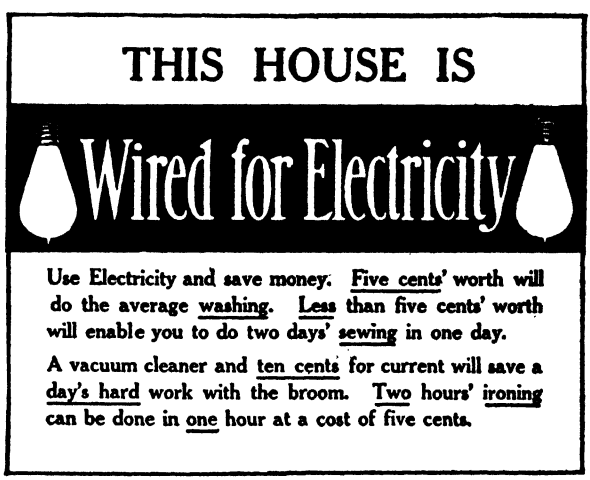


FIG. 6.—Finished-building wiring campaign placard. Size 13 in. × 11 in.

23. Display cards or placards were used in the Manchester, N. H., campaign for wiring finished buildings. All real estate dealers were supplied with placards 11 in. by 13 in. of the type shown in Fig. 6. The advantages of electric washers, motor-driven sewing machines, and vacuum cleaners were indicated to advantage on these cards. Window displays also were featured. In these a residence-type meter, main switch and fuses were wired to various appliances in operation to convince the prospective customer of the simplicity of electric service.

24. Use of Photographs of Installations in a Finished-building Wiring Campaign. One of the chief difficulties encountered during a campaign is the belief that some people possess, that it is impossible to wire an occupied building without spoiling all the walls, getting dirt over the entire place and disorganizing things generally. If these people can be convinced that they are wrong they usually become interested. To prove that the installation would be made with a minimum of damage or dirt, the contracting agent of the Kansas City Electric Light Company secured photographs of wiring jobs during different stages of the work. Enlargements of these pictures, mounted on electrically lighted easels and arranged with holders for the wiring campaign literature, were placed in drug stores throughout the residence district.

25. Window display advertising, particularly in towns of less than, possibly, 20,000 inhabitants, is one of the most resultful means of publicity available to the central station or contractor. The values of Par. **14** indicate that in that particular campaign the window display advertising was much more valuable than any other means employed. The window display should be such as will compel attention. Some device in action will usually draw a crowd. If fixtures are offered in the campaign, a set can be displayed and a placard should indicate their price and the room for which each fixture of the set is intended. A small section of a frame house can be built in the window and the wiring in it shown so as to indicate how wiring can be installed in a finished building without visible damage. The process of finishing between outlets can also be illustrated. Placards should plainly state the company's wiring offer.

26. Circulars and folders can be used in important campaigns to supplement the other mediums. A good circular outlining the advantages of electric service and the ease with which houses may be wired can be sent to all inquirers, to precede the solicitor, or the circulars can be sent over a selected list. Fig. 7 shows the cover of an excellent six-page-and-cover circular (8 1/2 in. × 12 in.) used by the Union Electric Company of St. Louis. The reverse side of the cover, showing the return card, is illustrated in Fig. 8. Pages 1 and 2 explain how readily houses can be wired and the desire of the company to assist toward this end. The advantages

of electric service, the installment plan of payment which the company adopted, and the guarantee under which the wiring is installed are all outlined on page 3. On page 4, large illustrations of the fixtures included in the company's offer are shown. (See Fig. 203 for pictures of these fixtures.) Pages 5 and 6 comprise the Order or Contract form for wiring finished buildings which is reproduced in Figs. 9 and 10. This contract form sheet is perforated along its edge so that it can be easily removed from the circular.

FIG. 7.—Cover of circular on finished-building wiring.

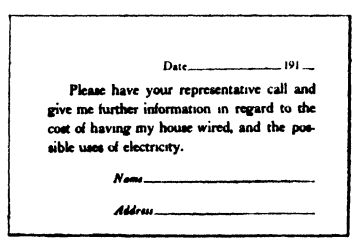
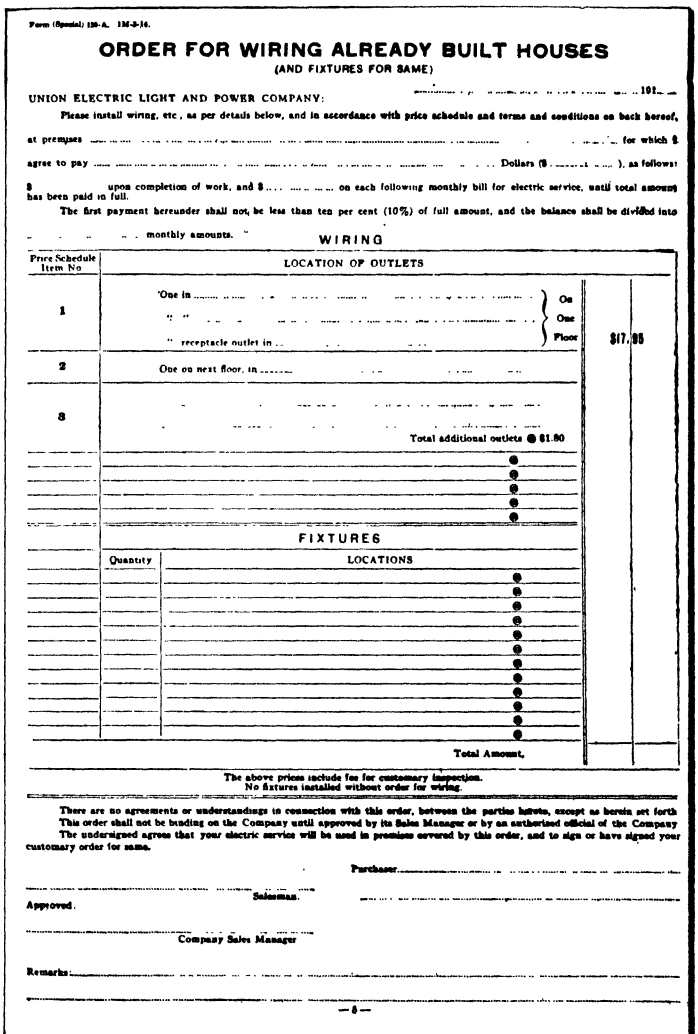


FIG. 8.—Back of return card from finished-building wiring circular.

27. In the Union Electric Company's circular a contract form is included. Fig. 9 shows one side and Fig. 10 shows the reverse. The company's proposition is thoroughly covered by the contract form. The consumer can fill in the form himself or the solicitor can do it for him. Including the contract form in the circular eliminates unnecessary clerical work and provides a means whereby the customer may know from the start the exact nature of the proposition that is presented for his consideration. An outline of the Union Electric Company's campaign is given in Par. **59**. The fixtures that are referred to on the contract are illustrated in Fig. 203.

28. The National Electric Light Association's Booklet "Electric Service in the Home." Its cover is shown in Fig. 11. It is furnished to member companies at a nominal price and is a splendid medium for popularizing the finished-building wiring propo-

sition. It is written in an easy, popular style and is well illustrated with line cuts and half tones. It comprises 20 pages—



Form (Special) 138-A. 1M-3-14.

ORDER FOR WIRING ALREADY BUILT HOUSES

(AND FIXTURES FOR SAME)

UNION ELECTRIC LIGHT AND POWER COMPANY: ..... 191..

Please install wiring, etc., as per details below, and in accordance with price schedule and terms and conditions on back hereof, at premises ..... for which I agree to pay ..... Dollars ($.....), as follows:

$ ..... upon completion of work, and $..... on each following monthly bill for electric service, until total amount has been paid in full.

The first payment hereunder shall not be less than ten per cent (10%) of full amount, and the balance shall be divided into ..... monthly amounts.

WIRING

Price Schedule Item No.	LOCATION OF OUTLETS	
1	One in ..... On One Floor	$17.95
	" "	
	" receptacle outlet in	
2	One on next floor, in	
3	Total additional outlets @ $1.80	
	@	
	@	
	@	
	@	
	@	

FIXTURES

Quantity	LOCATIONS	
	@	
	@	
	@	
	@	
	@	
	@	
	@	
	@	
	@	
	@	
	@	
	@	
	Total Amount,	

The above prices include fee for customary inspection.
No fixtures installed without order for wiring.

There are no agreements or understandings in connection with this order, between the parties hereto, except as herein set forth. This order shall not be binding on the Company until approved by its Sales Manager or by an authorized official of the Company. The undersigned agrees that your electric service will be used in premises covered by this order, and to sign or have signed your customary order for same.

Purchaser.....

Salesman.....

Approved.

Company Sales Manager

Remarks:.....

—8—

FIG. 9.—One side of finished-building wiring contract form.

coated paper—and cover. Spaces are provided for the imprint of the company sending it out. The three chapters or sections are

headed: (1) *The Wiring of the Home*, (2) *The Lighting Equipment*, and (3) *Electrical Devices*. A sample copy can be obtained from

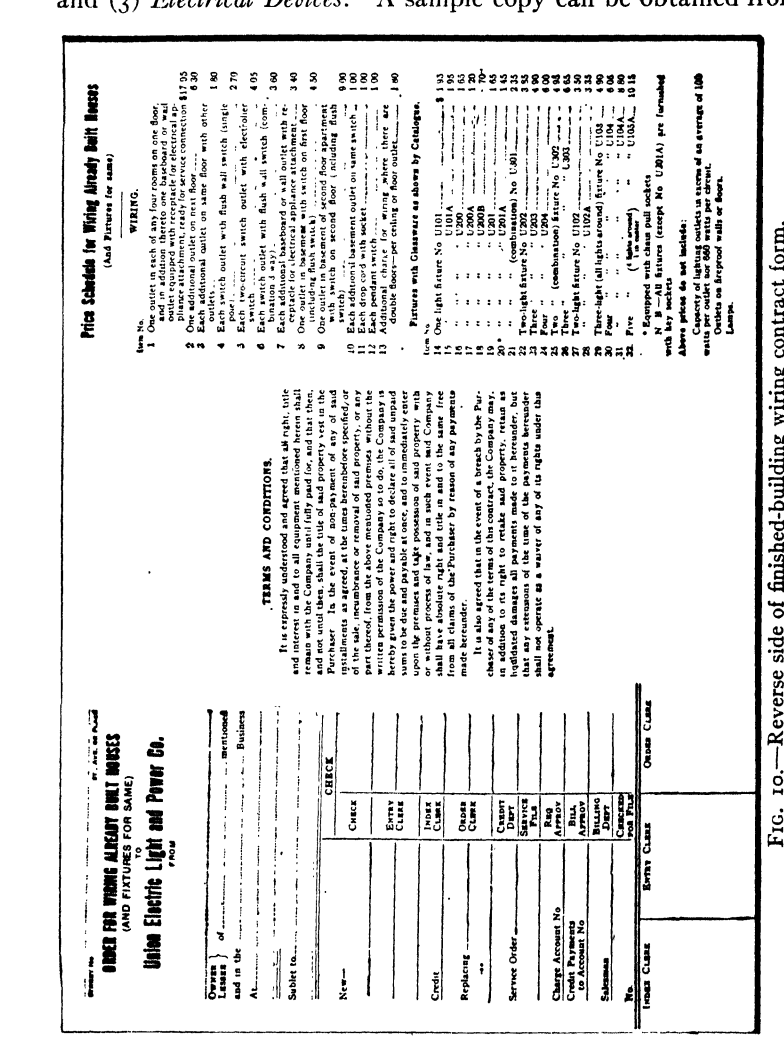


FIG. 10.—Reverse side of finished-building wiring contract form.

the office of the Association at 29 West 39th Street, New York City.

29. Handbills can be used with good effect in small cities and towns. The larger places can be covered more effectively and

at less expense through the newspapers. Handbills used for this purpose should always carry an attractive illustration or two—electrotypes can be obtained gratis from the large electrical manufacturing companies—otherwise they are likely to be thrown away before they are read. The text should be concise. The advantages of electric service may be very briefly outlined and then the central station's finished-building wiring proposition can be briefly stated. The company's telephone number should always be given so that the prospect may call for a solicitor with minimum effort.

30. Electric signs provide a splendid method of giving publicity to finished-building wiring propositions. The wording on them is necessarily brief. A phrase like "YOUR HOUSE WIRED AT COST, CALL MAIN 4280," or something similar, is about all that can be used on a stationary sign. With a flashing sign the possibilities are almost endless.

31. Personal canvass, although it is in one sense a means of advertising, is treated under the heading of *Soliciting* in other paragraphs.

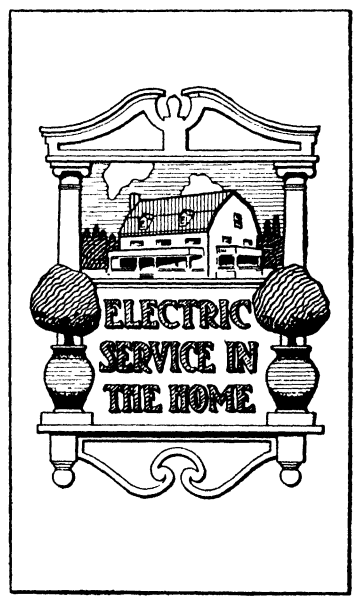


FIG. 11.—Cover of the National Electric Light Association booklet.

32. Electrical page advertising, in cities where the newspapers carry electrical pages, is conceded to be good publicity. The following notes are abstracted from the paper of J. E. McKirdy and Howard H. Wood on *The Wiring of Old Houses* read before the 1912 Convention of the Pennsylvania Electric Association:

The Electrical Page was introduced in Pittsburgh to the benefit of both newspapers and the electrical interests, during 1912. Such a page was published weekly in two papers which had a combined circulation of 180,000. Four of the seven columns of

each of the pages were devoted to co-operative electrical advertising by the different electrical interests. The remaining three columns were devoted to electrical news items. The aim was to explain in an interesting way the advantages of every conceivable use for electricity. People looked forward to the appearance of the pages. It is believed that the Electrical Page provides the most effective medium available for educating the public as to the popular applications of electricity and the desirability of having buildings wired.

FIG. 12.—Cover of folder of Faraday Electrical Association.

33. Advertising by Local Contractors' Associations. In certain instances contractors' associations have advertised co-operatively. It is obvious that it would not be feasible for any but the largest contractors to advertise a finished-building wiring campaign effectively. However, when their efforts are united, resultful advertising is possible. An example of such advertising was that of the Faraday Electrical Association of Chicago. Fig. 12 shows the cover of a folder of that Association which was mailed by the member contractors to prospective consumers. At the bottom there is a detachable post card. On this, requests for additional information and for estimates can be made. On the reverse side is given the name and address of the contractor sending

out the circular. Fig. 13 shows a notice that was included in the circular.

34. Blind advertising was employed during a Pittsburgh, Pa., campaign. It was started early in the spring, before the moving-day period, with the idea of educating the tenants to demand from the prospective landlord that he wire the house

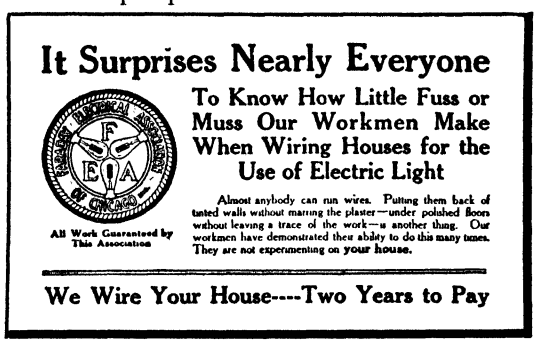


FIG. 13.—Advertising notice of Faraday Electrical Association.

before they moved in. A special incoming-call telephone having an easily remembered number was installed by the Company in its office to handle the inquiries. All employees in the wiring and contracting departments were instructed as to the details of the proposed campaign. A "want advertisement," reading thus, "*Don't rent a house unless it is wired for electricity. Call* 898 *Hiland for information*" (Fig. 14), was inserted in the classified columns of all of the important daily newspapers under the headings: "HOUSES AND APARTMENTS TO LET" and "HOUSES FOR SALE." Irate landlords and agents called the company demanding that the advertising be stopped, which was an indication of its effectiveness. It was continued for thirty days longer than was originally contemplated.

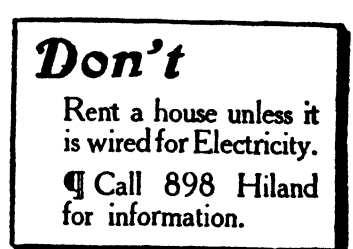
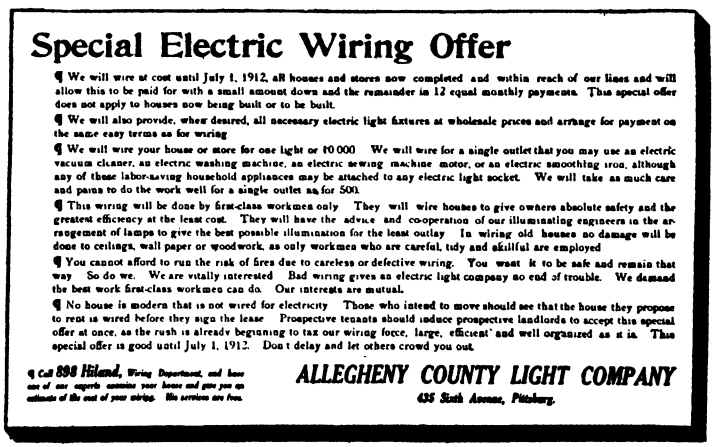


FIG. 14.—An advertisement that converted prospective customers into lighting company solicitors.

35. Advertising Methods of the Byllesby Company. The campaign was opened with the simultaneous appearance of full-page

display advertisements in the newspapers of all the cities in which the company had central stations. These announced in bold type, "HOMES WIRED FOR ELECTRIC LIGHT AT ACTUAL COST—WE PAY THE CONTRACTOR'S PROFITS." Below this, three wiring propositions (**104**) were offered the householder, with the assurance that all the installations would be completed in a safe and thoroughly modern way and that no householder would be required to sign a contract for electric current.



Special Electric Wiring Offer

¶ We will wire at cost until July 1, 1912, all houses and stores now completed and within reach of our lines and will allow this to be paid for with a small amount down and the remainder in 12 equal monthly payments. This special offer does not apply to houses now being built or to be built.

¶ We will also provide, when desired, all necessary electric light fixtures at wholesale prices and arrange for payment on the same easy terms as for wiring

¶ We will wire your house or store for one light or 10 000 We will wire for a single outlet that you may use an electric vacuum cleaner, an electric washing machine, an electric sewing machine motor, or an electric smoothing iron, although any of these labor-saving household appliances may be attached to any electric light socket. We will take as much care and pains to do the work well for a single outlet as for 500.

¶ This wiring will be done by first-class workmen only They will wire houses to give owners absolute safety and the greatest efficiency at the least cost. They will have the advice and co-operation of our illuminating engineers in the arrangement of lamps to give the best possible illumination for the least outlay In wiring old houses no damage will be done to ceilings, wall paper or woodwork, as only workmen who are careful, tidy and skillful are employed

¶ You cannot afford to run the risk of fires due to careless or defective wiring. You want it to be safe and remain that way So do we. We are vitally interested Bad wiring gives an electric light company no end of trouble. We demand the best work first-class workmen can do. Our interests are mutual.

¶ No house is modern that is not wired for electricity Those who intend to move should see that the house they propose to rent is wired before they sign the lease Prospective tenants should induce prospective landlords to accept this special offer at once, as the rush is already beginning to tax our wiring force, large, efficient and well organized as it is. This special offer is good until July 1, 1912. Don't delay and let others crowd you out.

¶ Call **898 Hiland**, Wiring Department, and have one of our experts examine your house and give you an estimate of the cost of your wiring. His services are free.

ALLEGHENY COUNTY LIGHT COMPANY

435 Sixth Avenue, Pittsburg.

Seven Columns by Ten Inches.

FIG. 15.—Advertisement used in opening the Pittsburgh Campaign. (Since this advertisement was printed the name of the company has been changed to The Duquesne Light Co.)

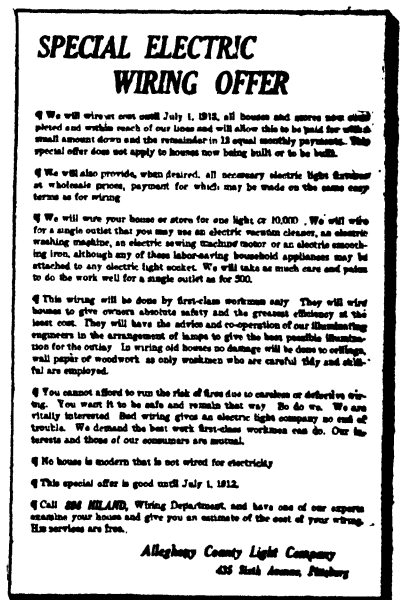
The full-page advertisement was repeated several times and was then followed by a series of smaller display advertisements. The final advertisement set a short time limit before which the owners of unwired buildings might take advantage of the offer. The advertisements, meanwhile, were followed up by solicitors who explained the proposition in detail and closed contracts wherever possible.

36. An example of a successful advertising campaign is that which was conducted by The Duquesne Light Company of Pittsburgh. It was considered that the only method whereby the potential business in the territory could be connected was through the inauguration of a campaign for the wiring of finished buildings.

The company had maintained a wiring department for several years, but it is only within the last few years that it has made an organized effort to wire finished buildings through systematic advertising. The campaign started on January 1, 1911.

Blind advertising as described in Par. **34** was the first move. After this device had aroused the interest of renters and property owners, half-page advertisements, an example of which is given in Fig. 15, were used. The advertisements announced that buildings would be wired at cost if estimates were requested before July 1. The time limit was set to accelerate the placing of the contracts. The closing date was extended later with the proviso that the estimate be requested before September 1 and the contract for the wiring be placed before October 1.

In the advertising, attention was directed to the facts that the buildings and furnishings would not be visibly injured; that safe wiring would be installed; that an estimate would be furnished free, and that the wiring could be paid for on the installment plan.



