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# STONE & WEBSTER

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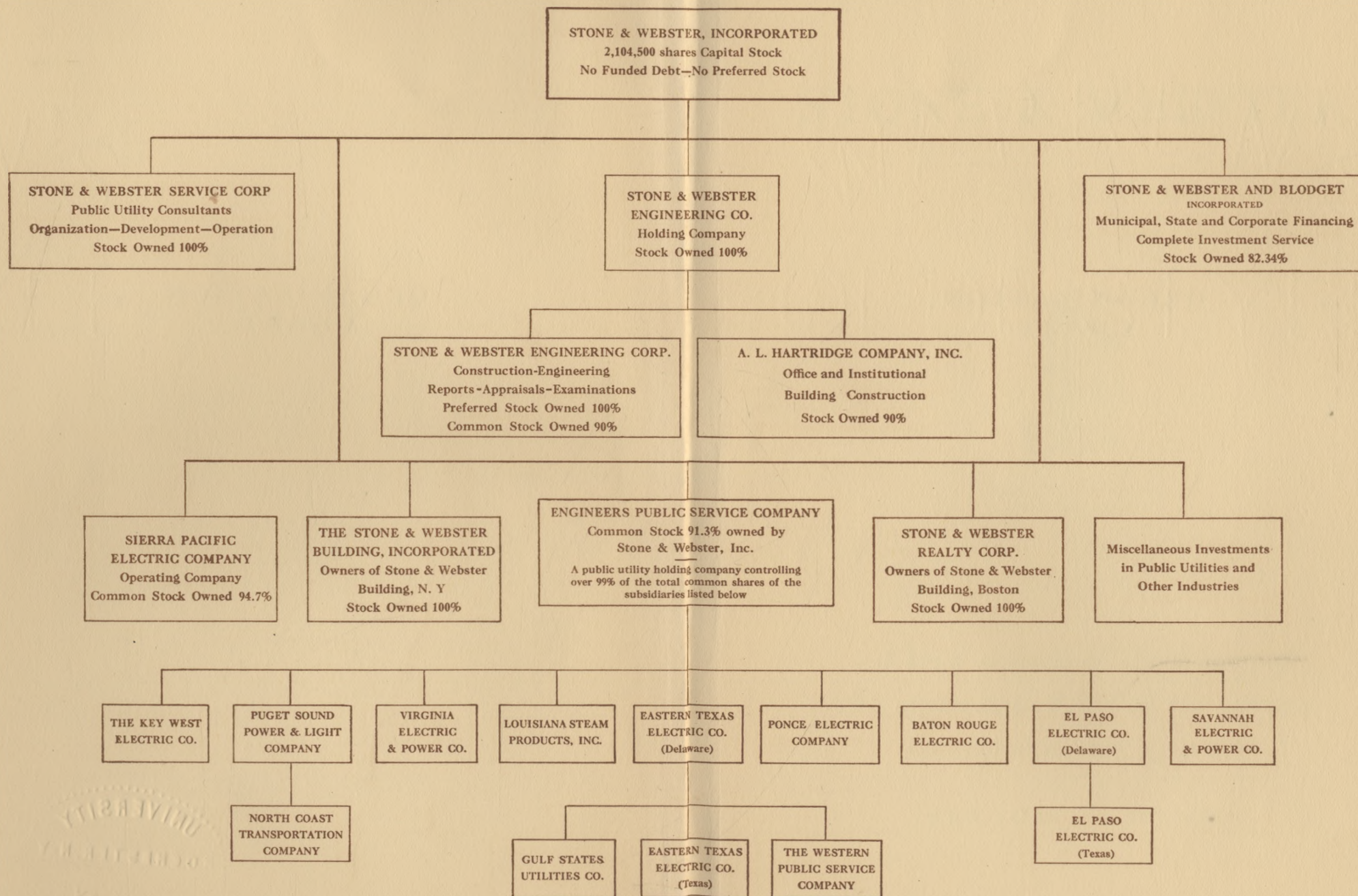
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ORGANIZATION  
CHART

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# THE STONE & WEBSTER ORGANIZATION

*A Chart Indicating Principal Corporate Activities and Relationships*



Stone & Webster Service Corporation, Stone & Webster and Blodget, Inc., Stone & Webster Engineering Company, and A. L. Hartridge Company, Inc., have only one class of stock outstanding and have no preferred stock and no funded debt.

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# STONE & WEBSTER, inc.

