NATIONAL RECOVERY ADMINISTRATION

DIVISION OF REVIEW

E V I D E N C E S T U D Y

NO. 10

OF

THE ELECTRICAL CONTRACTING INDUSTRY

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THE EVIDENCE STUDY SERIES

The EVIDENCE STUDIES were originally planned as a means of gathering evidence bearing upon various legal issues which arose under the National Industrial Recovery Act.

These studies have value quite aside from the use for which they were originally intended. Accordingly, they are now made available for confidential use within the Division of Review, and for inclusion in Code Histories.

The full list of the Evidence Studies is as follows:

1. Automobile Manufacturing Ind.
2. Boot and Shoe Mfg. Ind.
3. Bottled Soft Drink Ind.
4. Builders' Supplies Ind.
5. Chemical Mfg. Ind.
6. Cigar Mfg. Industry
7. Construction Industry
8. Cotton Garment Industry
9. Dress Mfg. Ind.
10. Electrical Contracting Ind.
11. Electrical Mfg. Ind.
12. Fab. Metal Prod. Mfg., etc.
13. Fishery Industry
14. Furniture Mfg. Ind.
15. General Contractors Ind.
16. Graphic Arts Ind.
17. Gray Iron Foundry Ind.
18. Hosiery Ind.
19. Infant's & Children's Wear Ind.
20. Iron and Steel Ind.
21. Leather
22. Lumber & Timber Prod. Ind.
24. Mason Contractors Industry
24. Men's Clothing Industry
25. Motion Picture Industry
26. Motor Bus Mfg. Industry (Dropped)
27. Needlework Ind. of Puerto Rico
28. Painting & Paperhanging & Decorating
29. Photo Engraving Industry
30. Plumbing Contracting Industry
31. Retail Food (See No. 42)
32. Retail Lumber Industry
33. Retail Solid Fuel (Dropped)
34. Retail Trade Industry
35. Rubber Mfg. Ind.
3[illegible]. Rubber Tire Mfg. Ind.
37. Silk Textile Ind.
38. Structural Clay Products Ind.
3[illegible]. Throwing Industry
4[illegible]. Trucking Industry
41. Waste Materials Ind.
42. Wholesale & Retail Food Ind. (See No. 31)
43. Wholesale Fresh Fruit & Veg.

In addition to the studies brought to completion, certain materials have been assembled for other industries. These MATERIALS are included in the series and are also made available for confidential use within the Division of Review and for inclusion in Code Histories, as follows:

44. Wool Textile Industry
45. Automotive Parts & Equip. Ind.
46. Baking Industry
47. Canning Industry
48. Coat and Suit Ind.
49. Household Goods & Storage, etc. (Dropped)
50. Motor Vehicle Retailing Trade Ind.
51. Retail Tire & Battery Trade Ind.
52. Ship & Boat Bldg. & Repairing Ind.
53. Wholesaling or Distributing Trade

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ELECTRICAL CONTRACTING INDUSTRY

(A Division of the Construction Industry)

Foreword

The statistical data available for the Electrical Contracting Industry are rather limited, and should be considered largely in the nature of estimates rather than statements of fact. The discussion which accompanies each table in the study will serve to explain the defects in the data.

Three sources of information were used in the study; the Census report on the Construction Industry, 1929 (Electrical Sub-Contractors Group), Code Authority data, and two surveys (1929 and 1933(made by the Electrical Trade Publishing Company, an affiliate of the Electrical Contractors Association, which sponsored the Code. For all practical purposes the respective Code and Census classifications of the Industry are closely comparable.

Chapter I

THE NATURE OF THE INDUSTRY

Definition of Industry.

The Electrical Contracting Industry, a Division of the Construction Industry, is defined in the Code of Fair Competition for that Industry, approved April 19, 1934, Article I, as follows:

"The term 'Electrical Contracting Division' or 'this Division' as used herein is defined to mean the erecting, installing, altering, repairing, servicing, or maintaining electric wiring, devices, appliances, or equipment, including the purchasing from suppliers and the selling of manufactured parts and products incorporated in such installation, provided that:

"(a) The provisions of this Chapter shall not apply to work for telephone or telegraph service where such work is an integral part of the communication system owned and operated by a telephone or telegraph company in rendering its duly authorized service as a telephone and telegraph company.

"The provisions of this Chapter shall apply to the installing of telephone and telegraph cables and wires in raceways or conduits in buildings in the process of construction where, pursuant to existing or future agreements or understandings, such work is performed by others than telephone or telegraph operating companies.

"Should controversies arise as to whether or not such agreements or understandings exist such controversies shall be referred for decision to such board in the National Recovery Administration as may have been, or may be designated by the Administrator.

"(b) The provisions of this Chapter shall not apply to electrical work for the generation and primary distribution of electric current, or the secondary distribution system ahead of the meter, where such work is an integral part of the system owned and operated by an electric light and power company in rendering its duly authorized service, is done by such a company's own employees and/or is work on customer's premises necessary for the rendering of safe and continuous service, but the provisions of this Chapter shall apply to the installation, permanent alteration or repair, or maintenance of electric wiring, devices, appliances or equipment of private owners other than an electric light and power company not elsewhere excluded in this Section.

"(c) The provisions of this Chapter shall not apply to the sale or rental of electrical signalling apparatus or systems for protection against fire, burglary or robbery, or to the servicing of such signalling apparatus or systems, where such work is an integral part of such a system owned and serviced or maintained by an individual firm, corporation, or other form of enterprise engaged in such business.