SPECIAL ELECTRIC WIRING OFFER

¶ We will wire at cost until July 1, 1912, all houses and stores now completed and within reach of our lines and will allow this to be paid for with a small amount down and the remainder in 12 equal monthly payments. This special offer does not apply to houses now being built or to be built.

¶ We will also provide, when desired, all necessary electric light fixtures at wholesale prices, payment for which may be made on the same easy terms as for wiring

¶ We will wire your house or store for one light or 10,000. We will wire for a single outlet that you may use an electric vacuum cleaner, an electric washing machine, an electric sewing machine motor or an electric smoothing iron, although any of these labor-saving household appliances may be attached to any electric light socket. We will take as much care and point to do the work well for a single outlet as for 500.

¶ This wiring will be done by first-class workmen only. They will wire houses to give owners absolute safety and the greatest efficiency at the least cost. They will have the advice and co-operation of our illuminating engineers in the arrangement of lamps to give the best possible illumination for the outlay. In wiring old houses no damage will be done to ceilings, wall paper or woodwork as only workmen who are careful, tidy and skilful are employed.

¶ You cannot afford to run the risk of fires due to careless or defective wiring. You want it to be safe and remain that way. So do we. We are vitally interested. Bad wiring gives an electric light company no end of trouble. We demand the best work first-class workmen can do. Our interests and those of our consumers are mutual.

¶ No house is modern that is not wired for electricity

¶ This special offer is good until July 1, 1912.

¶ Call ... HILAND, Wiring Department, and have one of our experts examine your house and give you an estimate of the cost of your wiring. His services are free.

Allegheny County Light Company
435 Sixth Avenue, Pittsburg

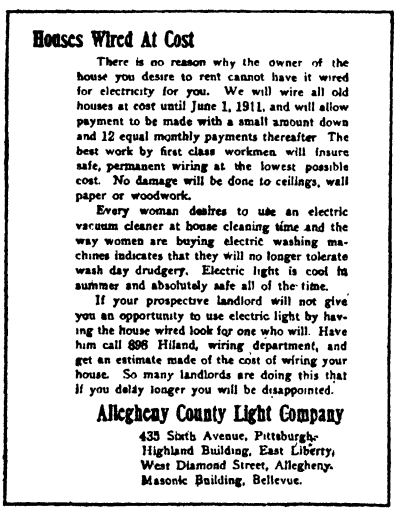
Three Columns by Ten Inches.

FIG. 16.—One of the smaller advertisements used after the campaign was well launched. (Since this advertisement was printed the name of the company has been changed to The Duquesne Light Company.)

As the campaign progressed, the size of the advertisements was decreased. Figs. 16 and 17 show two of the smaller ones. The so-called "GOING, GOING, GONE" advertisement was the grand finale of the Pittsburgh advertising campaign. Prominent in the advertisement was the picture of an auctioneer, hammer in hand, ready to knock down the prize—in this case a wiring contract.

From his mouth came the headlines calling attention to the fact that only so many days remained during which the householder might take advantage of the "*golden opportunity*" of having his house wired at cost.

At times the display advertisements were discontinued and practically the same wording was used in local reading notices (Fig. 17). The "Going, Going, Gone" theme was introduced ten days before the close of the campaign. As an additional stimulant posters were used on the dashboards of street cars.



Houses Wired At Cost

There is no reason why the owner of the house you desire to rent cannot have it wired for electricity for you. We will wire all old houses at cost until June 1, 1911, and will allow payment to be made with a small amount down and 12 equal monthly payments thereafter. The best work by first class workmen will insure safe, permanent wiring at the lowest possible cost. No damage will be done to ceilings, wall paper or woodwork.

Every woman desires to use an electric vacuum cleaner at house cleaning time and the way women are buying electric washing machines indicates that they will no longer tolerate wash day drudgery. Electric light is cool in summer and absolutely safe all of the time.

If your prospective landlord will not give you an opportunity to use electric light by having the house wired look for one who will. Have him call 898 Hiland, wiring department, and get an estimate made of the cost of wiring your house. So many landlords are doing this that if you delay longer you will be disappointed.

Allegheny County Light Company

433 Sixth Avenue, Pittsburgh.
Highland Building, East Liberty.
West Diamond Street, Allegheny.
Masonic Building, Bellevue.

FIG. 17.—Effective reading notice. (Since this advertisement was printed the name of the company has been changed to The Duquesne Light Company.)

As to results: The response to the advertising was instantaneous, and the astonishing number of inquiries that were received made it plain that finished-building wiring at moderate cost was a long-felt want. There were forty inquiries the first day of the insertion of an advertisement in only one newspaper. A single request for an estimate often resulted in the securing of a number of contracts. Many people, however, delayed requesting estimates until the offer was about to be withdrawn. During the last ten days preceding the time limit the inquiries increased daily until in one day ninety-seven property owners requested estimates, the total for ten days being over six hundred. Three telephones were required to handle the business and it was necessary to keep the wiring department open each evening until 10 o'clock.

CHAPTER III

SOLICITATION

37. Men of two classes, estimator-solicitors and salesman-solicitors, have been used to seek finished-building wiring business. On the whole the salesman-solicitor has been the most successful for reasons outlined in another paragraph. The estimator-solicitor should be a wireman capable of compiling detail estimates. Detail estimates are only necessary when prices are made on a detail estimate basis or where the price for a wiring proposition, that is not covered by standard price schedules, is required.

38. An expert estimator is seldom a good salesman. The converse is also true. It is for this reason that it has been found generally desirable to provide simple unit-price schedules. With these the non-technical solicitor can easily compute his prices—or the prospective consumer can compute them—with the consumption of very little time. Most of the solicitor's time will thus be available for his real work, that of getting the business.

39. Qualifications of the Finished-building Wiring Solicitor. It is more essential that he be a good salesman than a man thoroughly versed in the applications of electricity. He should be capable of addressing people of all sorts and of explaining to them the advantages and comforts that result from having a house wired. If a schedule of standardized prices, that has been compiled on the basis thoroughly discussed in another chapter, is adopted, the solicitor will have no difficulty in computing his quotations. Experience has shown that men who have the knack of selling will accumulate enough electrical knowledge in a week or so of field experience to enable them—provided they are equipped with the proper price schedules—to do very effective work. While a detail knowledge of electric wiring is sometimes advantageous, more frequently it is not. A solicitor who has

this knowledge is apt to discuss with the prospective customer technicalities that will confuse. Very large or exceptionally intricate jobs which should and do call for a detail estimate should be referred by the solicitor to the department head, who can enlist the services of a wireman-estimator. The solicitor, ordinarily, should figure only on the average run of jobs, the prices for which can be readily computed from the standard schedule. A very large proportion—nearly all—of the finished-building installations will fall within this class.

40. Division of a Community into Solicitation Districts. Each solicitor should be assigned his own district. In a small town the entire town would be the solicitor's territory. Where two solicitors are employed, the community to be canvassed should be divided into two districts. Each man should be responsible for his own district and should handle all inquiries emanating from it. Larger cities should be divided into as many districts as there are solicitors. Each man working only in his own district becomes acquainted with its people and its characteristics. This constitutes a valuable asset.

41. The solicitor should call on the occupant and on the owner of every unwired building in his territory. It is not often feasible to make the territories sufficiently small that this can be done. But it has been done and successfully. In certain campaigns card records (see following paragraph) have been compiled for practically all of the unwired buildings in the territory served. The potential prospects indicated by these cards have been and will be persistently followed up until all of the possible business is secured.

42. A card record of unwired buildings should be accumulated in any serious campaign. The solicitor when he calls—and he should call at every unwired building in his territory—secures the information whereby the record card can be filled in, or he fills it in himself at the premises. Some companies prefer typewritten records in which case the solicitor provides his office with a pencil memorandum of the data necessary for the record. (See Par. **63** for a description of the method used by the Kansas City Company for accumulating a record of unwired buildings.) Fig. 18 shows a soliciting card which has many valuable features. It

is used by the Werdan, Saxony, central station and is described in Mr. Doane's *N.E.L.A.* report.

Each building in the city and surrounding villages has an 8-in. × 5-in. card like that of Fig. 18. The first ten semicircular projections at the left of the top of the card indicate the vocations of those occupying the houses. The ten right-hand projections show the initials of the street names. After the card is filled out, all of the semicircular projections that do not apply to the one

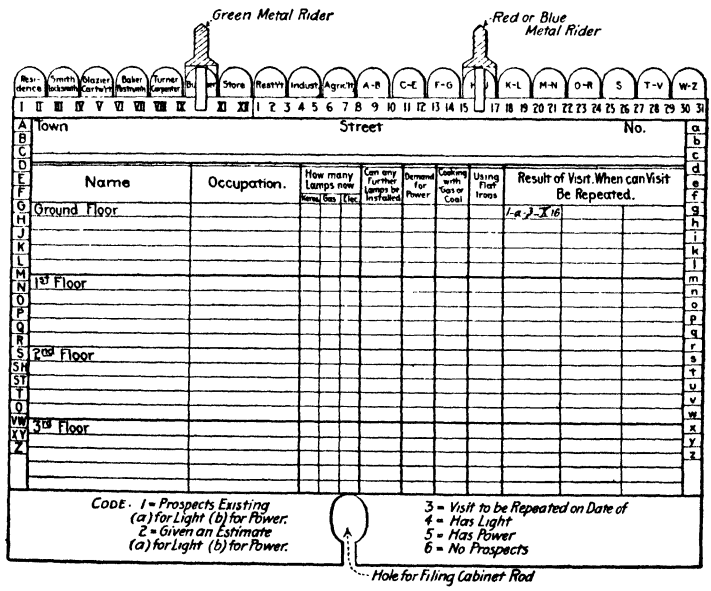


FIG. 18.—Example of a soliciting card.

building which the card records are cut off prior to its filing. Thus the record cards are self-indexing. All cards for streets beginning with "*S*" or all cards for "*Residences*" or for "*Bakers*" can be separated from the balance in the file with little difficulty. At the left of the card below the projections there is a row of twelve Roman numerals each of which indicates a month. The row of thirty-one Arabic numerals just to the right indicates days of the month.

Spaces are provided for writing in the name of the town and addresses. The four horizontal divisions of the table are for

information relating to the occupants in the different apartments and on the different floors of the building. The code printed at the bottom of the card is used for filling the last three columns headed "RESULT OF VISIT, WHEN CAN VISIT BE REPEATED." For example: if there were *Prospects Existing* for *Light* and the *Visit to be Repeated on Date of* Oct. 16, the code "1–*a*–3–*X*16" would be entered in the column as shown. Also a green rider is slipped over the numeral *X* indicating the month of October and a red rider or a blue one is slipped over the numeral 16, indicating the day of the month. The red riders are used for ordinary prospects and the blue ones for important large-load prospects that should be watched closely. The vertical columns of letters along the extreme right and left edges indicate the first and last letters of the name of the village.

When a solicitor starts on his rounds he takes with him the cards for as many streets as he thinks he can cover within a stipulated time. He proceeds systematically from house to house. The entries on the cards are in pencil so that they can be readily altered. A receipt is required from each solicitor for the cards that he takes from the file.

43. Advantages of Carrying a Simple Wiring Price Schedule. The psychological advantage of showing the prospect upon the first visit to his home approximately what it will cost to wire the building cannot be overestimated. The simplicity, speed and satisfaction of such a transaction is in marked contrast to the usual delay of summoning an experienced wireman to inspect the home, estimate the cost at the company's office and submitting the bid to the prospective customer by mail. The enthusiasm incident to the solicitor's first visit often dies away before the final bid is submitted and the owner may alter his intentions. With cost-table in his hand, the solicitor upon learning what outlets and switches the householder desires installed can quickly compute the price of the installation, inform the owner and often bring the first conference to a close with a signed contract in his pocket.

44. Description of an Estimating Blank and Its Use. The form of agreement entered into between householder and contractor during the Cleveland campaign contained a blank on the horizontal lines of which appeared the location and description of the

various rooms to be wired, while vertical columns were provided for notations as to the types and number of fixtures and switches. By entering check marks in these spaces the solicitor was able to compute the required outlets quickly and had a simple record of the location of each. Figs. 20 and 21 (Par. **73**) show estimating blanks somewhat similar to that described above.

45. Estimators are sometimes necessarily employed in soliciting business of certain classes. This subject is also referred to in another paragraph. Some companies have, and with considerable success, compiled detail estimates for every job in which case each estimator frequently did his own soliciting. In other cases both a salesman and an estimator called on the prospective customer. Estimators are also usually required in communities where an aggressive campaign is not being promoted because in such cases no standardized price schedule ordinarily exists. In such instances, where only one man may be required, it is frequently possible to train a good salesman into a fairly good estimator.

46. Personal Requirements of the Estimator. A man who is to make an item-by-item estimate should have an intimate knowledge both of the mechanics of finished-house wiring and of the materials used. He will have little time left to present selling arguments to the householder and should therefore be preceded by a soliciting specialist. As elsewhere suggested, salesmen are not as a rule experienced wiremen nor are technical wiremen good salesmen. The ideal arrangement is to put the wireman's technical information in condensed form so that the salesman can carry it with him in soliciting orders.

47. The Estimator's Work in a Finished-building Wiring Campaign.—When an inquiry is received requesting an estimate on the cost of wiring an old building, an estimator is sent to interview the prospective customer. He surveys the work with the prospect, making suggestions as to locations of fixture and switch outlets and endeavors to plan a first-class installation and one that is within the means of the owner. When the number and locations of the outlets are determined the estimator, from notes taken in the building under consideration, fills in a blank estimate form, which is so prepared that it makes a full record of the job

from start to finish. The estimator then prepares a detailed estimate for presentation to the owner, showing just what the company proposes to do and exactly how much the total work will cost. These estimates, an example of which is shown in Fig. 19, should be typewritten in duplicate. One is mailed or is presented to the prospect by a salesman and the other is filed.

48. Finished-building Wiremen as Electrical-goods Solicitors. It was found during the campaign in Pittsburgh that old-building wiremen are excellent solicitors for the installation of auxiliary electrical apparatus. The men work in a house for several days and are very likely to become acquainted with the occupants.

SEPT 7, 1911.

MR JOHN JONES,
110 Hamilton Street, City

DEAR SIR

Below we are submitting an estimate of the cost of electrical wiring to be installed at the above address

FIRST FLOOR

Porch — Wire for one center outlet controlled by one Single-Pole snap switch
Hall — Wire for one center outlet controlled by 2 Three Way snap switches
Parlor — Wire for one center outlet controlled by one Double-Pole snap switch
Dining-Room — Wire for one center outlet controlled by one Double-Pole snap switch
Kitchen — Wire for one center outlet controlled by one Double-Pole snap switch
Pantry — Wire for one center outlet controlled by one Double-Pole snap switch
Cellar — Wire for one cord drop controlled by one Single-Pole snap switch

SECOND FLOOR

Hall — Wire for one center outlet controlled by 2 Three-Way snap switches
Small Front Bedroom — Wire for one center outlet controlled by one Double-Pole snap switch
Large Front Bedroom — Wire for one center outlet controlled by one Double-Pole snap switch
Back Bedroom — Wire for one center outlet controlled by one Double-Pole snap switch
Bath Room — Wire for one center outlet controlled by one Double-Pole snap switch

FOR THE SUM OF $68.

If this estimate is satisfactory, kindly sign the attached form, and return same to the Light Company The amount specified on this estimate is subject to your acceptance until Nov 1, after which time all estimates for wiring to be furnished at cost will be void

Very truly yours,
SALES MANAGER.

FIG. 19.—Typical proposal.

The wiremen often have opportunities to explain the convenience and economy of energy-consuming devices such as vacuum cleaners, fans, washing machines and electric irons. Considerable business resulted from their efforts. In certain successful instances premiums and cash prizes have been offered wiremen for securing business of this nature.

49. Methods of Solicitation in Germany. Personal canvassing is considered the most effective means of advertising. It has been found important in soliciting the small man's business, especially in the country, that the prospective customer finds in the solicitor a man of about his own education and possessing his own ways of thinking and talking. Consequently the solicitors are

mostly chosen from the staff of wiremen, such men being selected as have shown a certain gift of speech and ability for handling men. These wiremen go out with their uniform caps and talk in Low-German dialect to the customers, thereby obtaining a better hearing from the latter. (S. E. Doane, *Electrical World*, May 23, 1914.)

50. Cash Premiums as a Stimulant to Solicitors (*Electrical World*, July 11, 1914). By giving each month prizes of an amount less than the salary of one salesman working on the house-wiring campaign the Louisville Gas & Electric Company was able to secure better results with five salesmen than were previously obtained with eight. These solicitors are restricted to making contracts for the wiring of finished buildings.

The principal prize is $10 in cash for what is termed "efficiency." The number of calls made by the salesman do not figure in this. The winner is determined by (1) *the amount of business he gets*, computed in terms of kilowatt hours, (2) *the amount of overtime he puts in*, (3) *the neatness of his reports*, (4) *his promptness in reporting*, and (5) *the absence of mistakes in his contracts*. Record is kept on a blackboard in plain view of all the employees in the office so that each man may know each day just where he stands with respect to the other solicitors. In addition $10 is given in weekly prizes. Only the volume of business turned in during the week by the men is figured in the award of these weekly prizes. The man who gets the most business receives the $6 prize and the man next to him gets $4. It was found that this method of stimulating salesmen did more to increase their effectiveness than any plan previously tried.

CHAPTER IV

POLICIES

51. Definite policies should be adopted prior to the inauguration of a finished-building wiring campaign. The central station should determine in advance just what its stand will be on certain features that recur in every campaign so that its entire procedure will be consistent and so that its advertising and solicitation policies will be in harmony with the general plan. Questions of a local character are likely to arise during every campaign. Concerning these there may be no precedents by which one may be guided. But the "recurring" questions have been decided one way or the other so many times that experience has indicated the best solutions for the average cases. The questions that will be classed here as recurring are: (1) *Method of Payment*, (2) *Relations with Contractors*, (3) *Basis of Prices*, (4) *The Matter of Fixtures*, and (5) *The Matter of Lamps*. Each of these items will be briefly discussed in paragraphs that follow. Their solutions in specific cases will be found in paragraphs in the chapter "*Examples of Campaigns*," and in other sections of the book. (See the Index.)

52. Methods of Payment. It has been the almost universal experience that, for a successful finished-building wiring campaign, the central station must arrange a means of financing whereby the consumer can, if he so chooses, pay for his wiring on the installment plan. Appropriations must be made to provide for this financing. If the central station does the wiring, the consumer makes an initial payment of possibly 20 per cent. (see Par. **67**, Muncie campaign), and the balance is paid in equal monthly installments extending over a year, more or less. If contractors are co-operating with the central station and do the work, it is the usual practice for the company to pay the contractor cash in full upon the acceptance of the job. The company then assumes the account and the consumer makes his installment payments on

about the basis outlined above. Where a consumer does desire to pay cash he should be allowed a discount, say of 5 per cent. The discount for cash should not be too great, however, because if it is the consumer may show a tendency to procrastinate until he has sufficient ready money to make the cash payment. This is undesirable because the economical and satisfactory procedure is to complete each prospect's proposition with as few interviews and estimates as possible.

There is one surprising and gratifying circumstance in connection with this matter of installment payments. It is that, usually, a majority of the installment wiring accounts are liquidated in three or four months, whereas the consumers may have a year in which to pay. (See Par. **63,** *Kansas City Campaign* and Par. **69,** *Marshalltown, Iowa, Campaign.*) The bill for the installment wiring payment is usually added as an item on the regular monthly bill for electricity.

53. Relations with Contractors. It has been found in many instances that the most satisfactory arrangement is for the central station and the contractors to co-operate rather than to compete with one another in the wiring of finished buildings. Some central stations have had and now have wiring departments that do finished-building work at prices that admit of little or no profit, particularly if the important matter of general expense (see Par. **83**) is given consideration. In other cities, finished-building wiring departments are maintained by the central stations merely to handle special, unusually intricate jobs that the contractors cannot handle except at prohibitive prices. The central station's men, who do nothing but finished-building work, become so skillful at it that they can, when necessary, make a difficult wiring installation at considerably less cost than can the contractor who handles a general run of work.

It appears to be the general opinion among those best informed that the most effective system of handling finished-building wiring is (1) for the central station to agree, with the local contractors' association or with a group of contractors, upon a standardized price schedule (see Par. **75**) for wiring; (2) the central station solicits the wiring business on the basis of the standardized schedule assuming all solicitation and advertising expense; (3) the central

station apportions equitably the business thus obtained among the contractors with whom it is co-operating; (4) the central station pays the contractor the standardized price upon the completion and acceptance of the job, and (5) the central station assumes the account, as hereinbefore explained, and receives the payments for it on the installment plan, if the consumer so desires.

Experience has shown that business can be obtained at prices that are sufficiently high as to allow a fair profit for the contractor. It is therefore generally unwise for a central station to embark in a house-wiring business unless the contractors demand unreasonable profits. The contractors can give material assistance to the central stations and for this reason, even if the ethical considerations of the situation are disregarded, they should not be antagonized.

In apportioning wiring contracts obtained by central-station solicitors among the co-operating contractors, the strictest fairness should be observed. Usually, the contractors are assigned the contracts in rotation as they are turned in to the central station. In other cases (see Par. **59c**, St. Louis Campaign) it has appeared more equitable to assign each contractor, in sequence, $100 worth of work. In Muncie, Ind. (Par. **67**), it was agreed that the company could award a number of contracts, not to exceed ten, for jobs all in one vicinity, to one contractor. However, every other contractor was to receive an equal amount of business before the first man received more.

In compiling a standardized wiring schedule the prices should be sufficiently high that it is certain that it includes ample profit for the contractors. Then if it is found possible, after a number of installations have been made, the prices can be reduced.

Contractors sometimes contend that unit prices are not fair to them because, on a unit-price basis, they may profit on one job and lose on another. If the contractor will consider the average profit, that is, the profit on, say, all of the jobs for a month and not consider individual jobs, this possible objection will disappear.