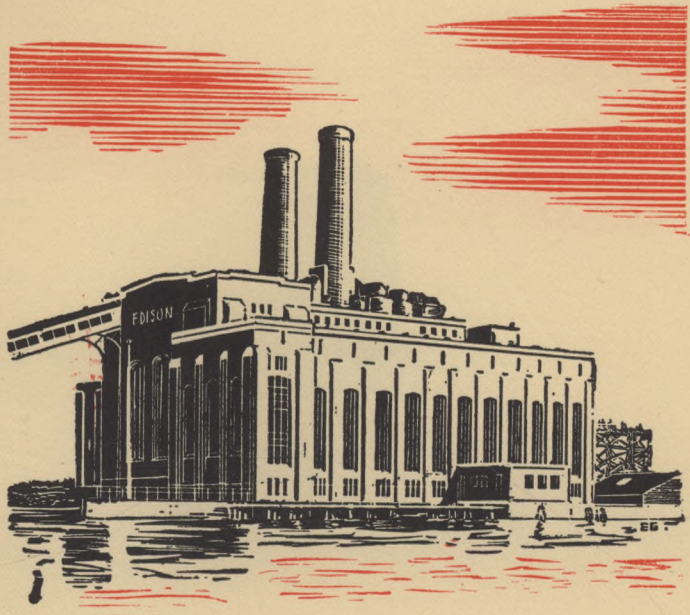


STONE & WEBSTER BUILDING  
90 Broad Street, New York

*A brief account of the history of  
this organization and of the services  
developed during 44 years*

NEW YORK • BOSTON

5/4/32



*Charles Leavitt Edgar Station  
The Edison Electric Illuminating Company of Boston  
Built by Stone & Webster  
Bigelow & Wadsworth, Consulting Architects  
158,000 kw. installed capacity  
The first commercial operation using steam at 1,200 lb. pressure*

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# STONE & WEBSTER

INCORPORATED

## DIRECTORS

CHARLES A. STONE, *Chairman*  
EDWIN S. WEBSTER, *Vice-Chairman*  
GEORGE O. MUHLFELD, *President*

HENRY G. BRADLEE	BAYARD F. POPE
F. HIGGINSON CABOT, Jr.	HERBERT L. PRATT
GEORGE H. CLIFFORD	RUSSELL ROBB
W. CAMERON FORBES	HENRY B. SAWYER
JOSEPH P. GRACE	WHITNEY STONE
HARRY H. HUNT	ROBERT H. VAN DEUSEN
CHARLES W. KELLOGG	ELIOT WADSWORTH
JAMES H. MANNING	EDWIN S. WEBSTER, Jr.
THOMAS N. PERKINS	ALBERT H. WIGGIN

## EXECUTIVE COMMITTEE

CHARLES A. STONE	
EDWIN S. WEBSTER	GEORGE O. MUHLFELD
JOSEPH P. GRACE	ELIOT WADSWORTH
THOMAS N. PERKINS	ALBERT H. WIGGIN

## EXECUTIVE OFFICERS

CHARLES A. STONE, *Chairman of Board of Directors*  
EDWIN S. WEBSTER, *Vice-Chairman of Board of Directors*  
GEORGE O. MUHLFELD, *President*

### *Vice-Presidents*

HENRY G. BRADLEE	JAMES H. MANNING
F. HIGGINSON CABOT, Jr.	GEORGE MIXTER
GEORGE H. CLIFFORD	BAYARD F. POPE
HARRY H. HUNT	RUSSELL ROBB

### WHITNEY STONE

HOWARD F. NEILL, *Treasurer*  
WILLIAM T. CRAWFORD, *Secretary*

• F O R E W O R D •

*I*n engineering, utility, and industrial developments of more than forty years, the Stone & Webster organization has played an important part. Assisting the enterprise of leaders of industry and finance through a conscientious study and active participation in the solution of many complicated business and engineering problems, this company has made its contribution to the strength and stability of the country.

Building upon the basis of broad and thorough engineering experience, Stone & Webster activities have gradually expanded beyond this technical field to include organization, supervision, and financing. Either a specialized or a comprehensive service may be rendered.

This publication describes the scope of the work with which Stone & Webster has been associated and indicates the services which a long experience has fitted it to perform.





**1890**

*The Saccarappa power plant of S. D. Warren  
Company where, in 1890, one of the country's  
early commercial hydroelectric installations was  
completed by Stone & Webster*

*The Story of*  
**STONE & WEBSTER**

**1888-1932**

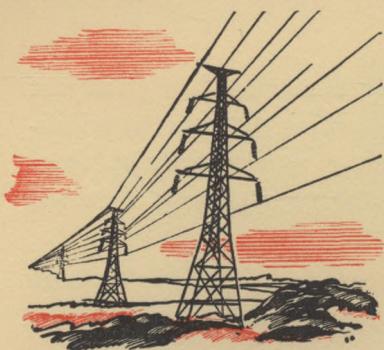
**I**N 1888 the electrical age was dawning. Electric lighting had just become a commercial achievement holding out great possibilities, a few electrically operated cars were in service, and the transmission of electric power over long distances was being discussed as a likely development in the near future.

