ELECTRICAL SUPPLEMENT

REAL ESTATE RECORD AND BUILDERS GUIDE.

FOUNDED 1868. DEVOTED TO REAL ESTATE, BUILDING MANAGEMENT AND CONSTRUCTION IN GREATER NEW YORK AND VICINITY

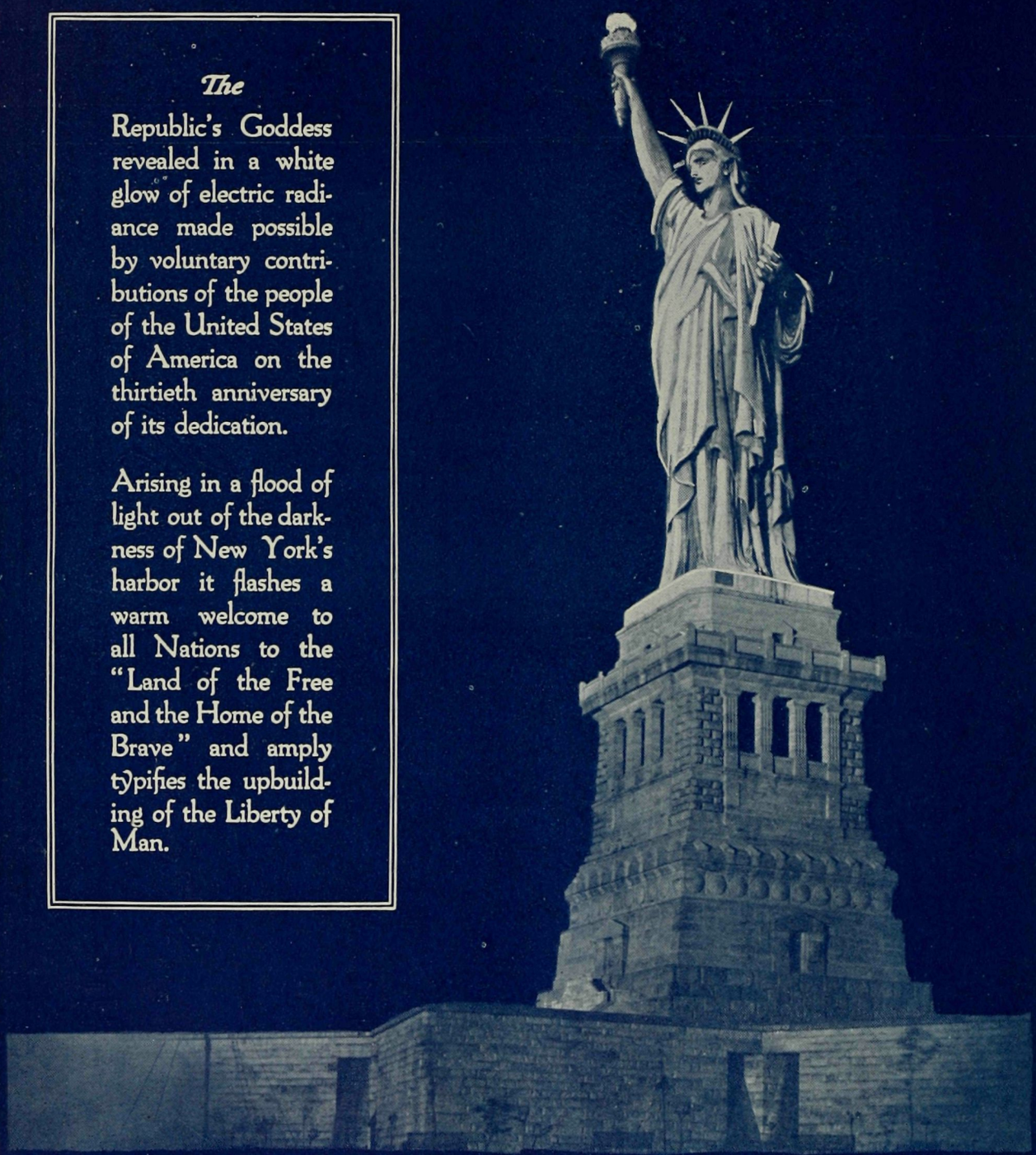
NEW YORK, DECEMBER 9, 1916

Liberty Enlightening the World

THIS INSTALLATION OF FLOOD LIGHTING OCCUPIES A PERMANENT PLACE AMONG THE WORLD'S MOST REMARKABLE ELECTRICAL ACHIEVEMENTS

The Republic's Goddess revealed in a white glow of electric radiance made possible by voluntary contributions of the people of the United States of America on the thirtieth anniversary of its dedication.