54. How One Central Station Company Co-operates with the Contractors. For many years the Company offered propositions whereby finished buildings could be wired for electricity and the payments therefor could be made in installments. The pay-

ments were extended over a two-year term and were included in the consumer's monthly bills. An arrangement was made whereby similar wiring could be done by contractors that are members of the local Electrical Association under the same terms as those offered by the Company to the consumer direct. The Company's price schedules are used by these contractors. The company pays the contractor cash upon the completion of a job and collects the monthly installments from its customer. In the material on *Advertising* the methods of publicity that have been used by the Contractors' Associations are explained. The prices of a standardized schedule should allow a fair profit to the contractor. The relations between the company and the contractors should be frictionless. A great deal of finished-building wiring work has been secured by contractors when new-building work was particularly dull.

55. Estimating and Prices. (See Pars. starting with **71.**) Some companies still make a detail time and material estimate for each job. The prevailing opinion, however, appears to be that by far the most successful and satisfactory method is to use, where possible, standardized price schedules so that every one—consumer, solicitor, contractor, and all others that are interested—can make a price for an installation without calling in any other person.

The question as to whether it is better to adopt a flat rate per job or a unit price per outlet schedule is discussed in Par. **76** and in those that follow. Some central stations have found it desirable (see **102**, St. Louis, and **105**, Boston) to market a minimum wiring installation which automatically promotes a demand on the consumer's part for additional outlets. Standardized price schedules are of little value for store and factory wiring. Time and material estimates should be made for work of this class and for all other work of an unusual character.

56. Policy in Regard to Fixtures. (See chapter on "*Fixtures.*") Some companies arrange to furnish fixtures for their wiring installations and some do not. High-class fixtures—sometimes special designs—are usually necessary for fine residences, and it is in most cases best to suggest that the consumer arrange to purchase these through some established fixture concern or job-

bing house. For the home of the person of moderate incom fixtures of standard design that are produced in large quantitie by the manufacturers are very acceptable. They can be purchase or contracted for in quantities by the central station and resol to the consumer at low prices. It is the general experience tha the finished-building wiring contracts can be obtained mor readily if fixtures are included. The average consumer desire a complete installation and likes to feel that the central statio will stand back of it all. It is well to adopt designs, like thos of Fig. 202, that can be readily duplicated by any fixture manufacturer.

56a. Solicitors should carry pictures and prices of fixtures and thereby be equipped to give prospective customers prices on installations complete with fixtures. It is assumed that every solicitor carries a price schedule whereby he can give prices on the wiring end of the installation. (See chapter on "*Solicitation.*")

56b. Free Fixtures as a Feature of a Finished-building Wiring Campaign. The Manchester, N. H., Traction Light & Power Co. conducted a successful wiring campaign with the co-operation of the real estate dealers and wiring contractors. Throughout the campaign, which lasted a month, the company furnished free fixtures for any house within its service zone. Private contractors were instructed by the company to install wiring on this basis, the company meeting the fixture cost. The prospective user of electricity was given the choice of several fixture designs.

56c. Rental of Fixtures in Europe. (S. E. Doane in 1914, *N. E. L. A. Report.*) At Werdan, Saxony, the wiring is installed at the expense of the central station, if the customer so desires. In that case he pays a supplementary charge of 3.6 cents a lamp a month as rent for the installation, which includes simple fixtures but not lamps. The consumer also must contract to continue these payments for at least three years. This amount of 3.6 cents a month is based on the assumption that 15 per cent. of the average selling price of the installation shall be paid off every year by the rent. The average selling price has, therefore, been assumed as being $2.90 a lamp outlet. Flexible twin cord is chiefly used in wiring these outlets.

Several years ago the municipal plant at Dortmund discovered that there were a number of residences in the city which, though wired, were not connected to its lines. In the city, which has 150,000 inhabitants, 700 wired houses in laborers' quarters were not receiving service. The reason given ordinarily was that electricity was "too expensive," but it was found that the real reason was that the tenants were not willing to incur the expense of installing electric fixtures. The lighting company resolved to rent electric fixtures as the local gas company had already been doing with gas fixtures. Thirteen different types of fixtures are being rented at prices ranging from 4 cents, for simple ceiling fixtures with enamel reflectors, to 72 cents per month for elaborate chandeliers for four lamps. The price for installing is 48 cents. After the rent has been paid for three successive yeais, the tenant acquires ownership. The payments which are designated by the company as rent are actually installment payments. To prevent dissatisfaction among the contractors, the rents are fixed high enough so that a three years' rent amounts to the list price of the fixture, the list prices being, moreover, so high that discounts of from 60 per cent. to 70 per cent. are ordinarily given.

About three and one-half years after the system had been introduced, rental contracts for 11,300 fixtures had been made, of which 5500 were contracted for in the last year alone. It was possible to fulfill these 11,300 contracts with a supply of only 10,500 fixtures, since a certain number had been returned to the company before the expiration of the three years in cases where the tenants moved out of town. These returned fixtures were polished (and, if necessary, repaired) and rented a second time.

57. Policy in regard to furnishing lamps for finished-building wiring installations. There appears to be no established practice. However, it has, apparently, been found desirable to include lamps in the flat prices for complete installations for small residences (see Par. **104,** Mobile). It appears that the small-home owner prefers to have the price that is given him include everything that is required, complete and ready to furnish light. If any item is omitted he may become suspicious and desire to procrastinate.

57a. The controlled-flat-rate method of charging in connection with finished-building wiring campaigns[1] appears to attract business that cannot be obtained by other means. A flat rate of 1 cent per watt per month is usually adopted in this country. The minimum monthly charge is usually $1. A *current-limiting device, excess indicator* or *flat-rate controller* is installed in each consumer's residence to prevent the consumer from using more than the maximum current to which he is entitled. If his load exceeds the demand for which his excess indicator is set, the device will interrupt the circuit periodically, causing the lamps to wink until the load is reduced to within the value for which the device has been adjusted. The Excess Indicator Company of Pittsburgh manufactures such instruments. They cost in this country from $7.50 to $4.50, depending on the quantity furnished. In Europe they are much cheaper.

The current-limiters cost much less than watt-hour meters—and with the limiters, meter reading is eliminated and the cost of accounting is minimized. Hence with these instruments and with low-cost wiring, it is possible for the central station to seek and serve with profit even the smallest consumers. Experience shows that a large proportion of these flat-rate consumers ultimately change over to a meter basis, hence the method is very effective in introducing and popularizing central-station service. Meter customers seldom, if ever, desire to change to a flat-rate basis. The net revenue per kilowatt hour is usually almost exactly the same with flat-rate as with meter customers. If there is any difference, it is probable that the flat-rate customers will be the most profitable. The gross revenue from controlled-flat-rate consumers averages about 9¢ per kw-hr.

The controlled-flat-rate method of charging has been very successful in attracting the minor consumers in Europe; see S. E. Doane's paper (Par. **171**): "*The Successful Handling of the Small Customer in Europe.*" In the United States, this method of charging has been successfully used in conjunction with finished-building wiring campaigns in: Pittsburgh, Pa.; Hartford, Conn.; Scranton, Pa.; Harrisburg, Pa.; Muncie, Ind., Par. **67**, and South Bend, Ind., Par. **66a**.

[1] A. T. Holbrook, *Electrical Review*, Oct. 3, 1914, page 674.

CHAPTER V

EXAMPLES OF CAMPAIGNS

58. Examples of Finished-building Wiring Campaigns. In paragraphs that follow some typical examples of successful campaigns are briefly outlined. It has been the endeavor to select those waged in cities and towns from the largest to the smallest, so that it will be reasonably certain that any reader will find some suggestions that apply to his own case. The electrical periodicals should be watched because they contain in almost every issue the records of or suggestions from some campaign which are often very valuable.

59. H. M. Byllesby Company Campaigns. This organization operates a number of central stations in different parts of the United States and has been very successful in increasing its business through wiring finished buildings. This company was one of the first in this country to appreciate that, though the small residence is of little importance individually to the central station, in the aggregate the small residences constitute a splendid load. The policy of the company has always been to co-operate with the contractors. The business was obtained largely through advertising and personal solicitation. An outline of some of the advertising methods are given in Par. **35** and in the following paragraphs.

One of the best proofs of the value of systematized solicitation of finished-building wiring contracts was found at Mobile, Ala. (population, 51,500, 1910 census), where in forty-five days 660 old buildings were wired and added to the company's list of electricity users. This is the more remarkable because of the fact that poor negroes who constitute about half the city's population formed a large quota of those who took advantage of the wiring proposition. See Par. **104**, Mobile, Ala.; Pars. **50** and **64**, Louisville; and the two following paragraphs.

59a. H. M. Byllesby & Company "Premium" Campaign in Minneapolis. The Minneapolis General Electric Company is the local company. The campaign almost doubled the normal volume of finished-buildings wiring business. Any customer of the company securing the order for wiring one house was awarded the

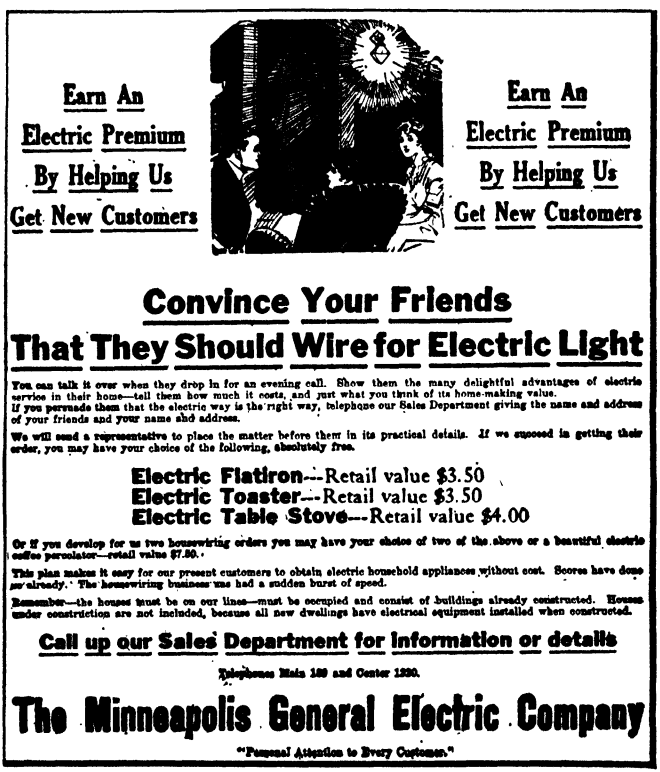


FIG. 19*A*.—Newspaper advertisement explaining the "premium" offer of the Minneapolis General Electric Company.

choice of an: (1) electric sad iron, (2) electric toaster, (3) an electric table stove. For securing two house-wiring orders the customer was given an electric percolator.

While, under normal conditions in Minneapolis, from 75 to 100 finished-dwelling wiring contracts were secured each month, this class of business had a tendency to slump during the summer and

fall. The premium campaign reversed this tendency. Premiums were given only in connection with contracts for finished buildings on existing lines of the company. The premium-seeking consumer rendered assistance in isolating and converting the prospective customer—usually a friend or acquaintance. An experienced salesman was sent when summoned by telephone to render aid. If the salesman closed the order, the consumer was given the premium.

During a campaign of less than four months 685 finished buildings were wired. This number included some apartment buildings, each of which (although each one contained from six to fifty new customers) was counted as only one building.

As to advertising: During the first month of the campaign the only publicity consisted in distribution of printed circulars that were mailed with the monthly bills. During the following three months, the premium plan was explained by forty-inch newspaper advertisements (Fig. 19*A*). One advertisement was printed each week in each of three daily papers. The response to the newspaper advertisements was gratifying. Most of the inquiries to the company were made via telephone. The advertisements were so written as to appeal to the housewives. A majority of the inquirers were women. The advertisements brought out the thought that customers of the company could easily convince prospectives because they knew from their own experience the value of the service.

A valuable feature of the campaign was that it promoted the use of electric household appliances. Every premium was placed in service by its receiver and thus became a revenue producer for the company. All wiring was installed by the regularly established contractors subject to their regular rates and terms of payment. No cut prices on fixtures or wiring were offered.

Only 300 electrical appliances were awarded for premiums for the 685 orders taken, which indicates that 90 per cent. of the increased business was influenced by the premium offer. A comparative statement of the finished-building wiring business in Minneapolis for the first nine months of 1913 and 1914 is given in the following table. Wiring installations in stores and commercial structures are not included.

Period	Number of buildings wired		Percentage increase
	1913	1914	
January to June	359	442	23
June	104	153	47
July	92	149	62
August	82	150	83
September	75	233	210

59b. The H. M. Byllesby Campaign at Louisville, Ky. The Louisville Gas & Electric Company is the local concern. The campaign started with a half page newspaper advertisement and this space was used as long as the campaign was aggressively continued. In a period of approximately ten months 1900 house-wiring orders were obtained. The campaign had the effect of stimulating the independent contractors who secured a large number of orders independently of the company. During a period of fourteen months the number of electric customers was increased 26 per cent. A certain proportion of this increase was due to normal business—new commercial customers, new residences and the like—but the greater proportion of this increase was due to the finished-building wiring campaign.

The contractors assumed all financial responsibility. As will be evident from a study of the contract, Fig. 19*B*, the company was not a party to the wiring agreement, but simply acted as an agent in closing the contracts for the customers. The contractors handled the installations on the time-payment plan, accepting an initial payment of 25 per cent. of the total amount upon the completion of the installation and the balance in six monthly payments. Where the whole amount was paid in cash, a discount of 10 per cent. was allowed.

The company confined its efforts to advertising and solicitation, giving the agreements that it secured to the contractors for execution. The agreement form was ultimately altered somewhat from that shown in Fig. 19*B*; on the revised form were given the names of a number of local contractors in good standing. The wiring jobs were apportioned among these concerns. The solicitation was restricted to finished residences on existing lines of the company. No business houses were wired on the terms indicated.

The advertising comprised a 30-inch display in each of the daily papers once each week. It has been estimated by the commercial department of the company that at least 75 per cent. of the house-wiring orders closed originated from newspaper advertisements.

Application for Electric House Wiring

Louisville, Ky ....., 191 ..

The undersigned, ...

....

hereby make application to .....

hereinafter called the "Contractor," for wiring the premises and installing fixtures as listed herein, at No. .....

..... in accordance with the specifications and schedules endorsed hereon and attached hereto, which are incorporated herein, and agree to pay therefor at the office of the Contractor the sum of ....

Dollars ($.....) as follows:

Twenty-five (25%) or ..... Dollars ($ .....) on completion of work and the balance in twelve (12) equal monthly payments, or ..... Dollars ($ .....) on or before the first of each month following, until the whole amount has been paid. Failure to meet payments when due shall render the deferred payment feature of this contract void, and the remaining payments on said contract shall become due and payable at once.

A discount of ten per cent (10%) from the above contract price will be allowed, provided full payment is made within ten (10) days from the date of completion of installation.

It is mutually agreed that in event of any modification of the installation specified herein, the amount of this contract shall be revised in accordance with the Schedule of Prices incorporated herein.

GENERAL SPECIFICATIONS

All material furnished and work done under these specifications shall be in accordance with the Rules and Regulations of the National Board of Fire Underwriters as contained in the latest Electric Code.

The Contractor shall give to the proper authorities all necessary notices relative to the work and shall secure the approval of the City Electrical Inspector required to enable the Applicant to obtain service.

The Contractor shall furnish and install main switch and all necessary fused cut-outs.

The Contractor shall run all necessary wires from point of service outside of building and shall make all necessary provision for the installation and connection of the meter in accordance with the rules of the Lighting Company supplying current.

The owner or tenant shall remove and relay all carpets, rugs or other floor coverings, necessary to install wires.

The applicant must locate all outlets for fixtures, switches, receptacles and drop cords before wiring is started and the Contractor shall not be required to change the location of outlets after they have been installed.

We will do all necessary cutting of floors and plaster, and will repair the floors, leaving them in as good condition as possible, but it is understood that all patching of plaster and wall paper and all retouching of decorations is to be done at property owner's expense.

It is understood and agreed that in the event of default in the payment of any installments when due, or of the sale of the land or building at said address, we may, at our option, declare all of the unpaid sums to be due and payable at once, and may at once sue for and recover the same in any court of competent jurisdiction.

This proposal shall not be binding upon the Company until accepted in writing by one of its officers.

Fixtures are to be finished in .....

The price of the above work, complete as specified, is ..... ($ .....) Dollars.

For wiring to outlets only.....	$	
Switches		
Drop Cords, Receptacles, etc		
Additional for emergency circuit		
Fixtures		
Inspection		
	Total $	

FIG. 19*B*.—Face of application form used in the Louisville, Ky., Gas and Electric Company's Campaign.

Fig. 19*C* shows the unit price schedule adopted which was printed on the reverse side of the contract form. Pars. **50** and **64** give additional information relating to this campaign.

59c. Campaigns of the Union Electric Light & Power Company, St. Louis (population, 687,000; 1910 census). A campaign conducted from January 1, 1913, to Nov. 1, 1913, resulted in the con-

WIRING SPECIFICATIONS AND SCHEDULE OF PRICES

CHARGE FOR INSPECTION IN COUNTY

LOCATION	Ceiling Outlet	Bracket Outlet	Wall Switch including Snap Switch	Jewy Snap Switch (Pull)	Base Recpt. inc. Snap Recpt.	M. M. Bracket Brick Wall	M. M. Snap Switch, Brick Wall	Concealed BX Bracket Brick Wall	Concealed Flush Switch Brick Wall	Open Work per outlet	Snap Switch Basement
PRICE EACH	$3 00	$3 00	$2 75	$6 00	$3 00	$3 50	$3.50	$4 50	$3 63	$1 50	$2 50
Porch											
Vestibule											
Reception Hall											
Reception Room											
Living Room											
Library											
Dining Room											
Lavatory											
Pantry											
Kitchen											
Basement											
Rear Hall											
Upper Hall											
Upper Rear Hall											
Bath											
Bed Room											
Bed Room											
Bed Room											
Bed Room											
Bed Room											
Attic											

Flush Switches and Flush Base Board Recpts., $1.00 extra each.

Four, Five or Six, Outlet Contract, at $3.50 per Outlet.

Drop Cords, $1.10.

Key Recpts., $1.00.

Pendant Fixture Switch, $1 00.

Full Sockets, 25 cents per Socket extra.

Ham Attachments, 35 cents.

Wood Moulding, $2 00 per Outlet.

Louisville, Ky. ....., 191....

We / I hereby represent that we are / I am the owner... of said premises, and that the title to stand in our / my name ..

Owner .....

Owner's Residence .. ..

Accepted .....191.....

By .....
President.

Tenant .....

FIG. 19*C*.—Reverse side of form shown in Fig. 19*B*. This shows the price schedule adopted.

nection of more than 5000 new residence patrons. A monthly minimum charge of 50 cents for residence service has been adopted. The company makes liberal use of newspaper advertising space.

Typical advertisements are illustrated elsewhere. Circularizing and personal solicitation are also used extensively.

In a more recent campaign the price schedule shown in Par. **102** was used. The wiring is done by contractors but the company guarantees their work. In the contract covering the work the price of the first item carries the entire overhead cost. Should the prospective customer contend that he does not wish all of the outlets in the first item, he is informed that the cost will be $17.95 whether all of the outlets are installed or not. The result is that all of the outlets are installed and the use of appliances is thus stimulated.

Formerly the company in co-operating with the contractors in the city gave each a job in turn. The present policy is to give each contractor in turn $100 worth of business regardless of whether it is made up of one or several jobs. In this way the company hopes to distribute the work more equitably among the various contractors. In case a contractor receiving work from the new-business department of the company has no credit or responsibility, the central station requires him to furnish a bond in order that it shall not suffer loss should his work on its contracts fail to give satisfaction.

60. Campaign in Boston, Mass. (population, 670,000; 1910 census. A population of 1,000,000 is served by the company if the suburbs and towns supplied are included). Standardized price schedules (Par. **105**) were used which enabled any employee of th company to estimate the cost of wiring a house immediately upon inquiry without the assistance of a contractor or an experienced wireman. Every employee could tell specifically just what a partial or complete job would cost if he knew the number of rooms, the number of lighting outlets, switches and baseboard receptacles required.

The buildings were wired by accredited local contractors. Though the basic offer (Par. **105**) was for one outlet at $14.35, very few one-outlet contracts were made because of a well-directed effort on the part of the company toward securing a complete wiring contract. This was effected by leading the applicant along step by step and showing him by detailed prices how much more he could secure by a little larger payment. Care also was taken

to point out that the cost of the work would be less if all the outlets were installed at the same time. Much co-operation was obtained from the contractors by means of a plan whereby the company pays the contractor $2 per customer plus 25 cents per outlet installed.

The installment plan adopted required an initial payment of $2.35, followed by monthly payments of $2 each for a period of six months—after the signing of the contract—covering the cost of one outlet for a total of $14.35. Customers were permitted to extend their payments to a maximum of twenty months; in case this monthly payment exceeded $5, greater extension of time was permitted than with smaller payments. The business that has been received in Boston through finished-building wiring campaigns amounted in twelve months to 1247 houses and $105,850 of wiring. The fixtures used in the Boston campaign are illustrated in Fig. 202. In one campaign in Boston 769 houses were wired in seven months. The average price, per house, for wiring was $83.50.

60a. Campaign of the Edison Electric Illuminating Company of Brooklyn, N. Y.[1] (see Par. **101a** for price schedule). A requirement of the proposition was that the kitchen was always included in any wiring installation. This room was selected as a basis for all prices because it was assumed that electricity would be used more in the kitchen than in any other room. One room having been wired, the price of wiring the balance is relatively low. Hence the small charge for additional rooms is an inducement for the consumer to equip his entire house.

As to terms: For wiring any combination of rooms, the company required an initial payment of not less than 8 per cent. of the total cost. Minimum monthly payment $2. Maximum period of monthly payments: $2 to $2.99, twelve months; $3 to $3.99, fifteen months; $4 to $4.99, eighteen months; $5.00 and above, twenty months. Payments were in no case allowed to extend over a period of twenty months.