"(d) The provisions of this Chapter shall not apply to manufacturing or assembling in the manufacturer's plant, nor to servicing or repairing of electrical apparatus, appliances or equipment by a manufacturer or by an electric repair shop, but the provisions of this Chapter shall apply to the installation of all new electrical work on the customer's premises not elsewhere excluded in this Section.

"An electric repair shop, for the purposes of this paragraph, shall mean an establishment engaged in the repairing, rewinding and reconditioning of motors, generators, transformers and other electrical apparatus.

"(e) The provisions of this Chapter shall not apply to the maintaining, servicing or repairing of existing installations of electric wiring, devices or equipment, or the moving and relocating of equipment within a plant or property, performed by an owner or tenant (not for hire), individually or with his permanent employee or employees for electrical maintenance work within his own property, but the provisions of this Chapter shall apply to the installation of all new electrical work not elsewhere excluded in this Section."

Number of Contractors

Trade Association Data. - According to data prepared by the Electrical Trade Publishing Company, the total number of Electrical Contractors in 1929 was 25,004. By 1933 this number had fallen to 17,002. (See Table I, below.)

The decline in the number of contractors is probably not so great as these figures suggest, for they are not strictly comparable. It is problematical whether the 1933 survey data adequately covered the smaller contractors. Due to the decrease in the volume of business, many contractors who in 1929 employed wage earners were, in 1933, performing practically all their work themselves, and many electricians who were formerly employed by electrical contractors had gone into business for themselves.

Code Authority Data. - These data, which show 27,379 electrical contractors in 1935 (14,247 registered and 13,132 unregistered), of which approximately 10,000 were inactive, appear to substantiate to some degree the data just cited for 1933. However, these data were also prepared by the Electrical Trade Publishing Company and were presumably compiled from the same records as were used for the 1929 and 1933 figures.

Census Data. - The Census of Construction figure showing 12,615 electrical contracting establishments in 1929 is considered low, due mainly to incomplete coverage among establishments, especially among the smaller ones.

Number of Contractors By Principal States

Table I shows the approximate number of Electrical Contractors in the ten leading states for 1929 and 1933, as compiled by the Electrical Trade Publishing Company. More than 60 per cent of all contractors were located in these ten states in each of the years shown.

TABLE I

Number of Electrical Contractors, by Principal States, 1929 and 1933

State	1929		1933	
	Number	Per Cent of Total	Number	Per Cent of Total
U. S. Total	25,004	100.0	17,002	100.0
California	1,645	6.6	1,118	6.5
Illinois	1,801	7.2	1,224	7.2
Massachusetts	1,429	5.7	971	5.7
Michigan	1,418	5.7	964	5.7
New Jersey	999	4.0	679	4.0
New York	3,303	13.2	2,246	13.2
Ohio	1,029	4.1	699	4.1
Pennsylvania	2,149	8.5	1,461	8.6
Texas	667	2.7	453	2.7
Wisconsin	1,066	4.3	725	4.3
Total, 10 states	15,506	62.0	10,540	62.0
Total, other states	9,498	38.0	6,462	38.0

Source: Electrical Trade Publishing Company, Electrical Contracting, February, 1931, and statistics presented at Code Hearing, January 22, 1934.

Size of Establishments

Table II shows establishments classified as to whether their dollar sales in 1929 were more or less than $25,000, according to Census of Construction data. Due to the incompleteness of the Census data, these figures can be considered as designating only roughly the proportion of the total number of establishments doing an indicated dollar volume of business in 1929. No comparable data are available for a subsequent period.

TABLE II

Number of Establishments and Value of Business, By Dollar Volume of Business per Establishment, 1929

Dollar Volume of Business per Establishment	Number of Establishments		Value of Business	
	Number	Per Cent of Total	Amount (000's)	Per Cent of Total
Total	12,615	100.0	$291,550 [a]	100.0
Less than $25,000	10,687	84.7	93,063 [a]	31.9
$25,000 and over	1,928	15..	198,487	68.1

Source: Census report, Construction Industry, 1929, "Electrical Subcontractors."

a/ Dollar volume of business of establishments in the "Less than $25,000 group" was estimated for each state on the basis of averages per establishment as developed from a smaller number of establishments which reported dollar volume.

Multi-Plant Operations

There are few instances in the Electrical Contracting Industry where more than one office or shop is permanently maintained by a member. The concern which is reputed to be the largest in the Industry maintains a regular office in four cities in four different states (New York, Chicago, Detroit, and Boston); and a few other concerns are known to have one or two branch offices, but the practice is not general.

Capital Investment

No statistics are available relating to the capital investment in the Electrical Contracting Industry. It is difficult to collect reliable data on this subject because of the large number of small concerns and single individuals engaged in the Industry, many of which have practically no capital invested.

Some indication of the capital investment may be obtained from the value of equipment reported by the Census of Construction for establishments whose dollar volume of business was $25,000 and over in 1929. The book value of equipment, as of December 31, 1929, for the 1,928 establishments whose dollar volume was $25,000 and over, amounted to approximately $5,241,000. These establishments also reported a volume of business of $198,487,000, thus indicating that they averaged sales of approximately $38.00 in 1929 for every dollar of equipment on hand at the end of the year.

Number of Failures.

No data are available on the number of failures in the Industry or the amount of liabilities involved.

Dollar Volume of Business Transacted

Code Authority Data. - There are no thoroughly reliable data on the dollar volume of business transacted in this Industry. Laurence W. Davis, Executive Director of the former Electrical Contractors Code Authority, has estimated the 1929 volume at $400,000,000, without, however, indicating the basis of this estimate.