It was in this year that Charles A. Stone and Edwin S. Webster graduated from Massachusetts Institute of Technology with one of the first classes in electrical engineering. Less than a year later, in 1889, they formed a partnership, Stone & Webster—consultants in electrical engineering.

The pure scientists knew what was then known about electricity, but as there were no commercial consulting engineers in the field, these young men were encouraged to fill this need by such leaders as Professor Charles R. Cross of the Massachusetts Institute of Technology and Professor Elihu Thomson of the Thomson-Houston Electric Company which was later merged with the General Electric Company.

One of the first undertakings of Stone & Webster was the installation of a direct current hydroelectric generating plant and transmission system for S. D. Warren Company, paper manufacturers. Although the power developed was only about 400 h. p. and the transmission distance slightly over a mile, this pioneering work proved the commercial possibility of the electrical transmission of power.

Shortly after the first plant had been completed, the Warren Company ordered another plant. Research had meanwhile demonstrated the advantages and possibilities of alternating current and had developed apparatus which made its use commercially practical. The second installation, therefore, made use of alternating current and included an 8,000 volt transmission line, one of the first 3-phase lines transmitting power at more than 2300 volts. It was also the first installation of the now famous Scott connection for transforming 3-phase to 2-phase and vice versa. These were the first installations of electrical transmission for commercial purposes in New England and among the first in America.



During these early years enthusiasm for electricity ran rampant. The Chicago World's Fair of 1893, with its bewildering variety of electrical exhibits, emphasized the fact that the electrical age had arrived.

Power and electric plants, telephone systems, traction lines, electrochemical works—hundreds of electrical projects had been rushed into existence in the hasty anticipation of a new golden era. Then came the panic. In the bitter light of the depression, many of these ventures proved to be unwisely conceived, poorly managed, and badly financed. Bankers, promoters, and equipment manufacturers were constantly calling for assistance and advice. The business of Stone & Webster expanded. An organization of experts was built up to report on properties, to aid in management and to assist in refinancing. In many instances, Stone & Webster went into every phase of the business, installing accounting methods as well as dynamos.

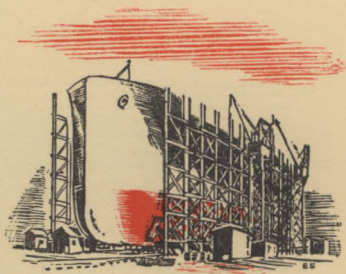
By 1898 conditions had substantially improved. Expansion programs took the place of salvage operations. A sounder, broader, and more experienced effort began to develop the electrical resources of the country upon rational lines. From this point, Stone & Webster, with the experience gained during the panic and later,

[ 8 ]

gradually took a more responsible part in the pioneering work. Activities were expanded to include a financial interest in the electrical properties in which experience indicated bright prospects for development based on sound engineering, skill in management and conservative financing.

The following decade saw a steady growth in the use of electricity over the entire country. Through training, experience, and organization, Stone & Webster was equal to the opportunities of the times. Among the accomplishments of this period were the development of the great Mississippi hydroelectric power at Keokuk, Iowa, to supply St. Louis with power, 150 miles away; the consolidation and expansion of the Puget Sound electrical properties, aiding the growth and prosperity of the entire Pacific Northwest; the creation of super-power systems by the design and construction of several of the early high head hydroelectric plants and of interconnecting long distance lines some of which transmitted power for the first time at 150,000 volts.

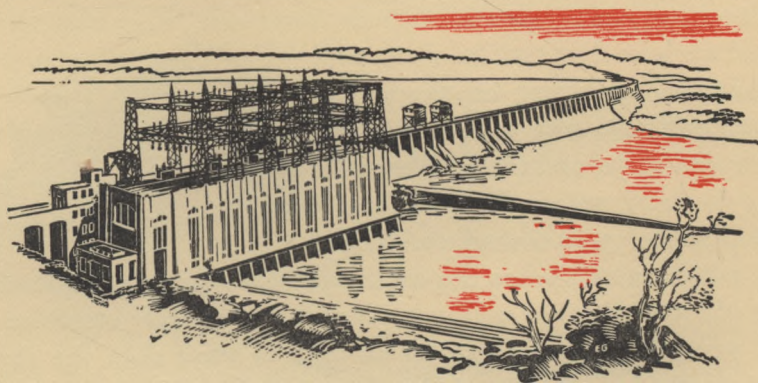
When the war emergency arose, the flexibility and strength of the mature organization were admirably shown. Cantonments, flying fields, arsenals, and other government undertakings were constructed at record speed. A major achievement was the construction for the American International Ship-building Corporation, of the Hog Island shipyard, the assembling of fabricated ships, and the building of a city with all modern facilities for a population of 35,000 workers. Ten and a half months after the construction of the yard began the first of 110 steel cargo ships was launched. The mere existence of this yard, which had a greater number of ways than the three largest shipyards in Great Britain combined, did much to discourage the enemy and to hearten the Allies. Operation records 5 years after the Armistice showed 97% of Hog Island ships in service as against an average of 21% for all government ships.