The price schedule was based on averages of bids submitted by several reliable contractors. A majority of the local contractors were willing to do the work at the prices listed (Par. **101a**). A

[1] *Electrical World*, Oct. 31, 1914.

booklet containing a list of contractors and fixture dealers was furnished by the company to any person contemplating the installation of wiring. The work was apportioned as fairly as possible among the various contractors. Where in soliciting their own business, contractors encounter a person who does not care to pay cash down, he is referred to the easy payment plan described. Under this proposition, the contractor furnishes the material for wiring and installs the equipment while the central-station company supplies the fixtures.

61. Campaigns in Pittsburgh, Pa. (population, 533,000; 1910 census). (J. E. McKirdy, in a paper "*The Wiring of Old Houses*" read before the Pennsylvania Electrical Association, 1912 convention.) The advertising methods used are outlined in Par. **36**. In 1911, 4000 free estimates were made and 1055 contracts, equivalent to 19,124 lamps of 16 c.p., were secured. In the first six months 357 houses were wired, equivalent to 6393 lamps of 16 c.p. In the last six months 698 houses were wired, equivalent to 12,733 lamps of 16 c.p., giving an average installation per house of eighteen 16-c.p. lamps.

In the first six months of 1912, free estimates numbering 985 were made, compared with 555 estimates made to the same day in 1911. From these were secured 569 contracts, equivalent to 9008 lamps of 16 c.p., giving an average per house of seventeen lamps. These figures include 266 stores. In the first six months of 1911, contracts numbering 106 were given to wiring contractors, whereas in the same period in 1912, 401 contracts were so placed.

It was realized by the company that it would be poor policy, both from an ethical and a business standpoint, to adopt any plan that would antagonize the local electrical contractors. Hence the company co-operated with the contractors wherever possible. Although many buildings were wired by the company's own wiremen, many jobs have been sublet to contractors. The contractors are paid by the company in thirty days, but the customer is permitted to pay in monthly installments extending over a period of a year. The company does all soliciting and estimating and assumes all expense in connection therewith, relieving the contractor of all costs except those involved in actually doing the work.

In general, the company wires only houses that contractors cannot wire with profit at the rates at which the company is doing wiring. Inasmuch as the company's men wire old buildings exclusively, they have become so expert at this work that they are able to make installations that would ordinarily be considered impossible of execution.

The inauguration of the campaign brought a protest from a committee of wiring contractors who contended that the central station was threatening the destruction of their business. It was explained to the contractors that a large number of houses had remained unwired, either through their lack of effort to wire them or their supposed excessive charges for wiring and that the illuminating company proposed to get this business on its lines. The contractors were informed that the illuminating company would give them any of the contracts they desired, besides assuming the expense of soliciting the business, making the estimates and securing the contracts.

Many of the contractors accepted this proposition and in 1911 they were given 473 contracts, amounting in excess of $20,000. The campaign stimulated the wiring contractors to greater efforts to secure business. The result was that many houses were wired by contractors of which the company knew nothing.

62. The group method of securing new business, employed by the Duquesne Light Company, and explained by H. H. Wood in his paper, *Wiring Old Houses*, read before the Pennsylvania Electrical Association Convention of 1912, provides a good example of the benefits a lighting company may reap from a finished-building wiring campaign. Thus, a group of twenty old houses, averaging six rooms each, in a suburb that had not previously been served with electricity, was wired. Gas mains did not reach the group and the residents used coal-oil lamps. The group was located possibly 1/4 mile from the company's pole lines. One resident made a request for an estimate for wiring his house. The estimator explained it would not be very profitable to run a pole line 1/4 mile long to serve one consumer, while if it were possible to secure several the lighting company would doubtless build a pole line to serve the group. On this basis the estimator secured twenty contracts.

63. A Kansas City campaign (population, 250,000; 1910 census). Contracts were executed by the company. The wiring was done by contractors. The schedule in Par. **108** shows the company's prices on time-payment contracts. A customer desiring to pay cash was given a lower bid. This schedule of prices was approved by the contractors and was so drawn as to allow them a fair profit. Later the list of prices was reduced 25 per cent. The average price of wiring a finished home in Kansas City was found to be $45.

The advertising methods comprised a liberal use of newspaper space and the circularization of a splendid list of about 10,000 prospects. It was assumed that any residence that could afford a telephone could afford electric light. The telephone directories were scrutinized and the addresses of all telephone subscribers that did not have electric lights were thereby obtained. The nucleus of a large mailing list was thus secured. It was found that personal solicitation was the most effective factor in obtaining business. Experience indicated that the best way for a solicitor to obtain the business was for him to systematically canvass his district several times. The second and third calls of the solicitors were more productive than the first.

63a. An Effective Double-socket Kitchen-or-Laundry Wiring Plan used in Kansas City. The Kansas City Electric Light Company offered to wire *any* residence kitchen or residence laundry for one double socket and furnish an electric iron and a lamp for $12. This amount was payable $1 down and $1 per month for eleven succeeding months. The wiring, socket, inspection, in fact everything was furnished on receipt of the initial payment of $1. The lamp for lighting could be fed from one of the sockets and the iron—or any other heating device—from the other socket. The plan has been extremely successful. Approximately half of the inquiries received in relation to the proposition developed into contracts for wiring the entire house. The company believes that in practically every instance where a double-socket installation has been made, the entire building will ultimately be wired.

The company financed prospective customers who could not afford to pay in one lump sum the entire cost of a wiring

installation. The contracts secured by the lighting company's solicitors were awarded in rotation to three contractors, each contractor receiving every third job regardless of its size or character. At the completion of the installation they were paid in full by the lighting company. The new customer then had the privilege of paying the electric-service company for the wiring in twelve equal monthly payments. Although the company offered to finance customers for a period of twelve months, the majority of the accounts were settled in full within periods of from three to four months. When the system of financing customers' installations was adopted it was estimated that within thirty months the company would have $100,000 invested in wiring, but, owing to the desire of consumers to pay in full, the sum involved was only approximately $20,000. Some 2600 houses were wired within a thirty-month period.

64. A Campaign in Louisville, Ky. (population, 224,000; 1910 census). The city has about 40,000 dwellings. Of this number 15,000 are now connected to the Louisville Gas & Electric Company's lines. The average cost of the wiring and fixtures, complete with 40-watt lamps, has been $36.40 per house. For campaign purposes the city was divided into five districts. Each was covered by and in charge of a salesman who devoted all of his time to finished-building contracts. See also Pars. **50** and **59b,** for a more complete description of this campaign.

65. A two-month campaign for wiring finished buildings in Toledo, O. (population, 168,500; 1910 census) was inaugurated by the Railway and Light Company of that city in November of 1913. During the first few weeks an average of fifteen houses were wired each day. As the campaign progressed the results increased daily.

66. In Harrisburg, Pa. (population, 64,000; 1910 census), 550 finished houses were wired in 1913 due to the efforts of the central-station company. A number of these consumers were on a flat-rate basis with a current-limiting device but more than 25 per cent. of them applied for meter service.

66a. A Campaign at South Bend, Ind.[1] (population 53,700, 1910 census). See Par. **108a** for price schedule. The Indiana

[1] *Electrical World*, Oct. 3, 1914, page 672.

and Michigan Electric Company inaugurated this campaign to secure the possible business in portions of the city where the smaller residences are located. A controlled-flat-rate (Par. **57a**) method of charging was adopted. South Bend has many factories and a larger proportion of foreign population than a majority of American cities of the same size; about 33 per cent. of the population are foreign laborers. The average wage of these people probably does not exceed $1.50 to $1.75 a day. It is obvious that the cost of electric service and wiring for people of such incomes must be low.

The combination of the flat-rate method of charging and the low price wiring comprised an offer that could be considered by any home owner or renter. The flat rate for lighting is 1 cent a watt a month, based on 66 per cent. of the connected load. The minimum allowable connected load is 100 watts. The maximum connected load on a flat-rate contract was, for the time being, set at 400 watts. A Polish solicitor was retained to work among people of his own nationality and to assist the English speaking solicitors. A former campaign, which however did not involve the flat-rate method of charging, resulted in the wiring of about 1000 finished houses.

67. Campaign at Muncie, Indiana (population, 24,000; 1910 census). The Muncie Electric Light Company co-operated with six representative contractors. The contractors agreed upon the prices shown in the schedule of Par. **108.** It was also agreed that the company should receive 10 per cent. of the gross price for each contract that it handled on the installment plan. Upon the completion of a job and the city inspector's approval the contractor was paid in full by the lighting company. As shown in the schedule, the customer pays the company 20 per cent. of the amount of the bill in cash. The remainder is generally paid in ten equal monthly installments, but in special cases a longer time and smaller payments may be allowed.

The contracts, irrespective of their size, are assigned to the contractors in rotation. However, in order to keep the contractors' expenses at a minimum, the company may award a number of contracts in a certain part of town to some one contractor. He is thereby saved the expense of rehauling tools and

material. Not more than ten contracts can be thus awarded in a group. When one contractor has received a group of contracts in one vicinity he is not awarded any additional contracts until the other co-operating concerns have received an equal number.

Contracts were accepted on the controlled-flat-rate basis, Par. **57a,** hence owners of even the smallest homes availed themselves of the company's offer. The ratio of population to consumers in Muncie is approximately six to one. In spite of this, forty-five contracts were secured during the first month that the plan was in operation. (*Electrical World,* July 11, 1914.)

68. A finished-building wiring campaign in Butler, Pa. (population, 20,700; 1910 census), conducted by the Butler Light, Heat and Motor Company. The standard proposition offered by the company covered the wiring of six rooms, complete with cord drops, 25-watt Tungsten lamps and shades for $21. No switches were included in the offer. During a two-month campaign the company with the assistance of the contractors wired 110 houses. Seventy-three of these were either partly or wholly equipped with room switches at additional cost to the owner.

69. A campaign at Marshalltown, Iowa (population, 13,500; 1910 census), conducted by the Iowa Railway and Light Company which owns the property, was quite successful. The results as given in *Electrical World* are shown in Table **14.** Contractors, co-operating, agreed upon a fixed price for the wiring installation that was featured. Advertising was confined exclusively to this "bargain" in wiring, the price being $22.50 for any four rooms, including wiring, two two-lamp fixtures, two drop cords and a lamp for each fixture. The company paid all advertising and soliciting charges. Boys were employed to distribute handbills and inquiry cards throughout the city. The prospect list was built from those of the cards that were returned. Although the contractors agreed to allow customers to pay for the wiring on the installment plan, the payments to extend over a period of five months, more than 50 per cent. of the business was settled on a cash basis or paid within thirty days. A total residence wattage of 34,285 was secured and ninety-one wiring contracts, aggregating $2,421.40, were given to the contractors.

70. The Citizens Gas & Electric Company of Mt. Vernon, Ill. (10,000 population), a Henry L. Doherty property, has been very successful in wiring finished buildings, particularly residences, using the price schedule given in Par. **109.** Contractors do the wiring. The company pays the contractors cash and, if desired, carries the account for one year for the customer, permitting him to pay on the installment plan. The company has been most successful in equipping the houses wired with drop cords and sockets instead of with fixtures. This is true particularly of the three- and four-room cottages of which there are many in Mt. Vernon. Later, if the consumer desires, he can purchase fixtures from the local contractors who follow him up in connection with this point. The existing unwired buildings are being wired at the rate of about 600 per year. Special newspaper advertisements were used with great effect.

CHAPTER VI

COSTS AND PRICES

71. There are two methods of determining costs and prices for finished-building wiring. The first is by *detail estimating*. The other is by using *unit or "standardized" prices*, which are average values ascertained either through experience or by referring to actual cost figures of jobs that have been completed. Each of the methods will be discussed in following paragraphs.

72. Detail Estimates and Their Compilation. The estimator, who should be an experienced wireman, carefully surveys the premises and compiles a detail schedule of all the material required. Then the labor necessary is estimated, and the profit and overhead charge are added. The resulting estimate will appear something like that of **90.** It is obvious that in preparing many detail estimates there are items and groups of items that are used repeatedly. The estimator will make a list of such groups and their unit prices to save himself time and work and thus, even in preparation of detail estimates, standardized or unit prices are used to a large extent. Detail estimates have the advantage of accuracy but they require technical skill and considerable time for their preparation. It may require considerable time after the wireman has made his survey before he can submit his estimate. Meanwhile the prospect may have decided that he does not want wiring. The first man who calls on the prospect should be able to quote, and furthermore he should be a salesman rather than a wireman-estimator; hence the almost universal adoption of unit prices. The unit prices should be such that the salesman with little technical knowledge can use them effectively.

73. A convenient form for rough estimating is shown in Fig. 20. By rough estimating is meant figuring on a basis of so much per outlet without endeavoring to make a detailed summary of labor and material. The form is as convenient for new as for finished

building work. The number of outlets and the number of sockets required for each room is tabulated as illustrated. The number of sockets and outlets required and their location can be ascertained either from the architect's plans or from an inspection of the building. After tabulation, the totals are struck and it is

Form 76 A

Outlet and Socket Estimating Sheet

GORDON DUNN COMPANY.
Electrical Contractors
2824 Bridge St.

Estimate No. 3218 Job No. 416 Date Nov. 14 1913.

For L. G. Willard Address 4218 Jefferson Ave.

Location	Centre Outlets		Side Outlets		Switches	Receptacles		
	No. Outlets	No. Sockets	No. Outlets	No. Sockets				
Cellar	2	2			1			
Kitchen	1	2			1	1		
Dining Room	1	4	2	2	1	1		
Living Room	2	4	4	4	2	1		
Parlor								
Library								
Hall, Upstairs	1	1			1			
Hall, Downstairs	1	1			1			
Bathroom			2	2		1		
Bed Room 1	1	2			1			
Bed Room 2	1	2	2	2	1			
Bed Room 3	1	2			1			
Bed Room 4	1	2			1			
Sleeping Porch	1	1			1			
Total Outlets	13		10		12	4		
Total Sockets		23		10				
Grand Total Outlets	13 + 10 + 12 + 4							39
Grand Total Sockets	23 + 10 + 4							47

FIG. 20.—Convenient estimating form.

then easy to determine the cost of the job by multiplying the unit cost per outlet by the number of outlets and making the necessary additions for switches, receptacles and the other fittings required. In the form shown, the switch outlets are treated, from the standpoint of cost, the same as center and side outlets. In

some localities it is the practice to use a different unit price for switch outlets than for the others. In such cases the form can be altered accordingly.

The number of sockets being known, the number of branch circuits required can be determined by applying the *Code* rule (*23-d*) which specifies that not more than sixteen sockets, or no lamp load exceeding 660 watts, shall be served by one cut out. It is not customary to connect more than twelve sockets to one branch circuit.

74. A preliminary information sheet on which may be listed all of the data that the prospective consumer can give is shown in Fig. 21. It is the form suggested in the 1913 *Report of the Committee on Wiring Existing Buildings* of the National Electric Light Association. The form is merely a suggestion and is probably too elaborate for ordinary conditions. It is intended to list all of the questions that the customer only can answer. It can be abridged to suit local conditions. It is not the intention to list on this sheet the questions that must be answered by the central station or the contractor.

75. Standardized or unit prices are used almost exclusively in finished-building wiring campaigns for the reasons suggested in preceding paragraphs. They afford a quick, fairly accurate means of giving the prospect a price. They should be (this classification and much of the other information that follows was suggested by an *Electrical World* article by H. L. Parker, "*Standardized Interior Wiring Prices*"): (1) SIMPLE, so that a salesman with little technical knowledge can handle them successfully; (2) FLEXIBLE, so as to be accurate for divergent conditions and so as not to depend too much on the law of averages; (3) EQUITABLE, so that the prices will be consistent and be in proportion, as nearly as possible, to the actual cost of each installation, and (4) FAIR, so that the central station or the contractor can realize a reasonable profit. The methods of determining unit wiring prices may be divided into four different classes: (1) FLAT PRICE PER INSTALLATION, (2) UNIT PRICE PER LAMP OR SOCKET, (3) PRICE PER OUTLET and (4) PRICE PER OUTLET VARYING WITH NUMBER OF LAMPS. Each of these classifications is discussed in the following paragraphs.

INFORMATION SHEET

Name... Charles M Brockhurst

Address ... 317 Norfork Ave.

Class of house ... Class-A-

Number of stories ... 2½

Is house detached, or part of a block or double house? ... Detached

About how far back is the front wall from the sidewalk line? ... 20 ft.

Is the house of wood, brick, stone or cement? ... Brick

If part of the house is one construction and part of another note this, giving details ... Brick outside walls

If of brick, stone or cement, are the entire walls the same, or are the inner walls frame (studding lathed over)? ... Frame inside walls

Is there an air shaft or back stairs? ... Back Stairs

If the building is not to be wired throughout note the rooms omitted and their location ... Wiring throughout

NOTE—The prices to be quoted assume, unless otherwise specified, that there is no deadening material between floors, and no brick or cement partition in any wooden house

		Porch	Downstairs Hall	Upstairs Hall	Dining Room	Living Room	Kitchen	Bed Room	Bed Room	Bath	Attic
1	Ceiling outlet for fixtures	1	1	1	5	2	1	1	1		1
2	Number of lamps	1	1	1	8	4	2	2	2		1
3	Ceiling outlet with drop cord and key socket										
4	Ceiling outlet with drop cord and chain socket										
5	Wall outlet for fixtures					2	1	2	2		
6	Number of lamps					2	1	2	2		
7	Wall outlet with flush receptacle					1					
8	Wall outlet with moulding receptacle										
9	Baseboard outlet with flush receptacle										
10	Floor outlet with flush receptacle										
11	Floor outlet with water-proof receptacle										
12	Wall outlet with special heating receptacle						1				
13	Baseboard outlet with special heating receptacle										
14	Floor outlet with special heating receptacle										
15	Outlet with single-pole switch	1					1	1	1		
16	Outlet with double-pole switch										
17	Outlet with 3-way switch		1	1							
18	Outlet with 4-way switch										
19	Outlet with 2-point electrolier switch										
20	Outlet with 3-point electrolier switch				1						
21	Automatic door switch										
22	Outlet for bell ringing transformer										
23	Ceiling switch outlet										
24	Two switches or receptacles come out at the same point or in gangs					2					
25	Three switches or receptacles come out at the same point or in gangs										
26	Four switches or receptacles come out at the same point or in gangs										
27	Hardwood or parquette floors in room above										
28	Bathroom or closet above this room										
29	Number of wall outlets on brick wall that is not furred										
30	Wiring must be concealed—armored cable must be used										
31	Wiring must be concealed—in flexible metallic conduit										
32	Wiring must be concealed—knob and tube work	X	X	X	X	X	X	X	X	X	
33	Wires must be in metallic moulding										
34	Wires may be in wooden moulding										
35	Wiring may be open on porcelain insulators										X

FIG. 21.—Information sheet.

76. The flat-price-per-installation standardized price is properly used only for short aggressive campaigns. For example: The central station or contractor offers to wire a house of a given number of rooms, for a certain number of lamps, for a stipulated amount. Where there are many houses of about the size and construction to which the offer applies in the community and it is contemplated to wire a considerable number of them, the method can be made a splendid load builder. Some of the installations will cost much more than others but the average cost plus profit per job should be about equal to the advertised price per job, if the advertised price was judiciously selected. In other cases the central station will agree to wire a house and also furnish the fixtures all for a given flat amount. An example of such a proposition is given in the Mobile Electric Company schedule in Par. **104.** The advantage of the flat-rate-per-job method is that its proposition is very simple and is readily understood by the prospective customer. It is therefore capable of being advertised effectively. Its disadvantage is its inflexibility.

77. The Unit Price Per Lamp or Socket. With this method the number of outlets necessary is not considered. The method cannot be accurate or equitable because a consumer who had wiring done for fourteen lamps from fourteen outlets would pay the same price as one that had wiring installed for fourteen lamps from four outlets. Simplicity is a point greatly in favor of the method. It is readily understood by any one that can read and has given excellent results in certain cases.

78. Unit Price per Outlet. This is the method that, with various modifications, is more widely used than any other for the determination of prices for finished-building wiring. It is sufficiently simple that the solicitor salesman can grasp it readily. It is quite accurate. On the whole it is giving satisfaction. The important variations of the method are:

(1) FLAT PRICE PER OUTLET INCLUDING BOTH LAMP AND SWITCH OUTLETS. The advantage is simplicity. It is fairly accurate for small houses unless three-way and electrolier switches are specified. Where such switches are specified and for large houses it is apt to give prices that are too low—that is, if the same

prices are fair for small houses with ordinary switches. Switches themselves are not included in the prices.

(2) A FLAT PRICE FOR OUTLETS ONLY, PRICE ADDITIONS BEING MADE FOR SWITCH OUTLETS AND SWITCHES. This method has been utilized, but usually with the addition that a price increment is also made for the cost of the entrance to the building as discussed in the following item.

(3) A FLAT PRICE FOR SERVICE ENTRANCE, INCLUDING MAIN SWITCH AND CUT OUT, LOOP FOR METER, ETC., TO WHICH IS ADDED A PRICE PER LAMP OUTLET OR SWITCH OUTLET. The National Electric Light Association cost and price data given in following paragraphs were determined on this basis, which is quite equitable and accurate inasmuch as the cost of any interior wiring installation divides itself very naturally into three items: (*a*) *Service Entrance*, (*b*) *Lamp Outlets* and (*c*) *Switch Outlets*. It is obvious, however, that the price of any job, where there is more than one branch circuit or twelve lamps, will be determined not only by the number of outlets but also by the number of lamps. This is because that for each additional twelve (or less) lamps there should be one additional branch circuit with its cut out and its run from the distribution center. The following method takes this feature into consideration.

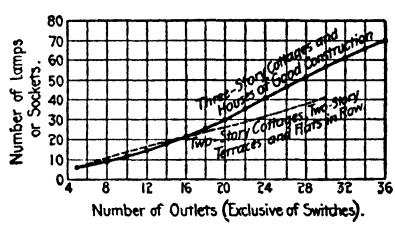


FIG. 22.—Relation between number of lamps and number of outlets.

78a. Price per Outlet Varying with the Number of Lamps. This method was proposed by H. L. Parker of the Consolidated Gas, Electric Light & Power Company of Baltimore and described in his article "Standardized Interior Wiring Prices" in *Electrical World* for Mar. 9, 1912. The method is used by the Baltimore Company. A table illustrating its application is given in **96.** The relation obtaining between the number of outlets and the number of sockets in residences as ascertained by surveys made in Baltimore is shown in Fig. 22. These relations were used in compiling the table, it being assumed that each lamp or socket

consumes 50 watts and that there are twelve or thirteen lamps on each branch circuit.