Census Data. - The dollar volume of business estimated for the 12,615 establishments which reported in the Census of Construction, amounts to $231,570,000. This amount cannot be considered as representing the total volume of the Industry, due to the inadequate coverage of establishments by the Census.

Research and Planning Data. - From data collected by the Research and Planning Division relative to collective bargaining (area) agreements for this Industry, a volume of $6.14 per capita of population in 1929 has been obtained as applicable to urban communities. Arbitrarily selecting $2.00 per capita as reasonable for the small communities not classified as urban and for the strictly rural population, and applying these per capita figures to the respective urban and rural population as of 1930, we arrive at a total volume of business for 1929 of $ 71,000,000.

This figure is believed to be more nearly correct than the Code Authority estimate because the total annual wages which are derived from a volume of $650,000,000 by applying the ratio of wages to value of business, 1/ is sufficient to provide the 135,000 employees of the Industry (as estimated by the Code Authority and supported by other data) with an average annual wage, in 1929, of $1,826. A volume of $440,000,000, using the same ratio, yields an average wage of only $991, which is lower than it is reasonable to believe was received.

Competitive Industries

This Industry does not compete directly with other industries in the usual sense of the word. However, the Industry would find itself at times in contact with Industries such as the Railway Safety Appliance Industry, the members of which insisted that they do their own installation work. One such instance was in connection with the installation of safety appliances in the new New York Subway. When the jurisdiction dispute arose it was taken to the National Recovery Board which decided that the provisions of the Railway Safety Appliance Industry Code should govern, except as to a few minor details. Otherwise, the competition existing between electrical equipment and appliances is rather among manufacturers, wholesalers and retailers, than among contractors who make installations. There is a form of competition encountered by contractors, however, involving home owners, industrial and commercial establishments, and other groups which perform electrical work themselves or with their own employees. It was with the intention of restricting this practice that the Code for the Electrical Contracting Industry was designed to cover all installation work, with certain specific exceptions, so that contractors would be in a position to meet this competition.

Products of the Industry

There is practically no industry in the country which does not utilize the services of the Electrical Contracting Industry. Being a service industry it has no "products" except completed electrical installations.

1/ From Census of Construction data this ratio was found to be approximately 31 per cent for establishments reporting in the "over $5,000" group in 1929.

Chapter II

LABOR STATISTICS

Number of Employees

Code Authority Data. - Statistical data for the total number of wage earners in the Industry must also be based largely upon estimates. The former Code Authority estimated 125,000 wage earners in 1931. Rough checks on the relation of labor cost to the total value of product and membership records of the International Brotherhood of Electrical Workers seem to substantiate such a figure.

Census Data. - The Census of Construction, 1929, showed that the maximum number of wage earners employed in the Industry in any one month was approximately 28,400 for establishments whose volume of business was $25,000 and over. This figure is subject to the qualifications of the Census data as previously explained.

Seasonality of Employment

The available data on seasonal employment are limited to the Census of Construction data for 1929 on the number of wage earners in establishments whose volume of business was $25,000 and over. While there are definite limitations to the Census data for the purpose of showing Industry totals, comparisons between related parts of the same data are statistically sound. The relation of the number of wage earners in each of the months to the number in the maximum month, when generalized in the form of a "per cent of maximum month" (see column so headed in Table III), show the relative changes in number of wage earners which took place among the larger establishments in 1929.

TABLE III

Number of Wage Earners, by Months, in Establishments Whose Annual Volume of Business was $25,000 and Over, 1929 a/

Month	Number of Wage Earners a/	Per Cent of Maximum Month
Average	26,608	93.6
January	24,524	86.3
February	23,849	83.9
March	24,447	86.0
April	26,414	92.9
May	27,127	95.4
June	27,821	97.9
July	28,168	99.1
August	28,303	99.6
September	28,419	100.0
October	28,226	99.3
November	26,780	94.2
December	25,218	88.7

Source: Census report, Construction Industry, 1929, "Electrical Subcontractors."

a/ Number of wage earners for each month for the 1,928 establishments reporting an annual business of more than $25,000 were estimated from data furnished by 1,748 of these establishments. The figures represent the number employed on the 15th day of the month or the nearest representative day.

Estimated Total Annual Wages

The wages paid to wage earners in 1929 by establishments whose dollar volume was $25,000 and over, as reported in the Census of Construction, amounted to $61,683,000. By relating the above wages to the value of business of these establishments ($198,487,000) it is possible to estimate the total wage bill for the Industry, assuming that the NRA, Research and Planning Division estimate of $531,000,000 adequately measures the Industry's total value of production. On this basis, total wages in 1929 are estimated to have amounted to approximately $165,000,000.

Hourly Wage Rates

Prevailing hourly wages rates usually are not so reliable as average hourly earnings, because in arriving at an hourly wage rate representative of one city or a group of cities no consideration is given to the number of wage earners receiving the different wage rates. In the absence of any data on average hourly earnings, it is necessary, however, to use prevailing hourly wage rates. These rates are given for ten principal cities in Table IV.