The experience gained by Stone & Webster during the war led to the broadening of all activities. Planning and construction of manufacturing plants of all kinds and of skyscraper buildings were undertaken. Financial and supervisory services were called into full play by the consolidation of properties and the formation of holding companies which characterized this period.

Pioneering, however, was not held in abeyance, for in 1927 Stone & Webster completed the Conowingo development on the Susquehanna River, which, with 7 water wheels of 54,000 h. p. each, produced the greatest horsepower developed in a single step up to that time, and, in 1930 and 1931, built the great Osage dam in the center of Missouri, creating an inland lake 129 miles long and with 1300 miles of shore line, to furnish power to St. Louis.

As accomplishments to date have far outrun previous expectations, so the future still holds forth opportunities for continued development. At present, the seasoned organization is performing services to American business such as have been rendered in the many periods of depression in the past. Reorganizing, integrating, modernizing, conserving—Stone & Webster's executives and engineers are continuing to play their part in the rehabilitation of American industries and in preparation for further growth.



*Conowingo Hydroelectric Development  
Philadelphia Electric Company  
Designed and built by Stone & Webster  
378,000 H. P. initial installed capacity*

# SOME FACTS ABOUT STONE & WEBSTER

Over \$7,000,000,000 of property appraised.

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In excess of \$1,000,000,000 of construction completed.

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75% of all construction has been for clients independent of the Stone & Webster organization.

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80% of construction work has been repeat orders.

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As a principal, has participated in underwriting over \$2,000,000,000 of security issues during the past five years.

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Security distribution since 1927 totals more than \$1,000,000,000 exclusive of wholesale and commission business.

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Over 3,200,000 h. p. of steam power designed and constructed, equivalent in capacity to about 10% of the nation's central station total.

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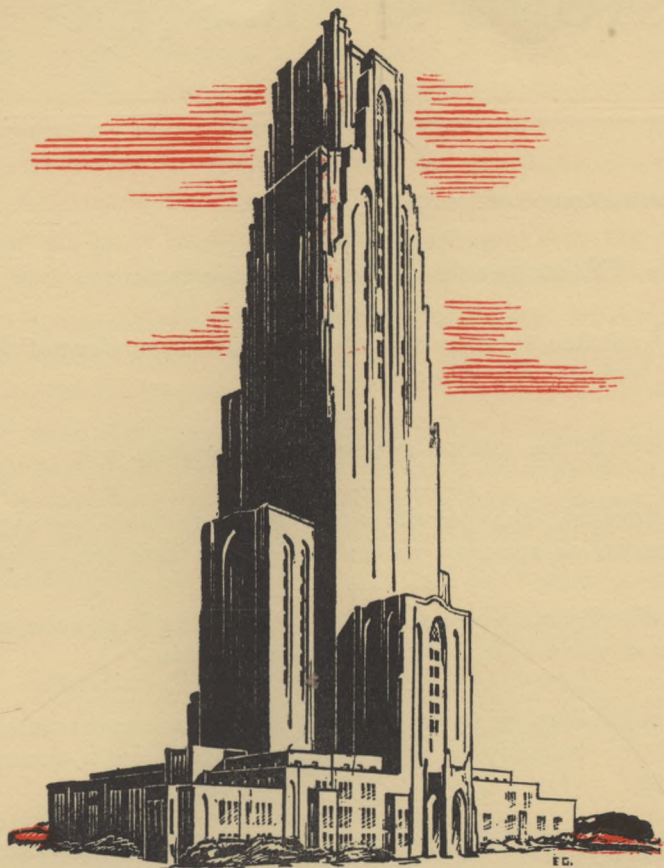
1,235,000 h. p. of hydroelectric power designed and constructed, representing approximately 8% of the nation's total.

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\$29,000,000 of equipment and material purchases supervised annually—an average figure for the last 10 years.

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Public utility supervisory services were established 39 years ago. Since then properties have been supervised in 29 States, Canada, Mexico and the West Indies.