79. Classification of Buildings for Estimating on a Unit or "Standardized" Basis. It is usually desirable if not necessary to divide into classes the buildings, of different types of construction, that may be wired. In small cities where nearly all buildings are of one type of construction—frame exterior and interior construction—such a classification is not necessary. In cities where several distinct types of construction are encountered, classification has been found necessary. Frequently the classification may be based on the normal rental value of the building. The price schedules given in **98** to **101** illustrate one method of classification.

80. The relation between number of outlets and number of sockets in residences as determined by H. L. Parker is shown graphically in Fig. 22. Surveys were made of a large number of residences in Baltimore each having the same number of outlets, excluding switch outlets, and results were plotted into the curves shown. For example, twenty houses each having eighteen outlets had an average of twenty-five sockets connected.

81. Cost data given in the 1913 National Electric Light Association report of the Committee on Wiring of Existing Buildings are given in paragraphs that follow. In every instance such data are designated by the initials *N.E.L.A.* In compiling these data the committee secured information from a number of representative central stations and, after correcting for obvious errors, struck a mean between the different figures submitted. The values given therefore are average values and obviously will not apply in all sections of the country. Unless otherwise specified, the costs do not include extra fittings such as switches, receptacles, fixtures and the like. They cover simply the wiring.

82. Labor Costs. The reporters were requested to adjust all labor costs to rates of $4 and $2 a day respectively, for wiremen and helpers, hence it can be assumed that the labor in all of the tables of costs given in following paragraphs and designated "*N.E.L.A.*" are charged on this basis, which is fairly representative for the whole country.

83. Overhead and General Expense Charges on Interior Wiring. Data gathered by the National Electrical Contractors Association from members widely distributed throughout the country, and doing annual gross businesses of from $10,000 to $100,000 a year, indicate that the average expense of conducting a contracting business is 22.2 per cent. In other words, 28.6 per cent. should be added to the net cost of all labor and material to secure the actual average cost of a job. In round numbers 30 per cent. should be added to the sum of labor and material costs to obtain the actual cost. The profit should be added to value thus obtained. It is a decided error for a contractor or central station to disregard these overhead charges. A central station may bury them in its bookkeeping but they are there nevertheless. On the above basis, general expense or overhead is assumed to include such items as salaries, rents, light, heat, power, telephone, telegraph, office help, insurance, advertising, overseeing, freight, cartage and expressage, printing and postage. The values given in the *N.E.L.A.* cost data in following tables cover cost of labor and material plus 30 per cent. for general expense.

84. Profits on and List Prices for Finished-building Wiring Jobs. Whether a central station that is wiring buildings should or should not include a profit in its prices to consumers is a question that must be determined by local conditions. The general opinion appears to be that, as a general proposition, a profit should be charged in order to protect the contractors. Electrical contractors ordinarily expect a profit of something between 10 and 25 per cent. In the *N.E.L.A.* cost tables in following paragraphs the costs have been doubled to obtain the list prices given. Discounts based on the conditions obtaining in any particular community can be applied to these list prices.

85. Labor cost for installing switches (*N.E.L.A.*; see Pars. **81** to **84**), that is, for mounting and connecting them after the wiring is installed, ranges from 15 to 40 cents per switch. A fair average cost is 25 cents per switch.

86. Effect of Municipal Wiring Rules on Cost of Wiring. Usually the requirements that municipalities sometimes impose, additional to those of *The National Electric Code*, increase the cost of wiring. For instance in Chicago, Denver and certain

other places, all concealed work must be in conduit, which renders it very expensive. In Pittsburgh, the municipal rules require that double-pole switches be used for all circuits to combination gas-electric fixtures. This has the effect of increasing the price per room where there are combination fixtures to $5 or $6 (for concealed knob and tube work). With pull-chain or key sockets, provided their use was permitted, the price could be decreased to $3 or $3.50 per room. Obviously, additional wiring restrictions tend to retard the wiring of finished buildings because of the accompanying feature of additional cost.

87. Cost of Cutting Hardwood and Parquetry Floors. (See Pars. **81** to **84.**) Cost values from different parts of the country range from 50 cents to $3 per outlet. Where the wireman is not competent to do the cutting and a skilled carpenter must be employed the cost is high. Where wiremen are trained to do it a low cost results. Certain contractors pay men that are experts at hardwood floor work 25 cents a day more than ordinary wiremen receive and under these conditions the resulting increased cost per outlet under hardwood floors is small. Ordinarily, contractors do not handle enough hardwood floor work to justify this procedure. Probably the average outlet under hardwood costs $2.50 without and $3.25 with overhead, more than an outlet under a soft-wood floor (*N. E. L. A.*).

88. The discrepancies between the prices quoted in different parts of the country for old-building wiring are due to causes which are readily explained if they are understood. There may be a slight difference in the cost of material and a material difference in the cost of labor in different sections. The greatest difference is due, probably, to the policy that the central station assumes in regard to the contractor. If conditions are such, in the community where the wiring is being done, that a generous profit can be allowed the contractor without decreasing materially the amount of business obtained, the central station usually co-operates with the contractors and uses their price schedules. However, if it is imperative that the wiring be installed at absolute minimum prices, the central station frequently does the work itself and bills the consumer with the cost of the job, that is, cost of labor and material plus an overhead charge but without any

profit. Another cause of variations in prices is that due to differences in overhead costs. The overhead costs of the small-town contractor amount to practically nothing. If he makes good day wages he is, frequently, satisfied. In cities where rents and other expenses are high, overhead charges are considerable items. Fig. 23 shows graphically some of these discrepancies. The graph was plotted by H. L. Parker. This graph was plotted

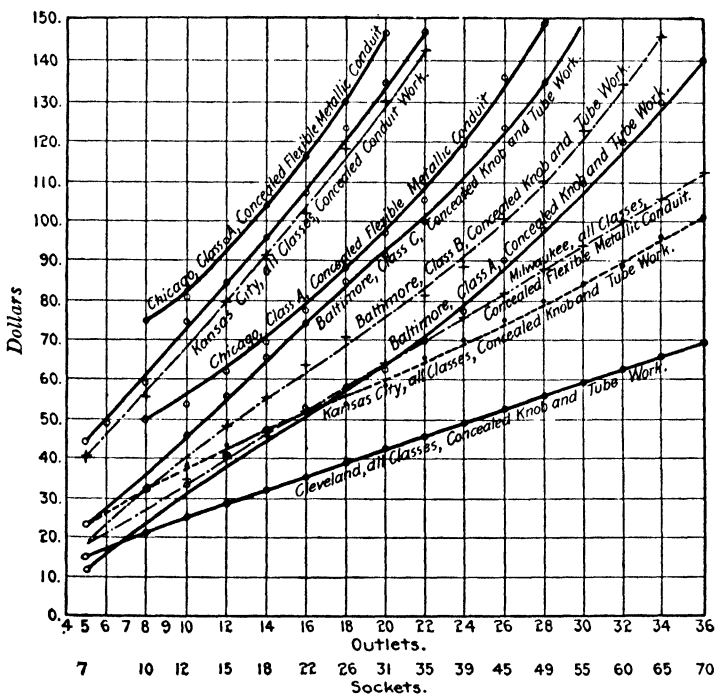


FIG. 23.—Graph showing differences in wiring prices in different communities.

several years ago and may not represent prices now in force. Experience has shown that, where wiring prices are standardized by the central station and the schedules distributed widely, the contractors usually follow the lead of the central station and a fairly uniform scale of prices throughout the community results.

89. Average Prices for Wiring Finished Frame Buildings. In the average town, up to possibly 12,000 or 15,000 inhabitants,

where there are no unions and where contractors' establishments are small, involving light overhead charges, the contractors will frequently make a flat rate to the consumer of something between $1.25 to $3.25 per outlet for "roughing in" with concealed knob and tube work in rooms which do not have hardwood floors above. Probably a fair average price is $2 per outlet. This figure ordinarily provides a fair margin of profit for the contractor. Switches, fixtures and lamps are not included.

90. An example of an itemized estimate, as contrasted with an estimate based on unit prices per outlet and for switches and the like, is given in the following table. The figures are those of the Consolidated Gas, Electric & Power Company operating in Baltimore, Md. Class of work: concealed knob and tube. Service-entrance in cellar. Meter loop and cut outs in cellar. Wood molding in basement and attic.

Room	Wiring Details, Etc.	Price
Service entry	20 ft. ¾-in. conduit	$0.740
	6 ¾-in. pipe bands	0.012
	12 1¼-in. No. 10 F. H. bright screws	0.012
	¼ lb. 10D. nails	0.005
	1 A. 4122 pipe taplet	0.146
	1 No. 5267 pipe taplet hood	0.153
	1 No. 4125 pipe taplet	0.284
	1 No. 602 pipe taplet cover	0.041
	1 ¾-in. conduit coupling	0.050
	2 ¾-in. conduit ells	0.200
	1 ¾-in. gas ell	0.020
	1 ¾-in. × 3-in. close nipple	0.022
	3 ¾-in. locknuts	0.012
	3 ¾-in. bushings	0.033
	50-ft. No. 10 D. B. R. C. Wire	0.700
	1 No. 35367 G. E. cut-out switch	0.225
	2 25-amp. fuse plugs	0.040
	2 20-amp. fuse plugs	0.040
	1 9 × 10 in. meter board	0.063
	1 16 × 24-in. meter board	0.400
	6 1½-in. No. 10 R. H. blued screws	0.006
Grounding service	15-ft. single-groove molding and capping	0.180
	17-ft. No. 6 S. B. R. C. wire	0.459
	2 A all in one ground clamps	0.120
Pantry	1 No. 500 loom box	0.038
	1 ⅜-in. stud	0.017

Room	Wiring Details, Etc.	Price
Kitchen	1 500 loom box	0.038
	1 ⅜-in. stud	0.017
Basement	1 No. 100136 P. & S. receptacle	0.153
	1 No. 88985 G. E. switch	0.136
	30-ft. 1½-in. 2-wire molding and capping	0.33?
Dining room	1 No. 500 loom box.	0.038
	1 ⅜-in. stud	0.017
	1 CC 2½-in. 2-gang switch box	0.180
	1 No. 2081 H. & H. flush switch	0.168
	1 No. 4077 H.& H. flush switch plate B.B.	0.053
Hall	1 No. 500 loom box	0.038
	1 ⅜-in. stud	0.017
	1 CC 2½-in. 2-gang switch box	0.180
	2 No. 2083 H. & H. flush switches	0.520
	1 No. 4078 H.& H. flush switch plate B.B.	0.105
Parlor	1 No. 500 loom box.	0.038
	1 ⅜-in. stud	0.017
	1 No. 2081 H. & H. flush switch	0.168
	1 No. 4077 H. & H. flush switch plate B.B.	0.053
	1 CC 2½-in. single-gang switch box	0.085
Porch	1 No. 500 loom box	$0.038
	1 ⅜-in. stud	0.017
	1 No. 2081 H. & H. flush switch	0.168
	1 No.4077 H. & H.flush switch plate B.B.	0.053
	1 CC 2½-in. single-gang switch box	0.085
Hall, second story	1 No. 500 loom box	0.038
	1 ⅜-in. stud	0.017
	2 No. 2083 H. & H. flush switches	0.520
	1 No. 4078 H.& H. flush switch B.B. plate	0.105
	1 C C 2½-in. 2-gang switch box	0.180
Front bed room	1 No. 500 loom box	0.038
	1 ⅜-in. stud	0.017
	1 No. 2081 H. & H. flush switch	0.168
	1 CC 2½-in. single-gang switch box	0.085
	1 No. 4077 H.& H. flush switch plate B.B.	0.053
Middle bed room	1 No. 500 loom box	0.038
	1 ⅜-in. stud	0.017
Bath room	1 No. 500 loom box	0.038
	1 ⅜-in. stud	0.017
	1 No. 2081 H. & H. flush switch	0.168
	1 No. 4077 H.& H. flush switch plate B.B.	0.053
	1 CC 2½-in. single-gang switch box	0.085
Rear room	1 No. 500 loom box	0.038
	1 ⅜-in. stud	0.017

Room	Wiring Details, Etc.	Price
Attic	1 No. 50726 Paiste receptacle	0.115
	1 No. 88985 G. E. switch	0.136
Miscellaneous	1000-ft. No. 14 S. B. R. C. wire	7.000
	150 $\frac{5}{16}$-in. × 4-in. tubes	0.600
	50 $\frac{5}{16}$-in. × 6-in. tubes	0.300
	50 No. 5½-in. split knobs	0.350
	250-ft. ¼-in. circular loom	3.250
	70-ft. 1½-in.-2 wire molding & capping	0.770
	50 No. 1 loom bushings	0.700
	3 No. 4090 Paiste molding taplets	0.366
	1 No. 4099 Paiste molding taplets	0.101
	12 1-in. No. 8 R. H. blued screws	0.012
	50 2½-in. No. 8 F. H. bright screws	0.100
	50 ¾-in. No. 5 F. H. bright screws	0.050
	8 1½-in. No. 8 R. H. blued screws	0.0064
	2 No. 61935 G. E. cut-outs	0.180
	4 10 amp. fuse plugs	0.080
	12 No. 6102 pipe clamps	0.300
	Total material	$22.84
Labor, electrician, three and one-half days @ $3.50		12.25
Helper, three and one-half days @ $2.00		7.50
Carfare, two men		0.60
Auto-truck charges		1.50
		$44.19
Plus 33⅓ per cent. (for overhead)		14.73
Total price to customer		$58.92

91. Costs and List Prices of Services, Entrances and Runs to Centers of Distribution. See Pars. **81** to **84**. Entrance has a capacity of from 1 to 100 lamps. The cost values assume that

Item	Cost	List
1 Each pole and stretch of wire (special prices if blasting is required)	$25.00	$50.00
2 Each foot of underground service (special prices if in macadam or paving)	1.10	2.20
3 For service pipe up to 20 ft	6.00	12.00
4 Each additional foot	0.30	0.60
5 Ground wire	4.00	8.00
6 Service switch	2.25	4.50
7 Basement run	11.50	23.00
8 Meter board	0.50	1.00

the service pipe extending from the outside of the building into the basement is of 3/4-in. diameter wrought iron conduit, and that it is 20 ft. long and contains 50 ft. of No. 8 rubber-insulated, double-braid, solid wire; bolts and clips and two conduletes are included. Ground wire is assumed to be 15 ft. of No. 4. Run to distribution center is assumed to be 40 ft. of armored cable or of rubber-covered wire in rigid conduit.

Or all items, 3 to 8, inclusive, are covered by the following figures:

Service entrance, etc.	$15.00	$30.00
For each extra outlet, add.	0.30	0.60

92. Cost of Standard Ceiling Outlets Wired in Accordance with Various Methods. (*N.E.L.A.*) See Pars. **81** to **84**. The cost of a ceiling outlet is assumed to comprise: (1) Its proportion of distribution box, cut out and fuse; (2) the loop to the outlet; and (3) the outlet box in concealed work or the rosette in open work. Obviously, the cost is essentially the same for a ceiling lamp outlet as for a ceiling switch outlet. The values contemplate soft-wood floor construction. Costs for hardwood floors are given elsewhere.

No.	Method of wiring	Costs			
		Labor	Material	Total[1]	Relative
1	Flexible metallic conduit.	$2.00	$2.00	$5.20	100
2	Armored cable.	1.75	2.00	4.87	94
3	Metallic molding.	1.50	1.75	4.23	81
4	Concealed knob and tube work, some loom.	1.50	1.50	3.90	75
5	Wooden molding.	0.75	0.85	2.60	50
6	Open wiring.	0.60	0.75	1.75	34

[1] This includes 30 per cent. for general expense.

93. Costs and List Prices of Outlets of Various Types. These are *N.E.L.A.* data. See Pars. **81** to **84**. The list prices are 200 per cent. of the cost in each case to permit the quoting of discounts for given sets of conditions.

No.	Method of wiring	Standard outlets[1]		Outlets for double-pole switches, two-point electrolier switches or automatic door switches. *These are 130 per cent. of Standard Outlet values*		Ceiling switch or pilot lamp at location chosen by contractor. *These are 30 per cent. of Standard Outlet values*	
		Cost	List	Cost	List	Cost	List
1	Concealed armored cable.	$4.87	$9.74	$6.33	$12.66	$1.46	$2.92
2	Concealed flexible metallic	5.20	10.40	6.76	13.52	1.56	3.12
3	Concealed, ordinary.....	3.90	7.80	5.07	10.14	1.17	2.34
4	Metallic molding.....	4.23	8.46	5.50	11.00	1.27	2.54
5	Wooden molding	2.60	5.20	3.38	6.76	0.78	1.56
6	Open wiring.....	1.75	3.50	2.28	4.50	0.525	1.05

[1] Standard outlets include ceiling, wall, baseboard and floor outlets for current, single-pole switches and bell-ringing transformers.

No.	Method of wiring	Pair of three-way switches. *These are 320 per cent. of Standard Outlet values*		Four-way[2] switches or three-point electrolier switches. *These are 160 per cent. of Standard Outlet values*		Heating outlets. *These are 200 per cent. of Standard Outlet values*	
		Cost	List	Cost	List	Cost	List
1	Concealed armored cable.	$15.58	$31.16	$7.79	$15.58	$9.74	$19.48
2	Concealed flexible metallic	16.64	33.28	8.32	16.64	10.40	20.80
3	Concealed, ordinary.....	12.48	24.96	6.24	12.48	7.80	15.60
4	Metallic molding.....	13.54	27.08	6.72	13.44	8.46	16.92
5	Wooden molding.....	8.32	16.64	4.16	8.32	5.20	10.40
6	Open wiring.....	5.60	11.20	2.80	5.60	3.50	7.00

[2] Four-ways used only in connection with a pair of three-way switches.

94. Costs and List Prices of Extras. These are *N.E.L.A.* data. See Pars. **81** to **84** inclusive; also see tables of costs and prices of outlets.

Item	Cost	List
For each outlet that involves cutting or dodging hardwood, add	$3.25	$6.50
For each outlet on brick wall, not furred (concealed jobs)	3.20	6.40
For each gang switch, credit for second and subsequent outlets	0.65	1.30
Door outlet from bell-ringing transformer	2.00	4.00
Emergency system, one circuit, armored cable	40.00	80.00
Installing switches, receptacles, etc., each	0.25	0.50
Installing automatic door switch	1.00	2.00
Installing bell-ringing transformer	1.00	2.00

For fittings themselves use market price plus general expense and profit.

95. Baltimore, Consolidated Gas, Electric Light and Power Company Lamp-outlet, Unit-price Schedule. The following charges are for installing knob-and-tube wiring for lamp outlets, in any finished building the inner walls of which are of wooden lath and plaster on wooden studding. Where outlets, on stone and brick walls, must be made, the additions given in the list below the table apply. Values in the table indicate the price to the consumer, in dollars, for a certain number of outlets feeding a certain number of sockets. Switches and switch wiring and miscellaneous fittings are not included in the values given in the following schedule.

Additions specified in Table **96** must be made therefor. A charge of 25 per cent. for overhead has been included in these prices. The price of the service entrance has been included in the tabulated values.

OUTLETS IN STONE OR BRICK. Where it is found necessary to make an outlet on a wall or partition of either of these materials, that is, where the surface must be channelled and conduit used, a charge of $3 per outlet in addition to the charges listed above, is made for each such outlet.

METAL MOLDING OUTLETS. An additional charge of $2 is made for each metal molding outlet.

OUTLETS UNDER HARDWOOD FLOORS. For ceiling or wall outlets under hardwood floors there is an additional charge of $2 per outlet.

GROUNDING SERVICES. All services must be grounded to a water pipe or ground plate for which there is an additional charge of $3.

Number of outlets	Number of sockets or 50-watt lamps					
	4 to 12	13 to 24	25 to 36	37 to 48	49 to 60	61 to 72
1 to 4	18.00	20.00	.....	.....	.....	.....
5	22.50	24.50	.....	.....	.....	.....
6	25.50	27.50	.....	.....	.....	.....
7	28.00	30.00	32.00	.....	.....	.....
8	30.80	32.00	34.00	.....	.....	.....
9	34.65	35.75	37.75	.....	.....	.....
10	38.50	39.50	41.50	45.50	.....	.....
11	42.35	43.25	45.25	49.25	.....	.....
12	46.20	47.00	49.00	53.00	.....	.....
13	.....	50.75	52.75	56.75	58.75	.....
14	.....	54.50	56.50	60.50	62.50	.....
15	.....	58.25	60.25	64.25	66.25	.....
16	.....	62.00	64.00	68.00	70.00	72.00
17	.....	65.75	67.75	71.75	73.75	75.75
18	.....	69.50	71.50	75.50	77.50	79.50
19	.....	73.25	75.25	79.25	81.25	83.25
20	.....	77.00	79.00	83.00	85.00	87.00
21	.....	80.75	82.75	86.75	88.75	90.75
22	.....	84.50	86.50	90.50	92.50	94.50
23	.....	88.25	90.25	94.25	96.25	98.25
24	.....	92.00	94.00	98.00	100.00	102.00
25	.....	.....	95.25	99.25	101.25	103.25
26	.....	.....	98.90	102.90	104.90	106.90
27	.....	.....	102.55	106.55	108.55	110.55
28	.....	.....	106.20	110.20	112.20	114.20
29	.....	.....	109.85	113.85	115.85	117.85
30	.....	.....	113.50	117.50	119.50	121.50
31	.....	.....	117.15	121.15	123.15	125.15
32	.....	.....	120.80	124.80	126.80	128.80
33	.....	.....	124.45	128.45	130.45	132.45
34	.....	.....	128.10	132.10	134.10	136.10
35	.....	.....	131.75	135.75	137.00	138.25

96. Baltimore Consolidated Gas, Electric Light and Power Company Switch-wiring-and-switch Price Schedule. The first section of the table shows the prices for wiring only. The second section shows the prices of switches and fittings only, without wiring.