TABLE IV

Prevailing Hourly Wage Rates of Electrical Workers
by Principal Cities

City	Prevailing Hourly Wage Rate			
	1929	1931	1933	1934
Average of 86 cities	$ 1.20	$ 1.25	$ 1.08	$ 1.09
San Francisco, Calif.	1.13	1.13	1.00	.95
Chicago, Ill.	1.63	1.70	1.50	1.50
Boston, Mass.	1.50	1.50	1.25	1.25
Detroit, Mich.	1.50	1.50	1.50	1.53
Jersey City, N. J.	1.63	1.81	1.81	1.50
Cleveland, Ohio	1.50	1.50	1.19	1.38
Philadelphia, Pa.	1.13	1.31	1.25	1.25
Dallas, Texas	1.13	1.38	1.38	1.38
Milwaukee, Wisc.	1.20	1.25	1.25	1.25
New York City	1.65	1.65	1.40	1.40
Average of above 10 cities	1.40	1.47	1.30	1.31
Average of other 76 cities	1.18	1.22	1.05	1.06

Source: Builders' Association annual report, "Wage Rates Per Hour for Building Trades in the Principal Cities."

Hours Worked

Because of the seasonal nature of employment in this Industry and the irregularity of employment even during the rush periods, it is impossible to secure data on the number of hours worked per week or the number of weeks worked per year.

From studies made by the Research and Planning Division, NRA, in connection with a number of collective bargaining agreements in this Industry, representing, in 1929, a volume of business of $75,720,000 and involving 14,839 employees, it is estimated that the average number of hours worked per year were as follows:

1929 - 1,057 (20.3 per week 1/)

1933 - 371 (7.13 per week 1/)

The figure for 1933 is based upon equal distribution of employment among all those who were employed in 1929. The actual number of hours worked by those who were employed in 1933 averaged considerably more than 371 since many employees were totally unemployed during that year.

1/ The total number of hours divided by 52.

Employees under 16 Years of Age

There is believed to be practically no employment of persons under the age of 16 in this Industry. Since more than 75 per cent of the wage earners are skilled workers, and the balance are apprentices or helpers who have some degree of skill, there is little opportunity for child labor to exist. The only work for which children could be used is office work and a small number of boys might be found on the clerical force as office boys.

Employment and Wages by Principal States

The only available statistics of employment and wages, by states, were those presented in the Census of Construction, 1929, for establishments whose dollar volume was $25,000 and over. Table V shows the proportion of total wage earners and of total wages paid among the larger establishments in the ten principal states during 1929. Data for subsequent years are not available.

Average wages derived from data in the following table are of no practical value except insofar as they represent the maximum which those particular employees averaged while in the employ of the reporting establishments. Because of the large turnover of labor in this Industry, and the fact that the wages of part-time employees cannot be separated from those of full-time employees, the number of employees reported on a given day of any month is not necessarily representative of the total number employed during the month. Furthermore, the maximum monthly figure reported during the year does not necessarily represent the total number of individuals employed and sharing in the total wage bill. Paradoxically, the maximum number of employees shown during the year merely represents the minimum number of individuals employed by the reporting firms.

TABLE V

Number of Wage Earners and Annual Wages Paid in Principal States for Establishments Whose Annual Volume of Business was $25,000 and Over, 1929

State	Number of Establishments	Maximum Number of Wage Earners Reported in any Month a/		Total Annual Wages Paid	
		Number	Per Cent of Total	Amount (000's)	Per Cent of Total
U. S. Total	1,928	28,419	100.0	$61,683	100.0
California	135	2,090	7.4	3,698	6.0
Illinois	180	3,860	13.6	9,333	15.1
Massachusetts	128	1,775	6.3	3,610	5.9
Michigan	109	2,080	7.3	3,917	6.3
New Jersey	35	823	2.9	1,836	3.0
New York	266	6,880	24.2	17,586	28.5
Ohio	119	1,455	5.1	2,813	4.6
Pennsylvania	140	2,200	7.8	3,949	6.4
Texas	65	826	2.9	1,425	2.3
Wisconsin	65	717	2.5	1,196	1.9
Total, 10 states	1,352	22,706	79.9	49,363	80.0
Total, other states	576	5,713	20.1	12,320	20.0

Source: Census report, Construction Industry, 1929, "Electrical Subcontractors."

a/ Maximum number of employees for the 1,928 establishments reporting an annual business of more than $25,000 was estimated from data furnished by 1,748 of these establishments, which show the number employed as of the 15th, or nearest representative day, of each month. The month of maximum employment was not the same in all states, due to varying seasonal conditions.

Cost of Labor as a Percentage of Value of Business

From the data supplied the Census by the 1,928 establishments reporting an annual volume fo $25,000 and over in 1929, the wage payments were found to constitute 31 per cent of the total value of work done. (See Table VIII below. While no specific data are available for subsequent years, it is the opinion of Laurence W. Davis of the former Electrical Contractors Code Authority, and of the Research and Planning Division, NRA, that there has not been any appreciable change in this relationship.

Chapter III

MATERIALS: RAW AND SEMI-PROCESSED

Principal Materials Used

All the materials used in the Electrical Contracting Industry are semi-processed in the sense that they are manufactured products used in the fabrication of complete electrical installations. Practically all the materials purchased, as reported by the Census of Construction, are included in the group of materials "Electrical Appliances and Supplies," which includes such items as wiring fixtures, lamps, telephones, radios, and annunciator systems.

Cost of Materials

The total cost of materials in the Industry in 1929 is estimated at approximately $838,000,000. This estimate was obtained by taking the ratio of cost of materials to value of business for the establishments with an annual volume of $25,000 and over (Census of Construction data), and applying this ratio to the ERA Research and Planning Division's estimated volume of $881,000,000 for the entire Industry.

Table VI shows expenditures by principal product groups for the establishments whose annual volume in 1929 was $25,000 and over. As already indicated the principal materials used were included in the "Electrical Appliances and Supplies" group, which accounted for 96 per cent of the cost of all materials purchased. No details are available, however, on a division of this group into individual products.