Arising in a flood of light out of the darkness of New York's harbor it flashes a warm welcome to all Nations to the "Land of the Free and the Home of the Brave" and amply typifies the upbuilding of the Liberty of Man.



The Entire Electric Lighting Equipment Installed by the

W. B. PERRY ELECTRIC CO.

BROOKLYN, N. Y.

REAL ESTATE RECORD AND BUILDERS GUIDE.

NEW YORK, DECEMBER 9, 1916

PROGRESS IN ELECTRIC LIGHTING WHICH THE STATUE OF LIBERTY HAS WITNESSED

By ROBERT A. JONES

THE Statue of Liberty is a token of the friendship and sympathy of the French Republic for her sister Republic, the United States. It was felt in France that an emblem of the ideals of democracy which inspired the two republics would be an appropriate gift on the one hundredth anniversary of the Declaration of Independence of the United States in 1876.

The celebrated artist, Bartholdi, conceived the idea of a colossal statue of "Liberty Enlightening the World" as a fitting memorial of the fraternal feeling between the two republics. In 1874 the French-American Union was formed in France, having for its object the construction of such a statue.

In spite of the fact that France was suffering from the effects of an invasion and had been bled by the payment of an indemnity of five billion francs—the largest indemnity which had ever been levied upon any country—the sum necessary for the construction of this statue was raised by popular subscription.

The arm and torch of this great statue were exhibited at the Centennial Exposition in Philadelphia, 1876. It was at this Exposition that Bell first exhibited his telephone.

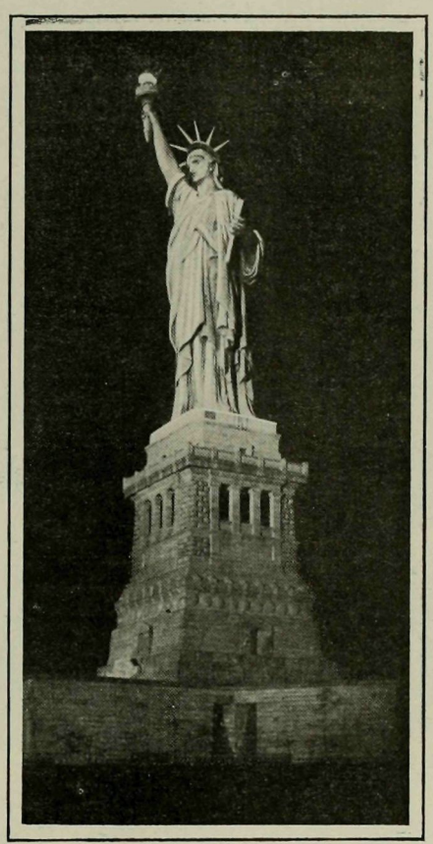
The Statue was not completed until 1880, or just about the time that Edison invented the incandescent electric lamp. At this time New York, as well as the other cities of the world, was lighted by oil and gas, and electric arc lamps were being first considered for street lighting.

The statue of Liberty was formally presented to the United States on July 4th, 1884, and accepted by the American Ambassador at Paris, Levi P. Morton. The statue was brought over to this country in 1885 and erected on Bedloe's Island in New York Harbor in 1886.. The development of electric lighting in New York at this time is well illustrated by an article in the New York Tribune—September, 1886—in which attention is called to the wonderful development in this city of "the electric light, which only six years ago was an untried fancy in the brain of two or three inventors."

The article gives a significant collection of figures on the progress of electric lighting, which had (in 1886) grown in six years from nothing to an industry in which more than one hundred million dollars were invested. Compare this "wonderful progress" with the growth of the industry since that time. The amount invested in the electrical industry in this country alone is now over eight billion dollars, or more than eight hundred times the amount invested thirty years ago.

"It seems like going back a long distance," the Tribune said in 1886, "to the time when there was nothing but gas lamps all over the city, yet only six years ago the City Fathers turned a deaf ear to all appeals to have the new lamp tried. Coming down to the present time (1886), with thirty miles of streets lighted by 708 arc lamps, the Common Council has no scruples about using the new method of lighting. That enterprising body has already passed a resolution requesting 2,000 new arc lamps to be installed as far north as 125th Street."