*Cathedral of Learning*  
*University of Pittsburgh, Pittsburgh, Pa.*  
*Built by Stone & Webster. Charles Z. Klauder, Architect*  
*The 40-story structure provides complete university*  
*facilities in a single building*

# HOW STONE & WEBSTER SERVES

*To the business man of today—whenever he may be, the Stone & Webster organization can be a valuable assistant. In the next few pages are set forth many of the specific services which the organization has been successfully rendering. These services are in most cases much broader than can here be fully described. They may be called upon with the assurance that the service rendered will be carried through with Stone & Webster thoroughness.*

*Subject entirely to the client's request the Stone & Webster companies work singly or as a group offering a specialized or a comprehensive service.*

## *Bankers*

- *When Advancing Loans—Underwriting Securities*—or further investigating commitments already made, Stone & Webster may be called upon to make the necessary examinations and to prepare the desired reports. These may take the broadest form and may cover not only operating practices and valuation of assets, but also assist in effecting economies and making plans and readjustments to strengthen present positions.
- *In the Purchase, Sale or Merger* of a property, a Stone & Webster report is an additional safeguard to the interests of the various owners and security holders and a protection to the principals as well.
- *Default May Be Avoided* in many cases by effecting operating economies, disposing of unprofitable units, and conserving re-



## HOW STONE & WEBSTER SERVES

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sources as a result of an engineering and business survey of plant facilities, operations, and sources of earnings.

● *Where Overextended Credit* forces the banker to reconsider the value and liquidity of collateral, a Stone & Webster survey can assist in determining the best course to pursue. Such surveys in the past have included analysis of operating and holding company structures and attention has been given to methods of effecting operating economies. Our detailed knowledge of current operating practices is a particularly valuable and important supplement to the banker's broad acquaintance with business conditions.

● *Sound Operating Policies* for public utility properties may be established and administered by Stone & Webster supervision, which is based on a mature judgment resulting from 39 years of experience in this work. This organization now supervises for itself and for others the operation of utility companies widely distributed throughout the country.

### *Corporation Attorneys*

● *Reorganization Plans* based on a thorough knowledge of the engineering, business and financial aspects of the situation, can be expedited and soundly consummated by the use of a Stone & Webster study. Our men are available for expert opinion and testimony.

● *Rate Cases* involving public utility properties usually require an appraisal giving the value of physical properties and also the determination of going concern values, cost of financing and other overhead charges. Preparation of such data is based upon past experience, for in recent years Stone & Webster experts have appeared before Courts and Commissions as witnesses in more than 150 cases.

● *In the Acquisition—Consolidation—or Disposal* of properties the divergent viewpoints of the various parties at interest can fre-

## HOW STONE & WEBSTER SERVES

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quently be coordinated by an impartial report on the value of assets under consideration—goodwill values—the value of securities exchanged—the priority rights of the various stock, note, and bond holders.

- *Mortgage Indentures* frequently carry provisions which can only be satisfied by qualified engineering appraisal. Such appraisal is often necessary in connection with the issuance of additional bonds, property releases, maintenance certificates and other reports required by the terms of the indenture. Stone & Webster has had not only a broad experience in these technical studies, but also in the practical working of the legal provisions which may be incorporated in the mortgage and their effect upon the marketability of securities.

- *Trustees* with estate problems, including the investment of substantial funds, will find the Stone & Webster investment service a valuable aid.

### *Industrial Leaders*

- *Lower Production Costs* are often a result of rearrangement of manufacturing facilities following an engineering survey of your plant by Stone & Webster, either independently or in association with your plant superintendents. Output can frequently be increased in the same way without substantial capital expenditures. These studies by engineers of broad experience often effect savings in other ways, including cost of power whether purchased or supplied by your own station.

- *In the Modernization of Industry* this organization is taking an important part. The fresh viewpoint derived from our association with many advanced operating methods brings helpful suggestions to the man on the job.

## HOW STONE & WEBSTER SERVES

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- *Labor Markets, the Accessibility of Raw Materials* and transportation facilities are but a few of the determining factors in locating a plant. Stone & Webster has made many studies of this nature.
- *Net Income* of most large manufacturing companies today is augmented by the sale of by-products—the profitable disposal of waste materials. Many manufacturers, particularly in the chemical and oil fields, using steam for process work increase income by first using the needed process steam in the generation of electric power. Stone & Webster has actively participated in this development.
- *In the Expansion of Production* calling for additional facilities our qualified experts will design or participate with your own engineers in the designing of new plant and will undertake its construction, including the installation of equipment. This work, under our form of contract, will be carried out subject at all times to your direction.
- *In Raising New Money*, purchase of other interests, merger with another company, and redistribution of securities already outstanding to new markets, Stone & Webster, with many years of experience in corporate financing, can be of valuable assistance. For many corporations we have helped to determine and market the securities best suited to their needs, taking into consideration the proper time to finance, the price to be obtained, and the interest or dividend rate to be carried.