PRICE LIST FOR SWITCH OUTLET WIRING

Per single pole switch.....	$2.50	Per set of two 3-way switches and one 4-way switch (3 outlets).....	$8.50
Per set of 3-ways (2 switches)	6.50	2-Point electrolier switch....	3.00
Per 2 sets of 3-ways (4 switches) (used at 2 outlets)	11.00	3-Point electrolier switch...	3.50
Per 2 sets of 3-ways (4 switches) (used at 3 or 4 outlets).....	13.00		

PRICE LIST FOR SWITCH AND SPECIAL FITTINGS

Fitting	Factory No.	Price	Fitting	Factory No.	Price
Single pole flush, push button switch.....	2081	$1.00	dicating)	329	$2.85
Single pole rotary, surface, indicating switch	2163	0.50	3-Point rotary, flush electrolier switch.....	605	1.50
3-Way flush, push button switch (each)....	2083	1.00	3-Point rotary, snap electrolier switch (indicating).....	325	0.85
4-Way flush, push button switch (each)....	2084	3.00	Automatic door switch	2022	2.00
2-Point rotary, flush electrolier switch.....	609	1.25	Flush baseboard lighting receptacle with cap	5418	1.50
2-Point rotary, snap electrolier switch (in-			Flush base board heating receptacle with cap	5551	2.00

97. Baltimore Consolidated Gas, Electric Light and Power Company Miscellaneous-wiring Selling Prices. This schedule includes all material and labor and the prices indicated are those to the customer. Where required switches and plates are included.

Item	Unit price
Molding and Wire	
Price per lineal foot for 2-wire 1½-in. painted white wood molding with capping and No. 14. B. & S. rubber-covered single-braid wire.....	$0.085
Price per lineal foot on same as above with No. 12 wire.....	0.095
Price per lineal foot with 1¾-in. molding No. 10 wire same as above.....	0.10
Price per lineal foot for 3-wire 2¼-in. painted white wood molding with capping and No. 14 B. & S. rubber-covered single-braid wire.....	0.11
Price same as above with No. 12 wire.....	0.125
Price same as above with 3-in. molding and No. 10 wire	0.14

Item	Unit price
Conduit and Wire	
Price per lineal foot for ½-in. rigid or flexible steel conduit with 2 No. 14 B. & S. rubber-covered double-braid wire	0.20
Price per lineal foot with ¾-in. conduit, 2 No. 12 wire	0.25
Price per lineal foot with ¾-in. conduit, 3 No. 12	0.37
Price per lineal foot with ¾-in. conduit, 2 No. 10 wire	0.30
Price per lineal foot with 1-in. conduit, 3 No. 10 wire	0.48
Price per lineal foot with 1-in. conduit, 3 No. 8 wire	0.55
Service Entrances	
Price per change from 2- to 3-wire service entrance use ¾-in. conduit and type F exterior and type B interior condulet, porcelain 3-wire combination switch cut out GE No. 35368 or equal before meter and GE No. 62199 3-wire main 2-wire branch cut out after meter	3.00
Cut Outs and Boxes	
Price for cut out "A" use GE No. 62199 or equal	0.65
Price for cut out "B" use GE No. 61935 or equal	0.35
Price for cut out "C" use GE No. 35368 or equal	1.40
Price for cut out "D" use GE No. 42976 or equal	1.00
Price for Box E to fit any above cut out A, B, C or D, pine painted white lined with asbestos with hinged door and snap	1.50
Price for Box F stamped metal box to fit cut outs A, B, C or D with hinged door and snap	2.50
Drop Cord and Socket	
Price for MDCKs: Use fielding No. 435 Rosette No. 18 reenforced old code slicked cord, with Weber key or keyless metal shell socket or P. & S. key or keyless porcelain drop socket, 8-ft. cord	1.00
Receptacles	
Price for MRKs: Use No. 2383 through or No. 2439 terminal Perkins bases with GE No. 9185 metal shell receptacle	0.50
Price for MRKy: Use No. 2383 through or No. 2439 terminal Perkins bases with GE No. 9184 key metal shell receptacle	0.50
Price MRPc: Use No. 2383 through or No. 2439 terminal Perkins bases with Hubbell No. 35006 pull chain metal shell receptacle	0.90
Price for MPgR: Use Hubbell No. 5584 porcelain wall plug receptacle	0.60
Price for MCFH: Use wood block 8-in. base 5-in. face, molded edge painted white, same thickness as molding with capping. Put molding against block, run wires in grooves in base of block. Drill ¼-in. hole in center for fan hook. Mount where fan hook will have firm fastening	0.20

Item	Unit price
Price for MSW: Use No. 2212 through or No. 2358 terminal Perkins base with H. & H. 10 amp. No. 321 closed base indicating switch	0.50
Price for CDCKs: Use type C ½-in. through and type E ½-in. terminal condulet with porcelain cover; No. 18 re-enforced old code slicked lamp cord with Weber key or keyless metal shell socket or P. & S. key or keyless porcelain drop socket	1.50
Price for CRKs: Use type C ½-in. through and type E ½-in. terminal condulet with porcelain cover and ⅛-in. nipple. Use Weber keyless metal shell socket or P. & S. keyless drop socket	1.15
Price for CRKy: Same as CRKs except use key sockets same make	1.15
Price for CPgR: Use type JA ½-in. through or type K ½-in. terminal condulet with Hubbell condulet attachment plug receptacle and Hubbell composition cap	1.40
Price for CCFH: Use No. 8B box with center hole punched out for fan hook mounted where fan hook will have firm fastening	0.30
Price for CSW: Use G1101 for through and H1101 terminal condulet with H. & H. No. 321 10-amp. closed base indicating snap switch	1.00

98. Price of Wiring Finished Buildings—Switch Outlets, Switches and Extras. The following prices are those to the consumer, and are to be added to the prices given for outlets in the three following tables. Wiring is concealed and in flexible metallic conduit, except in basements where rigid conduit is used exposed on the ceiling.

Cost of wiring for switch outlets					
Class	I	II	III	IV	V
Single pole	$3.00	$3.50	$4.25	$4.50	$2.50
Three-way	4.50	5.00	5.75	6.00	4.00

In addition to the above prices for wiring switches, additional prices for switches, etc., are as follows:

Item	Price	Item	Price
Flush push-button single pole	$1.00	Drop cord (without canopy)	$0.75
Standard snap single pole	0.50	Water-proof floor receptacle	3.00
Automatic door switch	1.50	Flush baseboard receptacle	1.50
Three-way flush switch	1.00	Standard wall socket	0.50
Three-way snap switch	0.50		
Drop cords, including spun brass canopy, cord, and socket	1.00		

99. Prices of Flexible Metallic Conduit Wiring for Medium-grade Finished Buildings. The prices apply to flats renting for from $25 to $40 per month and houses renting for from $20 to $50 per month, of semi-fireproof construction. Schedule applies only to finished houses having double floors of hardwood on pine. Prices of wiring for switches and receptacles from **101** to be added to the list prices. Prices are based on concealed flexible metallic conduit work, except in basement where rigid conduit is installed exposed on the ceiling. Fixtures and lamps are not included.

Lights	Price		Lights	Price		Lights	Price	
	Class I building, 2 story	Class II building, 3 story		Class I building, 2 story	Class II building, 3 story		Class I building, 2 story	Class II building, 3 story
10	$50.00	$ 70.00	28	$ 92.00	$116.00	46	$138.00	$173.50
11	52.00	72.00	29	94.00	118.00	47	140.00	176.50
12	54.00	74.00	30	96.00	120.00	48	143.00	179.50
13	59.00	81.00	31	98.00	122.00	49	148.00	186.50
14	61.00	83.00	32	100.00	124.00	50	151.00	190.00
15	63.00	85.00	33	102.00	126.00	51	154.00	193.50
16	65.00	87.00	34	104.00	128.00	52	157.00	197.00
17	67.00	89.00	35	106.00	130.00	53	160.00	200.00
18	69.00	91.00	36	108.00	132.00	54	163.00	203.00
19	71.00	93.00	37	113.00	143.00	55	166.00	206.00
20	73.00	95.00	38	116.00	146.50	56	169.00	209.00
21	75.00	97.00	39	119.00	150.00	57	172.00	212.00
22	77.00	99.00	40	122.00	153.00	58	175.00	215.00
23	79.00	101.00	41	125.00	156.50	59	178.00	218.00
24	81.00	103.00	42	128.00	159.50	60	181.00	221.00
25	86.00	110.00	43	130.50	162.50	61	186.00	226.00
26	88.00	112.00	44	133.00	165.50	62	189.00	229.00
27	90.00	114.00	45	135.50	168.50	..	.....	.....

100. Prices of Flexible Metallic Conduit Wiring for High-grade Finished Buildings. Prices for lamp outlets in high-class apartments and medium-sized residences renting for $50 per month, with hardwood finish throughout. Prices of fixtures not included. Prices of wiring for switches and receptacles from **101** must be added. Prices are based on concealed flexible metallic conduit work, except in basements where rigid conduit is used exposed on the ceiling, in buildings with hardwood floors over pine floors. Fixtures and lamps are not included.

Lights	Price		Lights	Price	
	Class III building, 2 floors	Class IV building, 3 floors		Class III building, 2 floors	Class IV building, 3 floors
10	$75.00	$88.00	36	$161.00	$182.00
11	78.00	91.00	37	166.00	189.00
12	81.00	94.00	38	169.50	193.50
13	89.00	99.00	39	173.00	198.00
14	92.00	102.00	40	176.50	202.50
15	95.00	105.00	41	180.00	207.00
16	98.00	108.00	42	183.00	211.00
17	101.00	111.00	43	186.00	215.00
18	104.00	114.00	44	189.00	219.00
19	107.00	117 00	45	192.00	223.00
20	110.00	120.00	46	195.00	227.00
21	113.00	123.50	47	198.00	231.00
22	116.00	127.00	48	201.00	235.00
23	119.00	130.50	49	206.00	242.00
24	121.00	134.00	50	210.00	246.50
25	126.00	141.00	51	214.00	251.00
26	129.50	145.00	52	218.00	255.50
27	133.00	149.00	53	222.00	260.00
28	136.50	153.00	54	226.00	264.50
29	140.00	157.00	55	229.50	268.50
30	143.00	161.00	56	233.00	272.50
31	146.00	164.50	57	236.50	276.50
32	149.00	168.00	58	240.00	280.50
33	152.00	171.50	59	243.50	284.50
34	155.00	175.00	60	247.00	288.50
35	158.00	178.50	..	.....	.....

101. Price of Flexible Metallic Conduit Wiring for Finished Buildings—Cottages. This is called Class V. The prices are those charged the customer. This list is for one-story cottages with open attic. Prices of wiring for switches and receptacles as given in **101** must be added. Prices of fixtures and lamps not included. The prices are based on concealed flexible metallic conduit work, except in basement where rigid conduit exposed on the ceiling is used.

Number of lights	Price
Seven to twelve	$35.00
Thirteen	39.00
Fourteen	41.00
Fifteen	43.00
Sixteen	45.00
Seventeen	47.00

101a. Prices of the Edison Electric Illuminating Company of Brooklyn, N. Y., for Wiring Finished Buildings.[1] Prices cover concealed wiring with armored cable. Spun-brass chain-pendent fixtures are furnished where such are suitable. If the standard fixtures are not desired the deductions given can be made accordingly. See Par. **60a** for description of campaign and terms of payment.

Outlet location	Item No.	Discription of Work	Price, $
Kitchen	1	Outlet consisting of a baseboard or wall flush receptacle, installed in kitchen on first floor, and one ceiling outlet with one-lamp fixture and pull-chain socket	19.45
Cellar	2	Ceiling receptacle in cellar at heating apparatus with flush switch at head of cellar stairs	7.75
Hall	3	Ceiling outlet in hall with one-lamp chain fixture and pull-chain socket (if wall bracket fixture is desired instead deduct 85 cents)	8.10
Dining-room	4	Dining-room outlet with three-lamp shower fixture, pull-chain sockets (if amber glass dome is desired instead add $1.50)	11.75
Piazza	5	Outlet on piazza with ceiling fixture and globe with switch in hall	10.00
Bedroom	6	Bedroom outlet with two-lamp shower fixture, pull-chain sockets	8.00
Parlor	7	Parlor outlet with four-lamp shower fixture, pull-chain sockets	10.50
China closet	8	China closet outlet and bracket fixture with pull-chain socket	6.20
Back porch	9	Back porch outlet and bracket fixture with switch	10.35
Pantry	10	Pantry outlet and one-lamp bracket fixture with pull-chain socket	6.20
Bathroom	11	Bathroom outlet and one-lamp nickel-plated fixture, pull-chain socket	6.20
	12	All other lighting outlets with one-lamp bracket fixture, pull-chain socket	6.20
All other outlets	13	Two three-way switches for controlling hall lamp from upper or lower floor	9.90
	14	Floor, baseboard, wall, or ceiling receptacles	4.95
	15	Bell-ringing transformers for alternating current only	4.95
	16	Flush wall switches	3.85
Installing risers	17	For each additional floor bove first floor add	5.50

[1] *Electrical World*, Oct. 3, 1914.

Deductions for fixtures if personal selection is desired

No. 1	$1.30	No. 6	$3.05
No. 3	2.10	No. 7	5.50
No. 4	4.65	Nos. 8, 9, 10, 11, 12, each	1.25
No. 5	0.70		

102. Price schedule of the Union Electric Light and Power Company, St. Louis. An outline of the campaigns of this concern is given elsewhere. The prices given do not include lamps nor cover outlets in brick walls.

Item	Price
One outlet in each of any two rooms on one floor, and in addition thereto one baseboard or wall outlet equipped with receptacle for electrical appliance attachment, ready for service connection	$17.95
One additional outlet on next floor	7.00
Each additional outlet on same floor with other outlets	2.00
Each switch outlet with flush wall switch (single pole)	3.00
Each two-circuit switch outlet with electrolier switch	4.50
Each switch outlet with flush wall switch (combination three-way)	4.00
Each addtional baseboard or wall outlet with receptacle for electrical appliance attachment	3.75
One outlet in basement with switch on first floor (including flush switch)	5.00
One outlet in basement of second-floor apartment with switch on second floor (including flush switch)	10.00
Each additional basement outlet on same switch	1.00
Each drop cord with socket	1.00
Each pendent switch	1.00
Additional charge for wiring where there are double floors—per ceiling or floor outlet	2.00

The prices are for concealed knob-and-tube work.

103. Rates Charged by a Company in a City in the North Central Portion of the United States for Wiring Finished Buildings. The "base charge" mentioned in the following table covers the expense of getting workmen and material to and from the premises to be wired. All openings for switches, receptacles, drop cords and fixtures are classed as outlets. The prices quoted apply only to houses of ordinary construction. They entitle the customer to an extra wall receptacle in the kitchen and an extra socket on the dining-room fixture without additional charge. Houses of fireproof or other special construction require special

estimates. Service connections are made by the company on its lines free of charge when the service is overhead. For underground service there is a charge of 50 cents per lineal foot, and measurement is made from the curb line to the inside wall of the building.

Item	Price
Single flooring—base charge	$4.00
Outlet charge, per outlet	3.00
Double flooring—base charge	4.00
Outlet charge, per outlet	4.00
Hardwood flooring—base charge	4.00
Outlet charge, per outlet	4.00
PRICES OF SWITCHES, ETC.:	
Push-button switches, each	$1.00
Push-button three-way switches, per set of two switches	2.50
Rotary switches, each	1.00
Rotary three-way switches, per set of two switches	2.50
Snap switches, each	0.50
Snap switches, three-way, per set of two switches	1.50
Bryant flush plate receptacles	1.00
Chapman flush plate receptacles	1.25
Hubbel baseboard receptacles	1.25
Drop cord with key socket	0.75
Drop cord with chain pull socket	1.00

Prices are for concealed knob-and-tube work.

104. Charges Made by the Mobile Electric Company for Wiring and Furnishing Lamps and Fixtures for Five-room Cottages. This property is operated by the Byllesby company. Prices are for concealed knob-and-tube work. Three propositions were offered:

1. WIRING AND DROP-CORD FIXTURES COMPLETE WITH LAMPS: Five drop cords, five ornamental glass shades, five lamps—supplying light for living-room, dining-room, kitchen and two bedrooms. Price, $8; inspection fee, $1; total, $9.

2. WIRING, TWO TWO-LIGHT FIXTURES AND THREE DROP-CORD FIXTURES COMPLETE WITH LAMPS: Two two-light fixtures, three drop cords, six ornamental glass shades, seven lamps—supplying two lights in the living-room, two in the dining-room and one in each of the other rooms. Price, $10.75; inspection fee, $1.50; total $12.25.

3. WIRING AND SQUARE TUBING FIXTURES COMPLETE WITH LAMPS: Seven lights, with artistic fixtures, square brass tubing fixtures instead of drop cord; wall fixtures where desired; two fixtures with two lights each, the others one each. Price, $12.50; inspection fee, $1.50; total, $14.

105. Schedule of Prices Charged for Finished-building Wiring by the Edison Electric Illuminating Company of Boston, Mass. See the example that follows for an illustration of their application. Wiring is with armored cable.

No. 1—Outlet consisting of a flush plug receptacle located in any room on the first floor anywhere excepting ceiling	$14.35
No. 2—No. 1 and outlet in cellar at heating apparatus with switch in hall and fixture	19.00
No. 3—No. 1 and 1 outlet on piazza with switch in hall and fixture	22.00
No. 4—No. 1 and 1 outlet in hall with switch and fixture (three-way switches $6 additional)	23.00
No. 5—No. 1 and 1 outlet in parlor with switch and fixture	25.50
No. 6—No. 1; No. 2; No. 3	27.00
No. 7—No. 1; No. 2; No. 4	28.00
No. 8—No. 1; No. 2; No. 5	30.50
No. 9—No. 1; No. 3; No. 4	31.00
No. 10—No. 1; No. 3; No. 5	33.50
No. 11—No. 1; No. 4; No. 5	34.50
No. 12—No. 1; No. 2; No. 3; No. 4	36.00
No. 13—No. 1; No. 2; No. 3; No. 5	38.50
No. 14—No. 1; No. 2; No. 4; No. 5	39.50
No. 15—No. 1; No. 3; No. 4; No. 5	42.00
No. 16—No. 1; No. 2; No. 3; No. 4; No. 5	47.50
Additions (to apply only after No. 3):	
No. 17—Dining-room outlet with switch and fixture	12.00
No. 18—Kitchen outlet with switch and fixture	8.25
No. 19—Pantry outlet and fixture	4.25
No. 20—China-closet outlet and fixture	4.25
No. 21—Back porch outlet with switch and fixture	8.00
No. 22—Second-story hall outlet with two three-way switches and fixture	11.25
No. 23—Bathroom outlet with switch and fixture	8.25
No. 24—All other lighting outlets with fixtures each	4.25
No. 25—All other switches, each	4.00
No. 26—Floor or baseboard receptacles, each	4.00
No. 27—Bell-ringing transformer	4.00
For each additional floor above the first floor:	

No. 28—Add $5 for Item No. 1 (extra charge is to provide for running risers through additional floors).

No. 29—Add $10 for Items No. 1 and No. 2 (extra charge is to provide for controlling cellar lighting from the floor occupied by the user).

Deductions if not wanted:

Switches (exclusive of cellar switch), each	3.00

For fixtures if personal selection is desired:

Nos. 3 and 6, each	1.00
Nos. 18, 19, 20, 21, 22, 23, 24, each	1.25
Nos. 4 and 6, each	2.00
Nos. 5 and 8, each	4.50
Nos. 9 and 12, each	3.00
Nos. 10 and 13, each	5.50
Nos. 11 and 14, each	6.50
Nos. 15 and 16, each	7.50
No. 17	5.00

See Fig. 184 for illustrations of fixtures.

106. Example of the application of the Boston Company's schedule to the wiring of a third-story apartment requiring the following equipment: *Kitchen*—one receptacle, one center lamp on pull-socket, no switch; *parlor*—one three-lamp fixture with pull-socket, no switch; hall—one single-lamp fixture on switch, one baseboard receptacle, *hall closet*—one single fixture, no switch; *dining-room*—one four-lamp fixture on switch; *bathroom*—one single-lamp fixture on pull-socket, no switch; *pantry*—one single-lamp fixture on pull-socket; *chamber*—one three-lamp fixture with pull-socket, no switch.

Applying the schedule given in the preceding paragraph:

One No. 11, *less one switch* (receptacle in kitchen, hall and parlor lighting)	$31.50
One No. 17 (dining-room lighting)	12.00
One No. 18, *less one switch* (kitchen lighting)	5.25
One No. 19 (pantry lighting)	4.25
One No. 23, *less one switch* (bathroom lighting)	5.25
One No. 24 (hall closet lighting)	4.25
One No. 24 *less fixture, plus one No.* 8 *fixture* (chamber lighting)	7.50
One No. 26 (hall baseboard receptacle)	4.00
Two No. 28 (third-floor apartment)	10.00
Nine pull-sockets (kitchen, pantry, bathroom, parlor and chamber)	2.25
Total	$86.25

107. Prices and Terms of Payments of The Muncie (Ind.) Electric Light Company. See Par. **67** for data relating to the Munice Company's campaign. The prices are for concealed knob-and-tube work. If the company handles the account for the contractor on the installment plan, the price is the same as if the consumer pays the contractor cash. Prices include the installation of drop cords and sockets, but the same prices cover the hanging of fixtures (fixtures to be furnished by the consumer) if they are desired.

Outlets	Wiring prices	Type of switch	Switch prices
3	$9.90	Single-pole snap	$1 40
4	11.95	Flush switch	1 95
5	13.90	Cellar outlet, complete with switch	2 20
6	15.90	Porch outlet, complete with flush switch	2 75
7	17.70	Porch outlet, complete with snap	2.50
8	19.70	Three-way push, flush	5.50
9	21.70	Three-way snap	5.00

Where more than nine outlets are required for a job, $1.70 is added to the price for each additional outlet. The rates of payment are:

Houses of	Cash payment	Monthly payment
Three rooms	$1.98	$0.79
Four rooms	2.39	0.96
Five rooms	2.78	1.11
Six rooms	3.18	1.27
Seven rooms	8.54	1.42
Eight rooms	3.94	1.58
Nine rooms	4.34	1.58
Ten rooms	4.68	1.87
Eleven rooms	5.02	2.01
Twelve rooms	5.36	2.14

108. Rates charged by the Kansas City Electric Company for wiring finished buildings are given in the following table. Prices are for roughing in only and do not include fixtures, lamps or switches. The prices are for knob-and-tube work. Class A wiring is that where the company removes and replaces the floor-

ing at its expense. Class B wiring is that where the occupant removes and replaces the flooring at his own expense.