TABLE VI

Cost of Principal Materials, by Principal Product Groups, for Establishments Whose Annual Volume of Business Was $25,000 and Over, 1929 a/

Product Group	Cost of Materials a/ ($000's)	Per Cent of Total Cost of Materials
Total	$67,768	100.0
Electrical appliances and supplies	64,555	96.1
Heating and ventilating equipment	1,049	1.2
Pipe, cast iron, sheet and tube steel	947	1.1
Plumbing and gas fitting equipment	340	0.4
Wire cable, guards, and fencing	291	0.3
All others	786	0.9

Source: Census report, Construction Industry, 1929, "Electrical Sub-contractors."

a/ Not all the 1,928 establishments falling in the "$25,000 and over" group reported data showing the distribution of the total cost of materials among the various product groups. Those establishments which did report such data accounted for 98.6 per cent of the total cost of materials, and on the basis of these reports the breakdown for the entire 1,928 has been estimated.

Sources of Principal Materials

An approximate indication of the sources of the principal materials used by the Electrical Contracting Industry, and included in the "Electrical Appliances and Supplies" group, may be obtained by showing the distribution, by states, of the manufacture of similar products as indicated by the Census of Manufactures group, "Electrical Machinery, Apparatus, and Supplies." (See Table VII.)

There are, however, two factors which seriously limit the use of these data for this purpose. In the first place, the group of products used by this Industry is not so inclusive as the Census of Manufactures group of products with which it is most nearly comparable. In addition, the products actually used by this Industry account for only a relatively small proportion -- estimated at from 5 to 10 per cent -- of the total value of such products turned out.

TABLE VII

Value of Production of Electrical Machinery, Apparatus, and Supplies, by Principal States, 1929

State	Value of Products (000's)	Per Cent of Total
U. S. Total	$2,300,916	100.0
California	42,131	1.8
Illinois	435,022	18.9
Massachusetts	184,787	8.0
Michigan	62,394	2.7
New Jersey	292,786	12.7
New York	380,159	16.2
Ohio	264,360	11.5
Pennsylvania	347,141	15.1
Texas	917	0.1
Wisconsin	48,333	2.1
Total, 10 states	1,958,210	85.1
Total, other states	342,706	14.9

Source: Census of Manufactures, 1929, "Electrical Machinery, Apparatus, and Supplies." Data do not include establishments having an annual production of less than $5,000.

Purchases of Equipment

Equipment purchases reported to the Census of Construction by the 1,928 establishments whose annual volume of business was $25,000 or over in 1929 grossed $1,250,000. No statistics have been collected regarding equipment purchases in more recent years.

As will be noted from the inventory value of equipment reported by these 1,928 establishments, which was $5,241,000 at the end of 1929, equipment is not a major element of cost in this Industry. It consists mostly of hand tools such as pliers, screw drivers, saws, hammers, soldering irons, and the like. Some automotive equipment, battery charging apparatus, and other miscellaneous equipment is used by certain members of the Industry, but major items of machinery are not usually required.

Source of Equipment

The greater part of the equipment which is used in the Industry probably is purchased from dealers within the trade area of the user, and data bearing on the source of such equipment are not available.

Cost of Materials as a Percentage of Value of Business

Based on the Census of Construction reported from the 1,928 establishments in the"$25,000 and over" group which reported a total volume of business in 1929 of $198,487,000, cost of materials constituted 44 per cent of the value of construction work. (See Table VIII.) While no reliable statistics are available for more recent years, it is the opinion of Laurence W. Davis of the former Electrical Contractors Code Authority that the relationship between the respective costs of labor, materials, and overhead has not changed appreciably during the last six years.

TABLE VIII

Relationship of Total Labor Cost and Total Cost of Materials to Total Value of Business For Establishments Whose Annual Volume of Business Was $25,000 and Over, 1929

Item	Amount (000's)	Per Cent of Total Value of Business
Total Value of Business	$198,487	---
Total Wages Paid	61,683	31.1
Total Cost of Materials	87,768	44.2

Source: Census report, Construction Industry, 1929, "Electrical Subcontractors." Based upon data for 1,928 establishments.

Chapter IV

PRODUCTION AND DISTRIBUTION

Dollar Volume of Business by Principal States

In this Industry, "production" is represented by contracts made and performed and the best measure of "production" is therefore the dollar volume of these contracts.

The dollar volume of business, by states, for 1929 is presented in Table IX, and a percentage distribution is given in Table X. For allocating the volume of business to states, the Census Bureau used the post-office addresses of reporting establishments and the volume of business in any state consequently represents the amount of business of establishments whose business offices were located in that state, regardless of whether all their business was transacted in that state. (See also Table XI, below.)

Although the total volume of business as reported by the Census of Construction amounted to approximately only 55 per cent of the NRA, Research and Planning Division's estimate for the Industry, the relative proportion of the dollar volume transacted in the different states is believed to be representative of the Industry as a whole. The total value of business transacted by establishments whose volume was less than $25,000 in 1929 was estimated on the basis of averages per establishments, as developed from a sample number of establishments which reported such data.

The Electrical Contracting Industry, being highly decentralized, has no centers of activity other than those caused by concentration of population. The relative volume of work in various states roughly approximates the proportion of the population in those states, with the industrial states having a somewhat higher-than-average volume per capita, and agricultural states a lower one.

TABLE IX

Number of Establishments and Dollar Volume of Business, by Principal States, 1929.