### *Institutions . . . Colleges . . . Hospitals*

- *Crowded Conditions* can frequently be overcome by remodeling and modernizing when budget limitations prohibit the construction of new buildings. Stone & Webster, working in close cooperation with the architects, offers an engineering and construc-

## HOW STONE & WEBSTER SERVES

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tion service and will see that the work is undertaken in steps which will conform to the funds available. Frequently, a preliminary report will indicate the way this can be accomplished and other advantages obtained, including: improved heating—air conditioning—modern sanitation—better illumination—increased mechanization of other facilities.

● *College Buildings, Hospitals, Stadia* and other institutional structures have been designed and built by Stone & Webster. Notable achievements in this field include the construction of the Massachusetts Institute of Technology, the Cathedral of Learning at the University of Pittsburgh, and the Bryn Mawr Hospital.

● *Endowment Funds* and their investment require studied consideration in view of changing financial conditions and trends in industry. Stone & Webster's complete investment service is of value to trustees in determining what securities are best suited for the investment of funds in hand.

### *Office Building and Apartment House Owners*

● *Economies Effected* under the Stone & Webster building contract are passed along to the owner. Savings are also effected by the large purchasing power represented by the total of the organization's activities. Stone & Webster acts as the owner's agent, assuring the completion of the project with the owner's interests at all times uppermost. Through careful coördination of effort, an enviable record for speed and thoroughness in all lines of construction has been attained. The organization provides a stability and further advantage through the availability, subject to call, of a larger and more experienced force of engineers than is usual on building operations.

### *Public Utility Executives*

● *Appraisal for Rate Purposes* is a field in which Stone & Webster experts have had broad experience. In recent years they have appeared as witnesses in over 150 cases before courts and commissions. The studies by this organization form a basis for determining reasonable gas and electric rates.

● *The Sound Financial Program* of a utility is assurance of its uninterrupted expansion through ability to take advantage of the natural growth of the territory served or of opportunities which may arise for acquisition of other properties. In such planning, and in the provision of funds through the broad distribution of securities, this organization performs a real service. In the consolidation of properties an appraisal of assets forms a sound basis for concluding a trade and a report on possible economies which may be effected provides a fair valuation of the new securities. The redistribution by this organization of outstanding securities to a larger number of holders is an important consideration in the stability of their market and the cost of new money.

● *Gross Earnings* are related to many operating problems which are constantly receiving our consideration. Among these are: the building of off-peak load—public relations problems—the development of domestic, commercial and industrial consumption through the adoption of various types of rates, including the domestic promotional form, and the stimulation of the use of gas and electric appliances.

● *Operating Results* can frequently be improved without great expenditure. An examination and report by engineers skilled in plant betterment work often results in lower operating costs or increased capacity for a relatively small outlay. Stone & Webster has been and is actively identified with the development of new

## HOW STONE & WEBSTER SERVES

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equipment to improve efficiency and of methods to realize economies in the utilization of labor and materials.

● *Expansion Programs* demand the location of the new transmission and distribution lines of your system so as to tap the sections where the greatest growth is assured. Stone & Webster has completed important studies of this nature for many of the large public utility companies. The purpose of these studies has been to determine how maximum business could be developed at minimum expenditure. The organization has also designed and constructed several of the country's largest and most important hydroelectric projects and central steam stations, distribution systems, substations, and many thousand miles of high-tension transmission lines. Here Stone & Webster's practical experience and group purchasing power are important considerations in keeping costs down.

● *Traction Problems* can only be solved by adapting every situation to changing conditions. Stone & Webster has made contributions to the evolution and coördination of urban transportation facilities to the benefit both of the public served and of the security holder.

### *Railroad Men*

● *Electrification Projects* are being given serious consideration. The benefits claimed include: lower cost of power—faster schedules—longer trains—greater traffic density over existing right of way—lower maintenance costs. A Stone & Webster report covering your road will help you to determine whether or not these benefits will be offset by adverse factors, such as interest on increased investment. If electrification has been decided upon, this organization's experience in electric and power station fields can be an important factor in helping you to determine the economic sound-

## HOW STONE & WEBSTER SERVES

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ness of building your own power station or purchasing power from others.

● *Modern Facilities*, including passenger and freight stations, terminals, and warehouses, frequently bring added gross and help improve operating ratio. These, as well as electrification projects with the necessary power facilities, Stone & Webster has designed and economically constructed.