Compare the 708 arc lamps in use in 1886 with the 66,000 electric lamps used for street lighting in 1916. Electric arc lamps were largely used for street lighting in New York until the present year, but they have been entirely superseded by the more efficient incandescent lamps.



STATUE OF LIBERTY ILLUMINATED.

The proper lighting of the statue itself was considered quite a problem at the time it was erected. The following is taken from an account of the dedication of the statue and a description of it published at that time:

> "One of the most interesting questions in connection with the statue has been the method of lighting it. Almost from the inception it was realized that only electricity would be equal to the task, but just how to apply and utilize the light was not very clear. The conditions involved in lighting the Statue of Liberty are of a most unusual nature. Two features have to be borne in mind; one, the need of illuminating the statue as a whole, and the other that of using the torch in some way as a beacon light."

Finally it was decided to install a plant in the base of the statue and to place five 500-candlepower lamps about the base of the statue and ten 500-candlepower lights in the torch. The same "unusual conditions" are involved in lighting the statue now—but how different is the solution of the problem to-day! The present system of lighting the statue, which at President Wilson's signal on the evening of December 2nd bathed the statue in a radiant flood of light and started the National Celebration of America's Electrical Week, uses two hundred and thirty-four lamps, each of more than four hundred candlepower.

But the effectiveness of this light is increased so enormously by the use of projectors that the quantity of light which the statue receives is very much more than would be indicated by the increased number of lamps, and is equivalent to millions of candlepower.

The original lighting system was supplied by a generator driven by a 50-horsepower engine. The new system is connected by cables laid across the bottom of the harbor and bringing the electric energy for the new system of lighting from the lines of the Public Service Company of New Jersey, which are connected to generators with a total capacity of 295,000 horsepower.

But let Liberty tell her own story of the progress which she has seen in the thirty years in which she has stood in the gateway of the Western Hemisphere to welcome the hordes of immigrants who have come to this country seeking liberty and an opportunity to take a place in the world's activities.

"I have seen the city at whose gateway I stand double in population, and have seen the development of an electric railroad system which carries over two billion passengers each year. Tunnels which could never have been operated without the development of the electric locomotive have been bored under the rivers so that some of these passengers might be carried more rapidly and safely.

"I have seen the tonnage of the passing steamers increase from 14,500 tons to over 50,000 tons and have watched each year the brightening of their lights. When I first began my watch over the harbor the air was quiet, for then the news was carried by submarine cables and by the passing ships, but now I hear the daily report of the events of the whole world as they are sent through the air by the wireless instruments which I have seen developed.

"I have watched the growth of the battleships whose guns have increased in power each year until they have become the terrible engines of destruction which, loaded, pointed and fired by electricity, roared their salute to the President when my new system of lighting was dedicated.

"I have watched the development of the aeroplane, one of which circled overhead with its message of Liberty outlined with electric lamps, and I know that the electric spark has made possible the development of the driving motor.

"I have seen the changes in the lighting of the streets along which the President was carried in his electric car after the ceremonies in the harbor. First the streets were dimly lighted with a few gas lamps, then electric arc lamps were used and now the incandescent lamps of the same type as those installed about my pedestal are used.

"The generating capacity of the central stations supplying energy for these lights in the Metropolitan District has increased from less than 1,000 horsepower in 1886 to more than 2,000,000 horsepower to-day, and in the same time the total number of these stations in the United States has increased to over five thousand."

The illumination of the statue is a wonderful illustration of flood lighting. Engineers from the General Electric and the Government spent many weeks in its planning, while the entire electrical system was installed by the W. B. Perry Electric Company, of Brooklyn.