Number of outlets	Old-house wiring, class "A," single flooring taken up and relaid		Old-house wiring, class "B," No flooring taken up or relaid		Number of outlets	Old-house wiring, class "A," single flooring taken up and relaid		Old-house wiring, class "B," No flooring taken up or relaid	
	Price	Price per outlet	Price	Price per outlet		Price	Price per outlet	Price	Price per outlet
5	$19.81	$3.99	$14.86	$2.99	34	$74.31	$2.18	$55.70	$1.64
6	22.31	3.72	16.73	2.80	35	76.06	2.18	57.05	1.63
7	24.81	3.55	18.61	2.66	36	77.81	2.16	58.36	1.62
8	27.31	3.42	20.49	2.57	37	79.56	2.16	59.67	1.61
9	29.81	3.32	22.36	2.50	38	81.29	2.14	60.97	1.60
10	32.31	3.23	24.24	2.44	39	83.24	2.15	62.43	1.60
11	34.06	2.75	25.55	2.32	40	85.31	2.15	63.98	1.60
12	35.81	2.98	26.86	2.22	41	87.46	2.15	65.60	1.60
13	37.56	2.89	28.17	2.13	42	89.51	1.15	67.17	1.60
14	39.31	2.80	29.48	2.10	43	91.56	2.15	68.67	1.60
15	41.06	2.74	30.80	2.05	44	93.61	2.15	70.21	1.60
16	42.81	2.68	32.08	2.00	45	95.66	2.14	71.75	1.60
17	44.56	2.62	33.42	1.97	46	98.71	2.14	74.03	1.61
18	46.31	2.58	34.73	1.93	47	99.76	2.12	74.82	1.59
19	48.06	2.54	36.05	1.90	48	101.81	2.12	76.36	1.59
20	49.81	2.48	37.36	1.87	49	103.86	2.12	77.92	1.59
21	51.56	2.46	38.67	1.86	50	105.91	2.12	78.43	1.59
22	53.31	2.42	38.98	1.86	51	107.96	2.12	80.97	1.59
23	55.06	2.40	41.32	1.80	52	110.01	2.12	82.24	1.59
24	56.81	2.37	42.61	1.78	53	112.06	2.12	84.05	1.59
25	58.56	2.34	43.92	1.75	54	114.11	2.12	86.11	1.59
26	60.31	2.32	45.24	1.74	55	116.16	2.12	87.05	1.58
27	62.06	2.30	46.55	1.73	56	118.21	2.12	88.66	1.58
28	63.81	2.28	47.86	1.70	57	120.26	2.12	90.20	1.58
29	65.56	2.26	49.17	1.69	58	122.31	2.12	91.80	1.58
30	67.31	2.24	50.49	1.68	59	124.36	2.12	93.27	1.58
31	69.06	2.23	51.80	1.67	60	126.41	2.12	94.81	1.58
32	70.81	2.20	53.11	1.66					
33	72.56	2.20	54.42	1.65					

108a. Prices for Finished-building Wiring Charged by the Indiana and Michigan Electric Company, South Bend, Ind. (*Electrical World*, Oct. 3, 1914, page 672). An outline of the campaign is given in Par. **66a.** The prices are for concealed knob-and-tube work.

Item	Equipment	Price
1	Three outlets with drop cords, lamps and shades...	$9.00
2	Four outlets with drop cords, lamps and shades....	10.00
3	Five outlets with drop cords, lamps and shades...	11.50
4	Six outlets with drop cords, lamps and shades....	13.00
5	Seven outlets with drop cords, lamps and shades..	14.50
6	Additional outlets, each.....	1.50

109. Rates of the Citizens' Gas and Electric Company for Finished-building Wiring. This company operates in Mt. Vernon, Ill., a city of about 10,000 inhabitants. The prices are those to the consumer and are for concealed knob and tube work.

Item	Price
Each outlet, either switch or light, in a one-story building.....	$1.25
Each outlet, either switch or light, in a two-story building....	1.85
Drop cord and socket without lamp.....	0.50
One-light fixture. Pull chain socket.....	1.25
Two-light fixture with pendent switch.....	2.85
Surface snap switch.....	0.35
Flush snap switch.....	0.75
Porch fixture.....	0.75

Local contractors do the wiring and the Citizens' Company pays them cash and carries the account for the consumer who may pay on the installment plan. A year's time is given the consumer in which to pay. An extra charge, added to the above, is made for lamps.

110. Prices of Concealed Knob and Tube Finished-building Wiring. Prices indicated are those charged the consumer for different numbers of outlets, single-floor residence construction. Fixtures and lamps are not included. All openings for switches, drop cords and fixtures are considered as outlets. The tabulated cost of switches, receptacles and drop cords should be added to the price of outlets. This sum will be the contract price for all

labor and material necessary to complete the work as outlined in the schedule.

From tables prepared for use of new business solicitors by the Central Station Development Company, of Cleveland, Ohio.

No.	Cost	No.	Cost	No.	Cost	No.	Cost	No.	Cost
5	$15.85	17	$37.40	29	$57.20	41	$77.82	53	$100.82
6	17.85	18	39.05	30	58.85	42	79.75	54	102.85
7	19.85	19	40.70	31	60.50	43	81.75	55	104.77
8	21.85	20	42.35	32	62.15	44	83.60	56	106.70
9	23.85	21	44.00	33	63.80	45	85.50	57	108.62
10	25.85	22	45.65	34	65.45	46	87 45	58	110.55
11	27.50	23	47.30	35	67.10	47	89.37	59	112.47
12	29.15	24	48.95	36	68.75	48	91.30	60	114.40
13	30.80	25	50.60	37	70.40	49	93.22	...	.....
14	32.45	26	52.25	38	72.08	50	95.15	...	.....
15	34.10	27	53.90	39	73 97	51	97.07	...	....
16	35.75	28	55.55	40	75.90	52	99.00	...	.....

Add as per following for outlets under other than single floors and for hardware and drop cords:

Under double flooring otherwise than hardwood. Second or third story.
Ceiling outlet..... $1.00 extra
Switch outlet for any center outlet..... 1.00 extra
Under hardwood flooring, single, double or triple. Second and third story.
Ceiling outlet..... $3.00 extra
One switch outlet for any center outlet..... 3.00 extra
Additional on same gang for same center outlet..... 1.50 extra
Switches, hardware and drop cords as per following:
Push-button switches, each..... $1.00 extra
Push-button three-way switches, per set of two switches... 2.75 extra
Porcelain base switches, each..... 0.35 extra
Porcelain base Edison receptacles, each..... 0.35 extra
Baseboard flush plate receptacles, each..... 1.15 extra
Drop cord, key sockets, each..... 0.60 extra
Drop cord, chain sockets, each..... 0.75 extra

111. Average cost of wiring finished buildings in Europe (S. E. Doane) is from $2 to $3 per outlet. The average rate for energy is 12 to 14 cents per kw-hr.

APPENDIX TO COMMERCIAL SECTION

SPECIFICATION FOR A HOUSE-WIRING CAMPAIGN FOR THE DAWSON LIGHT & POWER COMPANY DAWSON, OHIO.

(This specification, substantially as here reproduced, was prepared by the Department of Publicity of The National Lamp Works of the General Electric Company (Cleveland, Ohio) under the direction of P. L. Miles who specializes in the promotion of finished-building wiring campaigns. Because this specification outlines very carefully the procedure that experience has shown to be best for the inauguration and prosecution of a campaign in the average community, it has been thought advisable to include it herein).

FOREWORD

111a. Although the town of Dawson is fictitious, the house-wiring campaign herein outlined, is similar in many respects to those which have been thoroughly tested and with success in various cities throughout the country—cities such as Birmingham, Ala., Toledo, Ohio, Danbury, Conn., and Louisville, Ky. Dawson is supposed to typify a town of about 25,000 to 50,000 population. In this town there is an active lighting company, The Dawson Light & Power Company, with an aggressive new business manager.

Prior to the adoption of the house-wiring campaign herein outlined, the new business department was wiring finished houses or a hit-or-miss basis. There were five men in this Department, comprising the business-getting force of the Dawson Light & Power Company. When one of these men would chance upon a prospect for house-wiring in his district, he would call in one of the local wiring contractors and after much delay this contractor would submit an estimate to the salesman, in turn to be submitted to the prospect. Obviously this method involved a great waste of sales energy.

Next, it was necessary to give the prospect an accurate idea of the cost of fixtures. In some instances this meant a trip with the prospect to a fixture house, where he was assisted in the selection of his fixtures and where an estimate of their cost was obtained. And finally it was necessary to induce this prospect to make a cash outlay of $50 or $60 or at best allow him thirty days in which to pay for the wiring and fixtures. Furthermore, the prospect was not protected by a contract or specifications.

The business was not increasing as it should. Too great a period elapsed between the time at which the prospect was interviewed and the time at which he was given an estimate for the cost of the work. Sometimes the prospect became "cold." The salesmen's hands were tied. They could not present a proposition in its entirety. It is strange selling when a salesman cannot quote prices on the commodity he offers. But such were the conditions in Dawson.

Advertising had been used in the daily newspapers in a desultory way. But it was not the right kind of advertising. It was good general publicity, but it did not endeavor to produce results by inducing the prospects to make inquiries. Furthermore, it did not have the appeal of a "special proposition,"

but dealt principally with the safety, cleanliness, and convenience of electricity. With these features the people of Dawson are more or less familiar.

The campaign herein outlined was then adopted. The letters supplemented by the other advertising produced inquiries. When these inquiries were "followed up" by a salesman, he had a definite proposition to offer: the price of wiring, the price of fixtures and the price of lamps. The salesman could quote the prospect the total cost of becoming a user of electricity. After submitting his estimate, the salesman could explain the terms of payment: suggesting that the lighting company would finance the customer for a period of twelve months. The customer could also be told how the work would be done and how his (the consumer's) interests would be protected by a contract and specifications.

The justification of this methodical campaign was soon apparent. Inquiry cards began to pour in, and these cards, when followed up by a solicitor, brought concrete results.

Consider Toledo, Ohio, for instance: Here in the course of two months, 585 householders contracted for electric service—and became revenue producers for the lighting company. To apply a similar methodical campaign like that outlined herein to any city involves very little change—just enough to adapt it to local conditions. A few changes may be necessary, due to the fact that some stations engage in the wiring business, yet these changes may easily be made.

OUTLINE OF HOUSE-WIRING CAMPAIGN FOR DAWSON LIGHT & POWER CO., DAWSON, OHIO

111b. Object of Campaign. The object of this campaign is to induce home owners to install electric service, and thereby become customers of the Dawson Light & Power Co.

111c. Analysis of Field. The records of the Dawson Light & Power Company show that there are 1500 residential customers in the city of Dawson. Upon a basis of a population of 50,000 people, there are 10,000 homes in Dawson. (These figures are based on the United States census, which shows an average of 5 people to a home). Consequently deducting the present customers of the central station, there are in the neighborhood of 8500 unwired homes in Dawson.

It is estimated that at least 25 per cent. of these people own their own homes —2100 home owners. Inasmuch as it is *much easier* to induce a home owner to wire his house than it is to obtain a contract from a landlord or a tenant, it is recommended that, for the present, all efforts toward the wiring of homes in Dawson be confined to this one class of prospects, namely home owners. The question of a campaign among tenants and landlords can be considered later.

111d. Time-payment Proposition. It is ascertained from the Dawson National Bank that the average income of the working man in Dawson is somewhat less than $80 per month. In view of this low average wage, it is recommended that a time-payment plan be adopted—the central station

paying the *contractor* cash, upon the completion of a job and upon its acceptance by the owner, and then financing the *consumer* for a period of twelve months.

111e. Wiring, Fixtures and Lamps. No house can use central station energy until it has been wired, and the fixtures and lamps installed. It is therefore recommended that fixtures and lamps be treated as of equal importance with the wiring, and that they can be included in the time-payment proposition. Experience in other cities has shown that, where time payments were arranged on the wiring alone, that the lack of fixtures and the relatively large initial expense incident to their installation was often responsible for refusals to sign contracts.

In this connection it is recommended that the prospective customer be given the opportunity of purchasing complete fixture sets similar to those shown in Figs. 184 to 187. If this is done, the central station salesmen can present the house-wiring proposition in its entirety to the prospect, including wiring, fixtures and lamps—ready to connect to the central station circuits. It is also recommended that *four* of these sets be prepared as standard, the sets varying in style and price, thus permitting the customer to make a selection that appeals to his taste or is within his means. Each salesman should be supplied with photographic reproductions of these fixture sets, and a list of their prices.

As stated above, many house-wiring contracts have *not* been signed because of the fact that prospects have had trouble in selecting and purchasing fixtures. If the central station is prepared to furnish sets similar to those shown, this obstacle is eliminated. An exact photographic reproduction of each set may be shown to the customer by the central station salesman and the customer may, then and there, make his selection and without further trouble. It is not believed advisable that it be mandatory that the prospect select one of these standard fixture sets. They may be offered to him, and if they do not satisfy, others may then be purchased from a fixture house. If the fixtures are purchased elsewhere, their cost should not be included in the time payment proposition.

Inasmuch as it is against the policy of the Dawson central station to merchandise fixtures or lamps, the fixture sets may be ordered on a large contract basis from the manufacturers and supplied by the station to the dealers. The price to the customer for the different sets may be decided by the contractors themselves. The lamps may be supplied by the contractors at list price.

Another reason for the adoption of the fixture set plan, is that it enables the central station salesman to readily give an estimate of the complete cost of wiring, fixtures and lamps. This is an important feature, for it rarely occurs that a prospect will place an order for the wiring without first investigating the fixture cost. This may consume considerable time if the salesman cannot offer a definite fixture proposition.

111f. Basis of Estimating House-wiring. Under the existing conditions in Dawson, when a prospect for house-wiring is located by the central station salesman, it is necessary to obtain for him an estimate from a local contractcs. This usually delays the closing of the contract and,

in some instances, it results in the loss of the order. The prospect may be prepared to "close" while the salesman is on the ground, but may alter his intention if there is delay. It is therefore recommended that some system be adopted whereby an estimate can be submitted by the central station salesman *when he is calling upon the prospect.*

Moreover, contractors as a rule, are not salesmen, whereas salesmanship is the business of the central station representatives. The submission of an estimate is a part of selling. It is therefore suggested that the best policy that can be adopted in this campaign is to allow the central station salesmen to handle all of the selling. When the contract is signed the job should then be transferred to the wiring contractor.

It is advisable, therefore, that the electrical contractors in Dawson be mustered for a conference (possibly for luncheon) and that the proposition of wiring houses on a flat-rate-per-outlet basis be adopted. The price to be charged per outlet may then be determined by the contractors themselves and submitted to the station for acceptance. It is recommended that such a meeting be arranged by the Dawson Light & Power Company.

One truth that should be impressed on these contractors is that the "law of averages" governs the costs of wiring homes. A contractor may lose money on one particular job, due to the unusual construction of the building. Yet he may make more than a fair profit on another installation because it can be wired very readily. The law of averages will, however, insure the contractor a fair return on all houses wired. The price per outlet should be made high enough to cover these conditions and assure the contractor a fair margin of profit.

The description of this campaign that follows is based on the adoption of a unit or price per outlet method of estimating wiring cost. Another method which might, however, be considered is the wiring of houses of a certain number of rooms on a flat-rate basis. Schemes similar to this have been in successful operation in Brooklyn, Baltimore and Boston.

Another tangible reason for the adoption of a readily handled method of estimating the cost of wiring is that where it is adopted prospective customers may be given some idea of the cost of wiring their homes through printed matter such as *form letters* and newspapers. Many people have an exaggerated idea regarding the cost of wiring their homes. They believe it to be so expensive that, thinking it beyond their means, they do not even request an estimate. This impression must be defeated by giving the prospect an idea of the reasonableness of the cost of installing electric service. If the flat-rate scheme is adopted, this can be done very readily through newspaper advertising.

111g. Adoption of Contract and Specification. The adoption of definite specifications for house-wiring has been found very helpful to central station salesmen in other cities. Such specifications provide "talking points" and thereby materially assist the sales force. Such specifications also tend to protect the interests of the prospect, and insure him that the wiring will be safe, modern and workmanlike. This one feature is very useful in converting a prospect relative to the wiring of his home. With the monthly payment plan,

CONTRACT AND SPECIFICATIONS FOR RESIDENCE WIRING

..... hereby makes application to THE DAWSON LIGHT AND POWER COMPANY, hereinafter called the Company, for wiring the premises located at ..... Street, in accordance with the following specifications and in accordance with the schedule on the reverse side of this contract, and agrees to pay therefor at the office of the above Company the sum of ..... dollars ($.....) in twelve (12) equal monthly installments of ..... dollars ($.....) each, to be paid on or before the first of each month until the full amount has been paid. Failure to meet such payments when due shall render the installment feature of this contract void and the remaining payments on said contract shall become due at once.

The Company shall have the said premises wired complete, including all material and labor necessary to do the work shown in the specifications and schedule of work and material, in a thoroughly substantial and workmanlike manner.

The Company agrees to have the work commenced within five days from the receipt of this application, duly signed.

The Company agrees to have all the work called for under specifications and schedule completed within one week after the work has been started.

SPECIFICATIONS

All material used and work done under these specifications must be in accordance with the Rules and Regulations of the National Electrical Code.

The Company shall see that all necessary notices are given to the proper authorities and shall pay for a certificate of approval.

It is agreed that all the work and materials used in connection with this wiring installation shall be protected from damage by weather or otherwise, and it is further agreed that the applicant shall be saved harmless from such damage thus occurring.

All wires must be concealed between the floors and walls except in the basement where molding must be used, or where it is impossible to conceal the wires over the ceiling of the attic, molding must be used, all wires in the attic to side outlets to be concealed where possible.

All necessary cut outs must be provided.

All carpets and rugs which it is necessary to remove to complete the work must be removed and relaid.

All hardware described in the schedule of work and material must be provided and installed.

All hardware, outlets, lamps or fixtures not listed in the schedule will be installed upon the written order of the applicant, who agrees to pay for such work at the rates shown in the schedule.

The applicant must locate all outlets for fixtures, switches, receptacles, and drop cords before the work is started and it is not necessary for the Company to change such locations after the work has been started or finished.

It is agreed that all necessary wiring for connecting the various circuits to the meter of the Company is included in this application.

It is further agreed that the work including wiring, fixtures and lamps, will be installed wherever it is so stipulated in the classification of work and material, fixtures and lamps, shown on the reverse side of this application.

IN WITNESS WHEREOF the applicant has hereto signed his name this .... day of ..... 191..

(Applicant).....

The above application is accepted this ..... day of ..... 191..

THE DAWSON LIGHT AND POWER COMPANY

By.....

New Business Manager.

(Reverse side of this contract to contain schedules similar to those of Fig. 19c.)

FIG. 23*A*.—Typical wiring agreement between central station

Par. **111d,** it is necessary that an agreement be executed between the central station and the customer and also that one be executed between the central station and the contractor. It is therefore recommended that this contract also include *specifications*, as outlined in Figs 23*A* and 23*B* of this report. It is advisable to submit these specifications to the local contractors for their approval. The attorneys of the central station company should pass upon the legality of the contract forms. It is impossible for one not on the ground to prepare a contract and specification which will exactly satisfy local conditions. These points must be settled in Dawson.

CONTRACT AND SPECIFICATIONS FOR RESIDENCE WIRING

THE DAWSON LIGHT AND POWER COMPANY, hereinafter called the Company, hereby contract with ..... hereinafter called the Contractor for wiring the premises at .... Street, in accordance with the following specifications and schedule of work and material as shown on the reverse side of this contract, and agrees to pay therefore the sum of ..... dollars ($.....) upon the completion of the said work, upon our inspector's report and upon the receipt of a signed statement from the applicant that the wiring, fixtures and lamps are satisfactory to him.

The Contractor shall wire the said premises complete, including all material and labor necessary to do the work shown in the specifications and schedule of work and material in a thoroughly substantial and workmanlike manner.

The Contractor agrees to have the work commenced within five days from the receipt and acceptance of this contract, duly signed.

The Contractor agrees to have all the work called for under these specifications and schedule completed within one week after the work has been started.

SPECIFICATIONS

(Similar to those between Central Station and Consumer.)

FIG. 23*B*.—Typical agreement between central station and contractors. (Reverse side of this agreement should show a wiring schedule similar to that of Fig. 19c.)

Our recommendations as to the handling of the contracts are as follows: The central station salesman will obtain the signature of the prospect on two copies of the contract-and-specifications. The contract should then be accepted by the lighting company, and one copy should be returned to the prospect for his file. Another agreement, Fig. 23*B*, between the central station and the contractor receiving the job should then be draughted in duplicate. Upon the contractor's acceptance of the contract one copy should be returned to the central station, and pasted to the copy of the customer's contract and filed in a permanent file. The specifications and "schedule of work" contained in the *customer's* contract should be identical with those contained in

the contract between the station and the contractor. Thus the central station's interests are protected.

As previously outlined, the customer by his contract agrees to pay for the work in twelve monthly installments. By virtue of its contract with the wiring contractor, the station agrees to pay for the work upon completion subject to the written acceptance of the installation by the customer and to an inspection by a representative of the company who surveys the premises wired to verify the fulfillment of the contract and specifications.

It is further recommended that a form (similar to that of Fig. 19c) be printed, corresponding to the "classification of work and material," as shown later in this report. This form may be used by the salesmen for estimating when he calls upon prospective customers. The salesman, if he is unable to close the deal, may then leave this estimate sheet with the prospect as a reminder and as a cost proposal for wiring the home. The salesman should write his name upon this estimate sheet in order that the prospect can reach him by telephone.