● *Valuation of Terminals, Roadbed, rolling stock, and other physical properties* is important in rate base determination. It is also a necessary consideration for such purposes as purchase or sale, consolidation, financing, taxes, and insurance. Stone & Webster engineers have had broad appraisal experience and have often been called to give expert testimony before courts and commissions.

● *To New Financing and Refunding operations*, an organization which has had diversified experience in municipal, state, and corporate financing can bring fresh views. We will gladly work with you in determining the best type of security suited to your situation, considering general business and market conditions.

### *Receivers and Reorganization Committees*

● *In the Investigation and Appraisal of Assets* a Stone & Webster report is a valuable aid to the charting of future plans, for it carries with it broad experience in the related problems of engineering, business and finance.

A preliminary study frequently points the way in which excessive losses may be cut—efficiency improved—going concern value in-

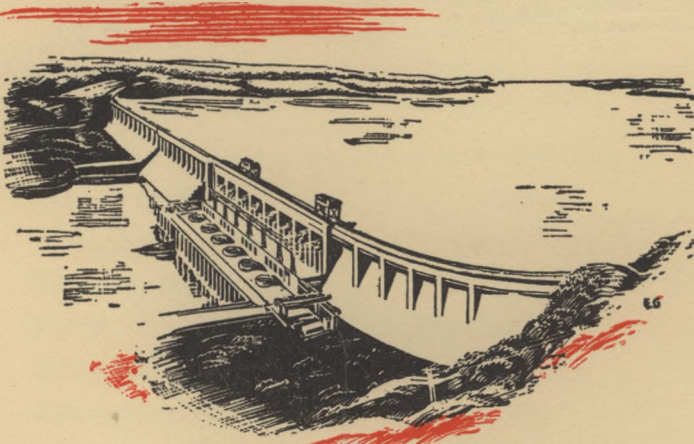
## HOW STONE & WEBSTER SERVES

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creased. The men assigned to such studies are staff engineers with a background of practical achievement in operating practice.

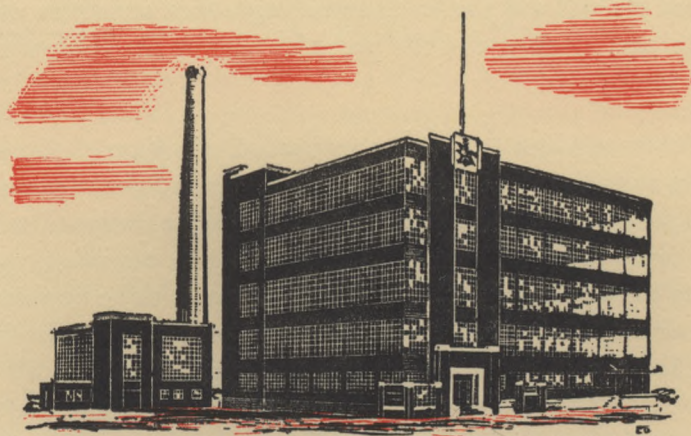
● *Final Reorganization* is dependent for its success not only upon the disposition of the unprofitable units and the retention of those showing promise—which our experts will help you to determine—but also upon a sound decision regarding the financial structure which can be supported by expected future earnings. If new capital is required we will aid you in determining which securities command the best market, and the probable cost to the company of the new money.

● *Liquidation* requires careful determination of values of physical properties as well as of patents and intangibles in light of present-day and probable future values. Our studies are designed to do this. If court review is necessary, our men give testimony with respect to the features studied. Among the assets to be liquidated may be security holdings in going concerns or subsidiaries. In their disposal Stone & Webster can be a valuable aid.



*Osage Hydroelectric Development in Missouri  
The Union Electric Light and Power Company  
Designed and built by Stone & Webster  
201,000 h. p. initial installed capacity*





*Yeast Manufacturing Plant, Old Bridge, N. J.  
Anheuser-Busch, Inc.  
Designed and built by Stone & Webster*

# VARIED FIELDS OF ACTIVITY

STONE & WEBSTER *has been called upon for financing, reports, appraisals, engineering and construction in such widely diversified fields as—*

Airports	Ice
Arsenals	Irrigation
Automobiles	Lamp works
Banks	Laundries
Boiler houses	Lead
Cable communication	Leather
Cement	Machine tools
Chemicals	Munitions
Coal	Office buildings
College buildings	Oil refineries
Electrical supplies	Paper
Farm machinery	Phonographs
Foods	Pipe lines
Gas distribution	Pottery
Gas manufacture	Radiators
Glass	Radio
Hospitals	Railroads
Hydroelectric plants	Rubber