State	Total		Establishments Reporting a Business of			
			Less than $25,000		$25,000 and Over	
	Number of Establishments	Value a/ (000's)	Number of Establishments	Value a/ of Business (000's)	Number of Establishments	Value of Business (000's)
U. S. Total	12,615	$291,550	10,687	$93,063	1,928	$198,487
California	1,129	24,380	934	8,953	195	15,427
Illinois	775	32,698	595	5,757	180	26,941
Massachusetts	954	17,147	826	6,848	128	10,299
Michigan	811	18,249	702	5,434	109	12,805
New Jersey	592	11,021	507	4,666	85	6,355
New York	1,747	59,661	1,481	12,064	266	47,597
Ohio	715	15,515	596	5,461	119	10,054
Pennsylvania	1,075	22,870	935	8,574	140	14,053
Texas	331	8,390	266	2,715	65	5,675
Wisconsin	432	7,928	367	3,186	65	4,742
Total, 10 states	8,561	217,809	7,209	63,659	1,352	153,948
Total, 39 other states	4,054	73,941	3,478	29,404	576	44,539

Source: Census report, Construction Industry, 1929, "Electrical Subcontractors."

a/ Dollar volume of business of establishments in the "Less than $25,000" group was estimated for each state on the basis of averages per establishment as developed from a smaller number of establishments which reported dollar volume.

TABLE X

Percentage Distribution of Number of Establishments and Dollar Volume of Business, by Principal States, 1929 a/

State	Total		Establishments Reporting a Business of			
			Less than $25,000		$25,000 and Over	
	Number of Establishments	Value of Business	Number of Establishments	Value of Business	Number of Establishments	Value of Business
U. S. Total	100.0	100.0	100.0	100.0	100.0	100.0
California	9.0	8.4	8.7	9.6	10.1	7.8
Illinois	8.1	11.2	5.6	6.2	9.3	13.6
Massachusetts	7.6	5.9	7.7	7.4	6.6	5.2
Michigan	6.4	6.2	6.6	5.8	5.6	6.4
New Jersey	4.7	3.8	4.7	5.0	4.4	3.2
New York	13.9	20.5	13.9	13.0	13.8	24.0
Ohio	5.7	5.3	5.6	5.9	6.2	5.1
Pennsylvania	8.5	7.7	8.8	9.2	7.3	7.1
Texas	2.6	2.9	2.5	2.9	3.4	2.8
Wisconsin	3.4	2.7	3.4	3.4	3.4	2.4
Total, 10 states	67.9	74.6	67.5	68.4	70.1	77.6
Total, other states	32.1	25.4	32.5	31.6	29.9	22.4

Source: Census report, Construction Industry, 1929, "Electrical Subcontractors."

a/ The basic data for which the percentage distribution is shown in this table are those presented in Table IX, just above.

Volume of Business Outside Home State

Data showing the amount of business transacted outside the home state during 1929, by establishments whose annual volume was $25,000 and over, are shown in Table XI.

Business transacted outside the home state, that is, outside the state wherein the home office of the contractor is located, consists generally of work done in adjacent states or work done by branches located in other states, but covered by the parent company's report. Since in this Industry the number of establishments having branches is small, work done under the latter arrangement is considered of minor importance for this Study.

TABLE XI

Volume of Business Transacted Outside Home State, by Establishments Whose Volume of Business was $25,000 and Over, by Principal States, 1929

State	Number of Establishments	Dollar Volume (000's) Total	In Home State	Outside Home State	Per Cent of Total Dollar Volume Outside Home State
U. S. Total	1,928	$198,487	$181,666	$16,821	8.5
California	195	15,427	15,251	176	1.1
Illinois	180	26,941	23,958	2,983	11.1
Massachusetts	128	10,299	9,280	1,019	9.9
Michigan	109	12,505	12,376	429	3.4
New Jersey	85	6,355	6,208	147	2.3
New York	266	47,397	41,233	6,364	13.4
Ohio	119	10,054	9,562	492	4.9
Pennsylvania	140	14,053	13,152	901	6.4
Texas	65	5,675	5,482	193	3.4
Wisconsin	65	4,742	4,634	108	2.3
Total, 10 states	1,352	153,948	141,136	12,812	8.3
Total, other states	576	44,539	40,530	4,009	9.0

Source: Census report, Construction Industry, 1929, "Electrical Subcontractors."

Productive Capacity

The productive capacity of the Industry is limited only by the man-power available. Since equipment and machinery, and consequently, capital, are not the important factors which they are in manufacturing industries, the capacity of the Electrical Contracting Industry is measured rather by the available labor supply. The Industry is capable of performing an annual volume far in excess of that performed in any past year, providing sufficient labor power is available.

Per Cent of Productive Capacity Utilized

Since the man-power which may be capable of performing the work of the Industry is not known, and productive capacity can therefore not be measured, the per cent of productive capacity utilized can not be stated. It will vary considerably from one locality to another, depending upon the character of the area, climate, and other factors.

Chapter V

TRADE PRACTICES

Unfair Trade Practices Prevalent Prior to Code

On March 18, 1931, members of the Electrical Contracting Industry met in Kansas City in a conference authorized by the Federal Trade Commission to discuss unfair trade practices and plans for their elimination. There resulted the following rules(Group I) which became legally binding upon the members of the Industry. 1/

"Group I"

"Rule 1. Wilfully inducing or attempting to induce the breach of existing contracts between competitors and their customers by any false or deceptive means whatsoever, or interfering with or obstructing the performance of any such contractual duties or services by any such means, with the purpose and effect of unduly hampering, injuring, or embarrassing competitors in their businesses, is an unfair trade practice.