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GENERAL ELECTRIC COMPANY

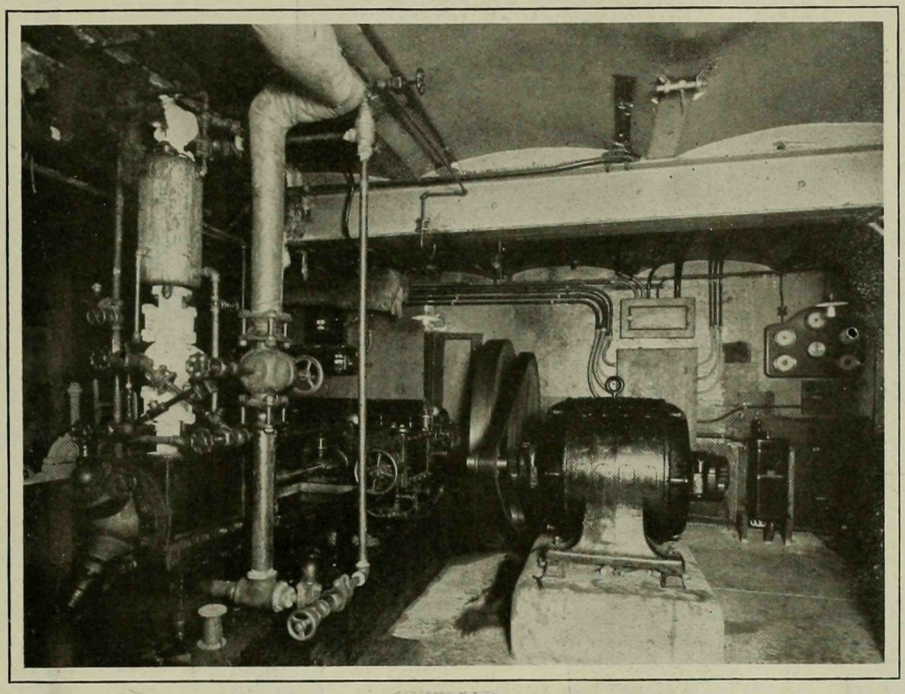
SCHENECTADY, NEW YORK SALES OFFICES IN PRINCIPAL CITIES

THE USE OF ELECTRICITY IN MODERN BUILDINGS

Refinement in Installation Demanded by Public Educated to the Devices of Labor Saving and Economy

By A. F. BERRY, United Electric Light and Power Co.

ALTHOUGH electricity is not yet the exclusive illuminant, it may safely be said that those structures lacking electric light and power facilities cannot be called modern. The desirability of installing electric service for light and power ceased to be a debatable point some years ago. The present question deals with the refinement in installation demanded by a public educated to the devices of labor saving and economy. This statement applies to the loft and office buildings, as well as to apartment houses. It has been our experience that the owners, architects and builders are eager to install apparatus of the most improved type and to the maximum extent consistent with reasonable investment. We have found that the suggestions of our representatives, trained by experience, are welcomed and often incorporated in the plans because of practical value. The underlying and guiding spirit of such a service on the part of this company is the desire to further progress in the applications of electricity, both for household and commercial use. This view is generally accepted by the many workers in the various lines of the electrical industry, without imputation of selfish motive. All strive and co-operate to make "Electricity—The Modern Servant."



REFRIGERATION PLANT WHICH SUPPLANTED BOILER ROOM.

An inspection of a number of recently erected apartment houses shows many features of progress. The lighting of halls and rooms departs from the conventional method used hitherto, in that the sources of lighting are not concentrated in the center of the rooms, but are distributed around the walls in a number of small individual units. This treatment removes the glare which has often aroused objection, particularly with the strong light from high intensity lamps.

For the past several years the use of the indirect and semi-indirect methods of light have been installed in the modern high class apartments—the object being to thoroughly diffuse the light from the lamp, that an even illumination might be obtained in the room, and what is also important—that the filaments might not be visible to the occupant.

The liberal distribution of chair rail or base board outlets for portable lamps, electric fans and other electrical appliances is very popular. A few specific instances may be of interest. Wall outlets in the bathroom are very handy for the use of curling irons, immersion heaters, radiators, or other devices used for toilet or medicinal use. Side wall outlets in the kitchen enabling the electric iron to be used independently of the lighting fixtures are essential, and an innovation instantly popular is the placing of a lamp in the hood of the range to prevent scorched food or burned fingers. Not a few apartment kitchens are equipped with small electric grills suitable for a wide range of cooking requirements, in fact a number of electric ranges have been installed and the complete equipping of several buildings of studio apartments is being seriously considered.