Schools

Soap

Steam power plants

Steamship terminals

Steel

Stock yards

Telegraph

Telephone

Textiles

Tobacco

Traction

Transmission systems

Warehouses

Waterworks

Yeast

Zinc



*Locust Summit Central Breaker*  
*The Philadelphia and Reading Coal and Iron Company*  
*Designed and built by Stone & Webster*  
*The largest anthracite breaker in the world*

## MODERN PIONEERING

● *First Commercial Use of 1200 lb. Steam* was in 1925 at the Charles Leavitt Edgar Station designed and built by Stone & Webster for, and in collaboration with, the Edison Electric Illuminating Company of Boston. This pressure, three times greater than usual, introduced many new technical problems. The boiler drums, the first of their kind, were of one piece, hollow forged construction, four inches thick. On this installation the initial use was made of the X-ray in examining commercial steel castings for hidden flaws. The plant was among the very early steam electric stations to produce a kilowatt hour for less than one pound of coal.

● *First Commercial Mercury Boiler and Turbine* installation was in 1922 for the Hartford Electric Light Company. Collaborating with the client and with the General Electric Company, Stone & Webster participated actively as general engineers and constructors of this pioneer project and subsequent larger installation with a capacity of 22,000 kw. The lowest coal rate on record is attained in this station, the consumption of less than  $\frac{3}{4}$  of a pound of coal per kilowatt hour of energy.

● *First Use of Pulverized Coal* on a large scale was in 1917 at a station of the Puget Sound Power and Light Company. This permitted the efficient utilization of low-grade coals and is one of the numerous improvements Stone & Webster has sponsored in the field of combustion.

● *First Utilization of Oil Refinery Wastes* as a fuel in combination with a conventional base fuel in a large central power plant was in 1930 at Baton Rouge. This plant of Louisiana Steam Products, Inc., designed primarily to furnish steam for industrial purposes, is operated to meet the joint needs of a large industry and a utility system. It includes the largest pressure-reducing turbines in the country, totaling 45,000 kw., which take steam at 600 lbs. and exhaust salable steam at 135 lbs. pressure.

The required large amount of water is taken from the muddy Mississippi River and, before entering the boilers, is treated in one of the most complete feed water treating plants ever constructed.

● *First lightweight, one-man safety street car* was conceived, developed in association with the manufacturers, and put into practical operation by the Stone & Webster organization. The value of this contribution is evidenced by the fact that one half the cars now operated are of this type, and the annual operation expense saving approximates \$60,000,000, or more than 1% on the total investment in the industry.



*The two annual public utility awards by the CHARLES A. COFFIN FOUNDATION are the most important acknowledgment of achievement in the industry. Of the combined total of eighteen awards made since they were established nine years ago companies supervised or controlled by Stone & Webster have won five—two awards in electric transportation and three awards in electric light and power. These are “for distinguished contribution to the development of light and power (or transportation) for the convenience of the public and the benefit of the industry.”*

## STONE & WEBSTER ENGINEERING COMPANY

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### *Officers*

GEORGE O. MUHLFELD, New York, *Chairman of Board of Directors*  
JAMES H. MANNING, New York, *President*  
ROBERT E. HAMILTON, New York, *Vice-President*  
HOWARD F. NEILL, New York, *Treasurer*  
WILLIAM T. CRAWFORD, New York, *Secretary*

## STONE & WEBSTER ENGINEERING CORPORATION

---

### *Officers*

JAMES H. MANNING, New York, *Chairman of Board of Directors and President*  
FREDERIC N. BUSHNELL, Boston, *Vice-Chairman of Board of Directors*

### *Vice-Presidents*

CHARLES A. BIGELOW, New York	JOHN C. HAYS, New York
WILLIAM H. BLOOD, JR., Boston	JAMES H. HOOD, Boston
LOUIS H. G. BOUSCAREN, Chicago	WARREN B. HOPKINS, New York
JOSIAH W. BUZZELL, New York	WILLIAM L. LOCKE, Boston
GEORGE C. ENGLAND, Boston	JOHN R. LOTZ, New York
ROBERT E. HAMILTON, New York	WILLIAM MCCLELLAN, New York
ALFRED L. HARTRIDGE, New York	WILLIAM N. PATTEN, Boston
MILTON J. WHITSON, San Francisco	

CHARLES A. BIGELOW, New York, *Comptroller*  
FRANK A. STEVENS, New York, *Treasurer*  
WILLIAM T. CRAWFORD, New York, *Secretary*

## A. L. HARTRIDGE COMPANY, INCORPORATED

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### *Officers*

JAMES H. MANNING, New York, *Chairman of Board of Directors*  
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