111h. Distribution of Contracts. It is recommended that the contracts as they are closed by the central station salesmen, be distributed among the local contractors in an impartial manner—that is in rotation. However, as a means of stimulating the contractors to do some selling themselves, which will chiefly be among their friends and acquaintances, it is recommended that for every contract a contractor closes for the central station that he receive one wiring contract in addition to the number that he ordinarily would receive. Such a bonus should be awarded only where the contract is closed without sales expense to the central station. There is no discrimination in this method, as any one of the contractors may avail himself of it. Thus, the number of bonus contracts which a contractor receives will depend entirely upon his individual sales initiative.

Where a prospective customer expresses to the central station salesmen a desire that a certain contractor be allowed to do the work, this request should be granted. The contract should be charged to the contractor as one of his regular allotted number. This may interfere with the allotment of the contracts in rotation. However at the end of each month the contracts can be so distributed that each contractor will have received an equal number. The only exception being where a contractor is given, as a bonus, extra contracts as a reward for those turned in by him.

111i. Lighting Installation. The practice of minimizing the number of outlets to reduce the wiring cost, where conditions warrant such procedure, is thoroughly endorsed. It is believed that, where the high price of wiring is interfering with the closing of a wiring contract, the central station salesman should eliminate switches and even, wherever possible, authorize drop-cords instead of fixtures. It is advisable to *get the customer on the line*, even though the lighting installation may not be all that is desired from an engineering or illumination standpoint.

From the viewpoint of central station *revenue*, the amount of income will be just as great from a house without switches and fixtures, as from a house hav-

ing these conveniences. Yet the wiring of the home will be the entering wedge. Ultimately, doubtless, a more complete installation will result.

Many instances have occurred where, because of the insistence of salesmen that the customer install several switches, three-way switches, baseboard receptacles and the like, the customer finally refused to sign a contract. The wiring estimate submitted to him showed a price far beyond his means. By eliminating a few of the switches the salesmen could have materially reduced the wiring expense and overcome the objection of "too much money." Electricity, even without wall switches, is *more convenient*, than gas or oil. The above recommendations only apply in instances where it is impossible to induce the customer to make a proper lighting installation—rather than permit the house to remain unwired, the alternative proposition of a low-price lighting installation should be presented. Low-price wiring in accordance with these recommendations does not interfere with the use of the various, small current-consuming devices. It is only necessary that a socket be available to provide for the use of most of these appliances.

111j. Stimulation of Salesmen. As a method of creating interest among the salesmen it might be advisable to give a bonus of 50 cents, or some other specified amount, for every old-house-wiring contract closed *during the operation of this campaign.* This bonus to be in addition to the regular salary of the salesmen.

The salesmen should be thoroughly trained in the method of estimating. With little experience they can estimate wiring, fixture and lamp jobs complete in a few minutes. With the system of estimating herein outlined, the salesmen need have no practical wiring experience.

111k. Method of Estimating. Following is given the method, used by the salesmen, in estimating the cost of wiring a home. (Refer to contract and specification forms, Figs. *23A* and *23B*):

1st. Under the "classification of work and material" (a form similar to that of Fig. 19c) and under the respective columns for center outlets, side outlets, etc., enter the proper number of outlets to be installed for each room.

2nd. Under the fixture column, enter the number of the fixture set or the numbers of the individual fixtures which the customer has selected and the cost thereof.

3rd. Under the lamp column, enter the number and the wattage of Mazda lamps which are necessary for each room and the price thereof.

4th. Total the number of outlets and multiply by the rate-per-outlet, as determined by the contractors.

5th. Add to this amount the cost of the hardware, such as baseboard receptacles, switches, drop cords, etc.

6th. Total the cost of wiring, hardware, fixtures and lamps, this total being the cost of the light installation. Divide this amount by 12, thus ascertaining the amount of the monthly payment which the customer will make.

111l. Relation of Advertising to Selling. The value of advertising in connection with the old-house wiring campaigns is usually exaggerated. Advertising alone, will not effect the desired results; advertising, plus sales-

manship is required. The prospect may be interested in the wiring of his home, may be sufficiently interested to send in an inquiry card requesting an estimate or the call of a salesman, but it is usually impossible to induce him, through advertising, to send in an *actual order* to go ahead and do the work. The services of a *salesman* are necessary to induce him to sign the contract.

First of all, the prospect wants to know the cost of the wiring and fixtures, whether it will be necessary to have a switch in a certain room, whether it is advisable to have a center or a side outlet in another room? It is impossible to answer such questions in advertisements. It is necessary for the salesman to call on the prospect and after surveying the conditions, then he can answer these questions and quote prices. Therefore, if the advertising is successful in this campaign in bringing in the *inquiries* of interested prospects, it is all that should be expected of it. After an inquiry has been received it is a question of salesmanship to close the deal.

111m. Future Campaigns. The names of inquiries which are used in this campaign should be used again next year in another house-wiring campaign. Every home remains a prospect for wiring until a contract covering it is signed. The campaign which is waged next year will have the advantage of having been preceded by the form letters and publicity of the present campaign.

111n. Houses Wired, not Using Current. An investigation in Dawson reveals that there are now about 350 houses which are wired for electricity, but for which current is not purchased of the Dawson Light & Power Company. There are probably two reasons why these people are not using electricity: *first* they believe the cost of current is prohibitive or *secondly*, their houses are not equipped with electric fixtures. The answer to the first objection is the low wattage Mazda lamp—which practically lowers the rates for electricity. The answer to the second objection, is the offering of the sets of electric fixtures on a time-payment basis.

This class of prospects can be very easily secured as customers. They have already made the large initial investment of wiring; hence it is only necessary to show them the economy of electric service with Mazda lamps, or the low price of and the easy payments by which they can purchase electric fixtures.

FORM OF CAMPAIGN

112a. It is recommended that the basis of this campaign be a series of direct-by-mail letters to people living in their own homes in Dawson. Supplementing these there should be advertising in the newspapers, street cars, moving picture theatres and in the company's show window. Recommendations relative to these advertising media are given later in this report.

As previously stated it is believed advisable, for the present, to confine your efforts to securing orders for wiring houses which are occupied by their owners and located on your existing distributing lines. However general publicity in the newspapers, moving picture theatres, etc., will cover the entire field of landlords, tenants and home owners.

Date.....

Prospect's Name and Address.

Dear Sir:– (*or Madam*)

Here is the greatest opportunity ever offered to the people of Dawson for equipping their homes with electric service.

Starting this week the cost of wiring has been greatly reduced. We have completed arrangements with local contractors whereby the work will be done at a very low figure.

More than this we will allow you twelve months to pay for the installation—in small monthly payments.

We will protect your interests in every manner possible by furnishing specifications under which the work will be done—specifications which assure you that your job will be executed in a thorough and workmanlike manner.

We will have the work installed complete, including wiring, fixtures and lamps, ready to turn on the current.

Think what this means in your home. You will have the cleanest, safest and best light known. There will be no damage to your woodwork or wall paper. And assuming that the complete installation costs you sixty dollars, you can pay for this in payments of only five dollars per month.

Won't you let us send our representative to give you an estimate of the cost of wiring your house? You are in no way obligating yourself by this request. We merely desire to acquaint you with the reasonable price of installing electric service in your home and of our easy terms of payment.

Please sign and mail us the enclosed card today.

Yours very truly,

DAWSON LIGHT AND POWER COMPANY

By.....

New Business Manager.

FIG. 23*C*.—Circular letter No. 1, to be multigraphed on central station letterheads.

The Dawson Light & Power Co.,
Dawson, Ohio.

Gentlemen:–

Please have your representative call and explain in detail your proposition for wiring our home for electric service. It is thoroughly understood that we do not obligate ourselves in any manner by this request.

Sign.....

Address.....

Time to call.....

FIG. 23*D*.—Postal card to be submitted with letters Nos. 1, 2, 3 and 4. (Reverse side of this card to be printed with the name and address of the Dawson Light & Power Company.)

112b. Prospect List. It is recommended that the prospect list to be used in this campaign consist of 2000 names of people in Dawson, living in their own homes and located on the existing distributing lines of the Dawson Light & Power Company. Home owners constitute the best class of prospects for house-wiring and the fact of their being on the existing distributing lines eliminates the expense of making line extensions to serve them.

Date.....

Prospect's Name and Address.

Dear Sir:- (or Madam)

Electricity will give you the best light known—it is the clean light—the pure air light—the healthful light—the convenient light and the safe light.

Its advantages are so many that no architect would think of designing a modern home without this necessity.

Your home is not wired and probably you have thought that the cost, the litter and dirt incident to the work, would not repay you for the convenience of electricity in the home.

This is a mistaken idea which we wish to correct.

This work is quickly and neatly done—done in two or three days, without injury to your woodwork or wall paper.

And the expense is spread out over a period of twelve monthly payments —probably amounting to only three or four dollars a month.

We want an opportunity of presenting our proposition to you—it won't cost you a cent to hear what we have to offer—and if you will sign and mail us the enclosed card today we will have our representative call on you.

May we hear from you?

Yours very truly,

THE DAWSON LIGHT AND POWER COMPANY.

By.....

New Business Manager.

FIG. 23*E*.—Circular letter No. 2, to be multigraphed on central station letterheads.

To obtain this list of 2000 names it is recommended that each of the five salesmen of the new business department be *required* to turn in daily on cards provided for this purpose the names of ten prospective customers. This will require only an hour each day for each salesman and is not likely to conflict with his regular work. On this basis it will require about a month and a half to obtain the prospect list.

Another plan, which might be used successfully in connection with the preparation of this prospect list is to hire school boys to furnish names for the

list, paying them on the basis of the number of names they turn in. If this is done, care must be exercised to be certain that the names are those of people who own their homes and that they are located on the existing distributing lines of the Dawson Light & Power Company.

112c. Campaign. The direct-by-mail advertising campaign is to comprise the following:

Date.....

Prospect's Name and Address.

Dear Sir: (or Madam)

Many of your neighbors have taken advantage of our offer to wire their homes for electric service—the modern light and the best light known.

Yet we have not been permitted to have our representative explain our proposition to you.

We feel confident that you want electric light in your home. And in view of the fact that the expense is really an investment, as in case of sale you can obtain more money for a wired house than for an unwired house, we feel that you should grant us this opportunity. The buyers of today are demanding that houses be wired for electric service.

We are offering to carry this investment for you—to string it out over a period of twelve months. In addition we are safe-guarding your interest by having the work done under strict specifications—something that has never been done in Dawson before.

In the home that is electrically equipped all of the electrical appliances may be used—the electric iron, vacuum cleaner, toasters, coffee percolators, etc.

The card, which we are enclosing, has the postage prepaid, and we hope that you will sign and mail it to us today without fail. You do not obligate yourself in any way by this request. It only means that our representative will call, and in a few minutes will give you an estimate of the cost of equipping your home for electric service.

Mail us the card today.

Yours very truly,

THE DAWSON LIGHT AND POWER COMPANY

By.....
New Business Manager.

FIG. 23*F*.—Circular letter No. 3, to be multigraphed on central station letterheads.

1st. Form letter, No. 1 (Fig. 23*C*) booklet *"Wiring a Home"* and return post card (Fig. 23*D*).

2nd. Form letter No. 2 (Fig. 23*E*), pamphlet *"Make the Old Home Bright"* and return post card (Fig. 23*D*).

3rd. Form letter No. 3 (Fig. 23*F*) and stamped return post card to be followed by:

4th. Call of central station salesmen on all inquirers.

5th. Call of salesmen on all names included in the prospect list, regardless of whether or not inquiry has been received.

6th. Mailing of letter, No. 4 (Fig. 23*G*) if so desired.

Date.....

Prospect's Name and Address.

Dear Sir: (or Madam)

On (date.....) our exceptional offer to wire your home at low cost and allow you twelve months to pay for the work will close.

After this date there will be absolutely no opportunity for you to take advantage of this liberal offer to install electric service.

Briefly, here is our proposition:

The work will be done at low cost—it will be done in two or three days after the signing of the contract—there will be no litter or annoyance to you—and when completed you have actually the best light known and can use any of the electrical appliances, such as a flat-iron, a washing machine or a vacuum cleaner.

More than this, we will string the payments out over a period of twelve months—small monthly payments of three or four dollars a month, depending upon the amount of your contract. We pay cash to the contractor doing the work and then allow you twelve months to return the money to us.

It is an exceptional opportunity. You know the advantages of electricity—its convenience, safety and cleanliness. And you know that it increases the value of your house in case of sale.

Over ..... Dawson families have taken advantage of this offer and you are not as yet, among this number. Some of these people are probably neighbors of yours.

Our offer absolutely closes (date.....).

It will not obligate you in any manner to find out how reasonable is the cost of wiring your home, and if you will sign and return the enclosed card we will be glad to have our representative call upon you. There is no obligation on your part, but you had better mail the card today in order to take advantage of our offer.

May we give you an estimate this week?

Yours very truly,

THE DAWSON LIGHT AND POWER COMPANY

By.....
New Business Manager.

(Enclose post card.)

FIG. 23*G*.—Circular letter No. 4, to be multigraphed on central station letterheads.

(The above letter may be sent out to the prospects, if so desired, after all inquiries have been taken care of. This letter tells the prospect that the liberal offer will close on a certain date, and that if he wishes to take advantage of your proposition he must do so at once. This letter is designed to bring in all inquiry cards of people who are interested and who have previously not replied to your letters.)

112d. Dates of Mailing. It is recommended that the campaign be inaugurated early in the Fall, preferably the first or middle of October, and that the letters follow one another at intervals of a week or ten days. The letters should be mailed the first of the week, preferably on Tuesday or Wednesday.

112e. Form of Letters. It is recommended that the letters be multigraphed on the stationery of the Dawson Light & Power Company. They should have the name and address of the prospect inserted by typewriter. The best results will probably be obtained, providing there are no multigraphing facilities in the office of the Dawson Company, if the entire job is delegated to a multigraphing firm in Dawson, where the work will be done under the direct supervision of the Dawson office. If this procedure is followed it will be only necessary to supply this firm with the stationery, the prospect list, the text for the letters and the postage. They will complete the job.

It is recommended that the letters used in this campaign be signed by some official of the Dawson central station, preferably Mr. Hearst, the New Business Manager. This signature can be reproduced by the multigraph. A plate can be made for this purpose. This will render it unnecessary to sign the letters by hand in ink.

Great care should be taken in the preparation of these letters to make certain that the name and address of each prospect is properly filled in, so that the letters will have the "personal" appearance, so desirable in direct-by-mail advertising. Wherever possible the letters should be addressed to the man of the house, rather than to the housewife.

112f. Subject Matter of Letters. The letters (Figs. 23*C* to 23*G*) used in this campaign should discuss principally the time-payment plan and the low price of wiring, supplemented by an outline of the general advantages of electric service in the home.

112g. Post Cards. The return post cards (Fig. 23*D*) enclosed with letters Nos. 1, 2 and 3 should be printed on stock of the same size as regular United States cards. The cards enclosed with letters Nos. 1 and 2 should be merely form cards with imprint "Place one cent stamp here." The card to be enclosed with letters Nos. 3 and 4 should have a one cent stamp affixed. It is deemed advisable to affix a one cent stamp to this last card, rather than use a standard United States post card, inasmuch as the stamp calls particular attention to the fact that the postage has been paid. As this is purely an inquiry-producing campaign everything should be so arranged that the prospect can with a minimum of effort send his inquiry to the station.

112h. Advertising Enclosures with Letters. The booklet "*Wiring a Home*" and the pamphlet "*Make the Old Home Bright,*" will be supplied gratis to the Dawson station, imprinted with its name, in such quantities as are desired. As soon as this campaign has been authorized, The National Lamp Works should be advised as to the exact imprint desired on this advertising matter as well as to the quantity that will be needed. At least 200 extra copies of each folder or pamphlet should be requested; these to be used for counter distribution from the display room. (This service is for National customers only.)

112i. Personal Follow-up by Salesmen. It is impossible to place too much stress upon the importance of the "follow-up" by the station salesmen after the inquiries have been received. Unless the inquiries are given imme-

diate attention the results of the campaign will be materially affected. The advertising material is merely for the purpose of creating an interest on the part of the prospect. If properly followed up by the salesmen, this interest may be developed into an actual order for house-wiring.

As previously suggested in addition to the following up of each inquiry, it is recommended that every prospect included in the mailing list receive a call by a central station salesman. The salesman will find that the prospective customers can be readily approached because of the fact that his call has been preceded by a series of interest-arousing letters and that the prospect will be more or less familiar with the salesman's proposition. In following up the inquiries, no delay should be permitted between the time of the receipt of the inquiry and the time that the salesman calls. This call should be made while interest is aroused and should not be postponed for two or three weeks.

112j. Newspaper Advertising. It is recommended that one advertisement appear each day during the operation of this campaign in all newspapers having a circulation in Dawson. Mr. Hearst's suggestion relative to publishing in the daily papers from day to day lists of people who have had their homes wired is thoroughly endorsed. Photographs might be taken, of some of these wired houses, and reproduced in the newspapers. This is a splendid method of producing local interest.

It is understood that considerable advertising relative to the advantages of electric service in the home has appeared in the Dawson local papers prior to the inauguration of this campaign. It is therefore assumed that the people are entirely familiar with the convenience, cleanliness and safety of electricity for illuminating purposes. Hence it is suggested that the copy for this finished-building wiring campaign treat principally of the low cost of wiring, the specifications and the time-payment proposition. These characteristics will prove a new and interesting feature.

112k. Moving Picture Theatre Advertising. It is recommended that slides be placed with some of the prominent moving picture theatres of Dawson. This is a very valuable supplementary method of advertising and it is thoroughly endorsed for use in this campaign. As in the newspaper advertising, slides may be used showing houses in Dawson that have recently been wired for electric service. Another thing that should be emphasized in lantern-slide advertising is that people should send requests for estimates of the cost of wiring their homes. It should be brought out that they do not obligate themselves in any way by making such a request.

112l. Street Car Advertising. During the operation of this campaign it is recommended that street car cards be placed in all street cars in Dawson. It would probably tend to create interest if a new card appeared every few days giving the number of houses which had been wired to date under the new plan. The cost of printing these cards will be small. Black lettering on white stock will suffice. The reading matter on car cards should be very brief and to the point.

112m. Window Display Advertising. The excellent show window of the Dawson Station's office should be used to the best advantage during the cam-

paign. As a suggestion for a window display: It might be of interest to introduce a guessing contest, the prize to be a vacuum cleaner, a washing machine or any of the other electrical appliances. The prize winner would be the person guessing nearest to the number of houses that will be wired during a certain period, the contest to be open until two weeks prior to the closing of the campaign. From day to day the number of houses wired could be indicated by a chart in the window representing a thermometer or a clock. Each day the chart should be set to indicate the number of contracts closed during the preceding day.

The contest should be confined to electric service customers. It should be so arranged that it will be necessary for each contestant to traverse the entire length of the display room to register his vote. This will necessitate his passing the many electrical consuming devices on display and will tend to familiarize him with the advantages of electric service. In a town the size of Dawson such a contest, if properly conducted, creates much local interest.

Placards outlining the low cost of wiring and the monthly payment plan should also be prominently displayed in the window. Other display cards should urge people to come inside and learn the details of the proposition.

CHAPTER VII

METHODS OF WIRING

GENERAL

113. Wiring for finished buildings can be classified into seven different methods as follows (the cost per outlet for each of these classes and the relative cost of each are given in the "*Cost*" chapter of this book): (1) Rigid Conduit, (2) Flexible Steel Conduit, (3) Flexible Steel Armored Conductor or Armored Cable, (4) Metal Molding, (5) Concealed Knob and Tube Work, (6) Wooden Molding, and (7) Open Wiring on Knobs and Cleats. Frequently two or more of these methods must be used in the same installation. Each of these methods, its adaptability and features involved in its installation, is discussed in paragraphs that follow.

113A. For more extended information regarding the different methods of wiring, details of the fittings used and pointers regarding manipulation, see the *American Electricians' Handbook.* It is not feasible to repeat here such data as affect the wiring of buildings under construction and that also affect the wiring of finished buildings. The wiring section of the handbook referred to above deals almost exclusively with the wiring of buildings under construction.

114. A cheap safe method of exposed wiring for finished buildings is yet to be developed in this country. All methods whereby the conductors are concealed are relatively expensive. There are a great many buildings—the smaller residences and stores—that offer, in the aggregate, a splendid load for the central stations. But there is no cheap exposed method approved by the Fire Underwriters in this country, that is safe and that also presents a good appearance, whereby these buildings can be wired. Exposed wiring on knobs and cleats is cheap and safe but is out of the running because of its unsightliness. Exposed

conduit wiring is quite expensive and would not look well in a residence. Wooden molding wiring is cheap and can be made to look quite well for small residence work but its application is restricted and its use is not permitted in certain municipalities: furthermore, it cannot be classed with the safest methods. Metal molding can be made to present a good appearance even in residences, but it is too expensive. In Europe (see **172** and paragraphs that follow), several cheap, slightly and apparently safe methods of exposed wiring for finished buildings have been developed and are widely applied. Many European central stations, through these methods of wiring, appear to be getting about all the load obtainable. Doubtless, similar methods will, ultimately, be developed in North America.

RIGID CONDUIT WIRING

115. Rigid Conduit Installations in Finished Buildings. The installation of conductors in rigid conduit provides decidedly the most expensive but the most satisfactory and safest method yet developed. A good rigid conduit installation is impervious to water. It is very difficult, however, to wire an old building throughout with rigid conduit without a great deal of cutting and disfigurement of walls and ceilings. Hence it is seldom that a finished building is wired by this method unless it is undergoing reconstruction and plasterers and other building-trades mechanics are available to assist the wireman to cut his race ways and outlets and to repair the openings that it is usually necessary for him to make. If flexible steel conduit is used in certain locations in combination with rigid conduit an installation almost as good results. Furthermore the cost is decreased, and the building is not noticeably disfigured. For this reason, where metallic conduit is mandatory for concealed work, as it is in some municipalities, Chicago and Denver for instance, the finished-building wiring installations usually combine rigid and flexible steel conduit.

116. Properties and dimensions of rigid conduit and conduit fittings and data covering its installation in buildings under construction are given in full in the *American Electricians' Handbook*. The tables and other information involved is too extended for inclusion here.