"Rule 2. Wilfully enticing away the employees of competitors with the purpose and effect of unduly hampering, injuring, or embarrassing competitors in their businesses is an unfair trade practice.

"Rule 3. The defamation of competitors by falsely imputing to them dishonorable conduct, inability to perform contracts, questionable credit standing, or by other false representations, or the false disparagement of the grade or quality of their goods, with the tendency and capacity to mislead or deceive purchasers or prospective purchasers and the tendency to injuriously affect the business of such competitors, is an unfair trade practice.

"Rule 4. The selling of goods below cost with the intent and with the effect of injuring a competitor and where the effect may be to substantially lessen competition or tend to create a monopoly or to unreasonably restrain trade is an unfair trade practice.

"Rule 5. The practice of shipping or delivering products which do not conform to the samples submitted or representations made prior to securing the orders, without the consent of the purchasers to such substitutions, and with the effect of deceiving or misleading purchasers and the tendency to injuriously affect the business of competitors, is an unfair trade practice.

1/ Federal Trade Commission, Trade Practice Conferences(June 30, 1933), p. 106.

"Rule 6. The practice of using materials or methods of installation not in accordance with the applicable governmental laws, rules, and regulations obtaining in the territory affected, with the tendency to injuriously affect the business of competitors, is an unfair trade practice.

"Rule 7. The secret payment or allowance of rebates, refunds, commissions, or unearned discounts, whether in the form of money or otherwise, or secretly extending to certain purchasers special services or privileges not extended to all purchasers under like terms and conditions, with the intent and with the effect of injuring a competitor and where the effect may be to substantially lessen competition or tend to create a monopoly or to unreasonably restrain trade, is an unfair trade practice.

"Rule 8. For any person, firm, or corporation knowingly to aid or abet another in the use of unfair trade practices is an unfair trade practice."

Group II consists of rules condemning trade abuses, unethical and wasteful practices. 1/

Group II

1. The inducing or attempting to induce an architect, owner, or builder to reveal to any bidder on a competitive job information relative to bids already received -- which information would give the favored bidder an advantage in the preparation of his own bid.

2. To induce or attempt to induce an architect, owner, or builder to reveal to a bidder the amounts and conditions of any bid received on a competitive job, with a view to giving the favored concern an opportunity to meet or cut below the lowest bid, whether the favored concern was one of the original bidders or not.

3. To mislead or deceive any bidder as to the amounts and conditions of other bids or with any other false information for the purpose of inducing him to cut his own.

4. Surreptitiously obtaining information relative to competitors' bids in the preparation of one's own bids.

5. The making of fake or fictitious bids for the purpose of deceiving competitors and securing undue advantage.

6. It is a frequent practice for electrical contractors to submit bids to general contractors who in turn use the lowest acceptable price from the several trades in making up their bids on a general contract. Many general contractors after securing the general contract then reopen the bidding for the same operation, commonly known as 'shopping', which practice involves deception and misrepresentation lowering the standard and quality of electrical installation and building construction.

1/ For the full statement of which this is a paraphrasing, see Federal Trade Commission, Trade Practice Conferences (June 30, 1933), pp.106-107

Unfair Trade Practices Under the Code

To some extent the above practices continued under the Code, but representatives of the former Code Authority and of its New York City Administrative Committee have stated that there was a considerable improvement under the Code.

Unfair Trade Practices Which Have Become Detrimental

Those unfair trade practices which were most detrimental to the Industry in the opinion of such men as Laurence W. Davis, Executive Director of the former Code Authority, and Mr. Allan Coggeshall of Hatzel & Buehler, Inc., and Mr. J. G. Livingston, President of J. G. Livingston Company, both of New York, and representing two of the oldest electrical contracting firms in the country, have been: bid-shopping, bid-peddling, and price-cutting.

Spread of Unfair Trade Practices From One Area to Another

There are no known instances of a specific unfair trade practice originating in a particular area and spreading to others. Those practices which are prevalent have grown up within the Industry over a long period of time and can hardly be traced to any one region. They probably started in the larger cities where the competition has been the greatest, and it is there that they have continued to be most harmful.

Effect of Unfair Practices

The effect of all those practices which involve unfair bidding practices such as price-cutting, has been to reduce the profits of both those that resort to the unfair methods and all other contractors in the field, with the natural result of unsatisfactory work, poor materials, and the like.

Chapter VI

THE INDUSTRY - GENERAL INFORMATION

History of Industry

The Electrical Contracting Industry is hardly more than fifty years old, having had its beginning shortly after the invention of the electric lamp by Thomas Edison in 1878, and the erection of the first central power station in New York in 1882.

For a time practically all the installation work involved in the early domestic and industrial systems was performed by employees of the utility companies, but it was not long before individuals entered into the business of making electrical installations.

The growth of the Electrical Contracting Industry can be measured somewhat by the increase in electrical energy production, which amounted to 2,500,000,000 kilowatt hours in 1902, 1/ and by 1929 had risen to 90,084,000,000 kilowatt hours. 2/ Data collected by the Edison Electric Institute show that during this same period the number of wired homes multiplied 42 times until now over 70 per cent of all homes in the United States are wired.

No radical changes in methods employed by the Industry have been made since its inception. Such changes as have occurred in methods are the result of gradual improvement in technique, equipment, and materials. Since the Industry depends largely upon individual skill with hand tools, there has not been great opportunity for broad change in the method of operation.

Operations of the Industry

The operation of the Industry consists of the assembling and installation on the premises of customers of electric wiring, apparatus, or appliances, and the repairing and servicing of existing installations.

History of Trade Associations

The only national trade association in this Industry is the National Electrical Contractors' Association, with headquarters at 420 Lexington Avenue, New York City. This organization sponsored the Code for the Industry, and its General Manager, Laurence W. Davis held the office of Executive Director of the former Code Authority.

The Association was organized in 1901, with 47 charter members, and by 1920 had increased its membership to about 2,000. Due to the practice of dropping members who were delinquent in dues at the end of each year, the membership of the Association has been limited to those who were willing to take an active interest in the affairs of the Industry. In May, 1933, the rolls of the organization contained only 1,200 names, of whom nearly half would have been dropped at the end of the year for non-payment of dues

1/ Bureau of the Census.
2/ Edison Electric Institute.

except for the revived interest resulting from Code formulation. In January, 1934, the membership had increased to 2, 134, and in January, 1935, there were 2,836 dues-paying members.

History of Relationship Between Labor and Management

The International Brotherhood of Electrical Workers, organized in St. Louis in 1891, is the only national organization of workers in this Industry. It is the second largest union in the building trade, being exceeded in membership only by the Carpenters' Union. The growth in membership of the Brotherhood is shown in the following table:

TABLE XII

Membership in the International Brotherhood of Electrical Workers, for Selected Years, 1897-1934

Year	Membership
1897	1,700
1905	21,000
1915	30,000
1920	139,200
1925	142,000
1929	142,000
1933	94,100
1934	113,500

Source: For years 1897 to 1925 from W. Haber, Industrial Relations in the Building Industry (1930); 1929 data from Bureau of Labor Statistics, Handbook of American Trade Unions; 1933 and 1934 data as reported by the American Federation of Labor in its Reports of Proceedings of Annual Conventions.

Only about half of the present membership of the union is estimated to be engaged in the work of the Electrical Contracting Industry in the United States, the balance being either Canadian members, or linemen, cable splicers, power-house employees, telephone operators, and other groups whose work is outside the contracting field.

On January 26, 1920, after about two years of preliminary negotiations, a joint committee composed of five representatives from the International Brotherhood of Electrical Workers and five from the National Association of Electrical Contractors and Dealers 1/ met to formulate a plan to improve the relationship between employers and employees.

The result of this action was the organization of the "Council on Industrial Relations for the Electrical Construction Industry of the United States and Canada." In a pamphlet, the Second and Revised Edition of which

1/ Now known as the National Electrical Contractors' Association.

was authorized March 30, 1931, the Council explained its policy as differing from so-called arbitration boards, "in that it professes to be a court of justice and not merely a court of arbitration. It proceeds on the theory that arbitration involves compromise, which seems to mean in some minds adding up the claims on both sides of a dispute and dividing the sum by two, while judicial settlement involves the application of definite and certain principles without any accomodation between the parties."

While leaving the settlement of controversies to the local unions and contractors where possible, the Council undertakes the adjustment of disputes on appeal by these agencies. It is composed, as originally, of five members from each of the two participating organizations. These have equal vote, and there is no so-called "impartial" chairman. To be binding on the disputants, decisions of the Council must be unanimous, although in cases of disagreement the opinions of the majority and minority are made available for the guidance of the involved parties in future negotiations.

At the present time, only the union shop employers of the National Electrical Contractors' Association who are associated in a subsidiary organization known as the Electrical Guild of North America, participate in and support the Council.

It is difficult to describe the relations between employers and employees in the Industry as a whole, since they have not been uniform throughout the country. Each city or locality has had its special problems. In some regions relations have been cordial and in others, numerous disputes and strikes have occurred, but it is probable that, as in the case of some other building trades, there has been a greater degree of cooperation in this Industry than in industries outside the building trades. This is largely because of the fact that a great number of employers have been employees in the past, and, in many cases, continue to perform manual work under their employer status.

Financial Condition

The financial condition of the Industry is difficult to measure because of the great number of small units. There are no data available relating to net income, although the Census of Construction reports for 1,718 firms, whose gross volume of business in 1929 was $184,269,366, indicate a balance of $11,857,000 for miscellaneous items of overhead and profit after all major expenses have been paid. It is probable that this margin was considerably reduced during the years of the depression prior to NRA; and that some part of that loss has been restored as a result of provisions in the Electrical Contracting Industry Code, which prohibited selling below individual cost. However no data on this point are available for years subsequent to 1929.

Effect of Code

Because this Industry is so closely related to the Construction Industry as a whole, the Code had little effect on the volume of business which is largely dependent on the activity in the building field. The establishment of a minimum skilled wage rate, maximum hours of work, and other labor conditions, tended somewhat to stabilize working conditions in the Industry, and,

in the opinion of Laurence Davis of the former Code Authority, the trade practice provisions curtailed the price-cutting and other unfair practices which were prevalent before the Code was adopted.

Experts in the Industry

The following persons, all with long experience in the Industry, are familiar with conditions in the Industry and are known as experts:

Laurence W. Davis, Executive Director,
Former Electrical Contractors Code Authority,
420 Lexington Avenue, New York City

J. G. Livingston, President,
J. G. Livingston Company,
420 Lexington Avenue, New York City

John L. Flagg, President,
Watson-Flagg Engineering Corporation,
140 Cedar Street, New York City

M. H. Hedges, Director of Research,
International Brotherhood of Electrical Workers,
1200 15th Street, N. W., Washington, D. C.

L. K. Comstock, President, Council on Industrial Relations
for the Electrical Construction Industry,
71 Broadway, New York City