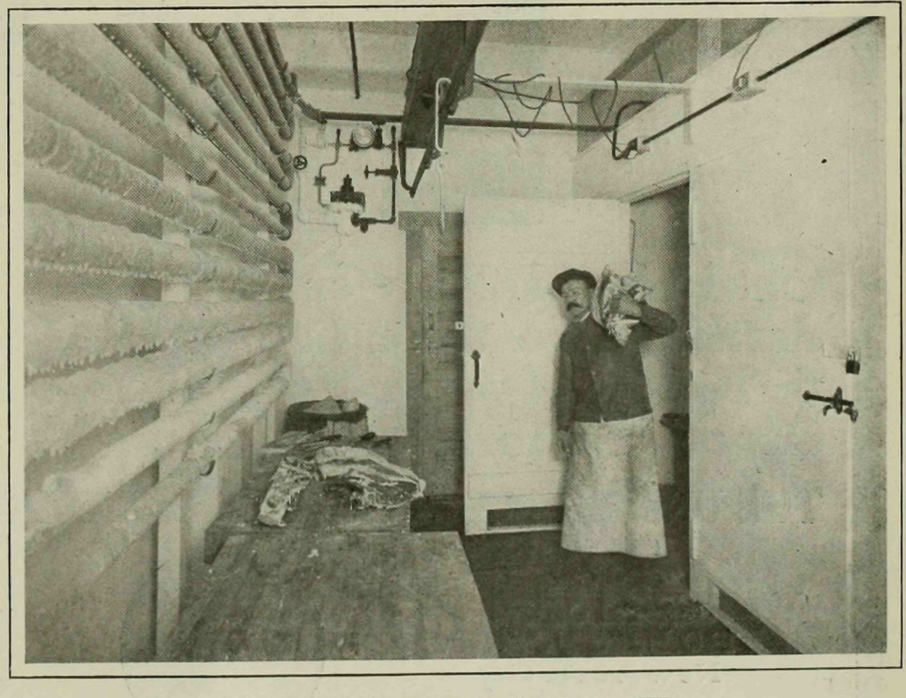
No mention of the subject of electric outlets should be made without laying particular stress upon the necessity of providing center floor outlets, conveniently located baseboard outlets in the dining room to permit convenient use of electrical table appliances, as the presence of only a semi-indirect lighting fixture renders their use impossible unless outlets of the types mentioned are subsequently installed.

The most recent innovations provide private laundries in basement or roof for each tenant, with proper facilities for washing machines, mangles, clothes dryers and irons, current used for any of these purposes being recorded on the tenant's meter. Following this line of thought, pent houses for servants' quarters are equipped with lock sockets to limit the current consuming tendencies of the maid.

The furnishing of refrigeration from a central plant operated by electric motor is being generally introduced and proving satisfactory because of the automatic control to start and stop the motor according to the demand for refrigeration.

It is only in the older buildings that we are confronted with the sight of a mass of electric cables running up to the different lofts to take care of light and power requirements. The owners of recently constructed buildings appreciate that it pays to offer the incoming tenants buildings liberally wired for electricity. Outlets liberally provided and conveniently located eliminate the necessity of damage and defacement to the buildings, as well as rendering the subsequent wiring by the tenants unnecessary. Many office buildings are installing special risers and outlets for the business appliances, such as adding machines, dictaphones, mailing, addressing and other business aids. Along this line may be mentioned the requirements of the X-ray machines and apparatus used by doctors, dentists and chiropodists.

Although space precludes the opportunity to describe the ingenious application of electricity in buildings erected for special work, passing mention may at least be made of such recent installations as the Ninety-fifth Street Market, with automatic electrically operated refrigerating system, the 181st Street and Iceland Skating Rinks and the Film Building, devoted to the motion picture industry, using electricity in every manner possible to reduce the fire hazard.



COLD STORAGE ROOM IN MEAT MARKET.

Coincident with the writing of this survey, announcement is being made in the public press of the fact that a further reduction is being made in the price of electric current.

USES OF ELECTRIC POWER IN BUILDINGS

Force Used In Hundreds of Different Ways, Simplifying Many Problems Which Daily Confront Owners and Tenants

By J. P. MALLETT, Society for Electrical Development, Inc.

EVOLUTION applies quite as much to buildings as to any commodity. If the greatest advancement is to be made in the great construction industry, each building erected should embody the latest improvements.

Every building should be designed and erected for some purpose, not as a mere structure which may bring some revenue on the money invested, but a building wherein something can be accomplished better than ever before because of the improved facilities provided therein. There is no question whether such a building will be rented if reasonably located, even though the rental price may be at the top.

One of the greatest conveniences that can be included in a building erected for almost any purpose is electric power, which may be used to drive anything throughout the building that can be driven by mechanical power more silently, safely and generally satisfactorily than with any other form of power.

This is a broad statement or claim to make, but if it cannot be refuted and can be proven it should be known and its greatest practical use be made effective.

Now what are some of the power requirements in the average building in a city? It is not the purpose of this article to consider the building designed for some specialized manufacturing purpose.

Elevators.—Almost any building has one or more elevators, possibly for passenger and freight service. Can you imagine a power so well suited not only for hoisting and lowering the car, but for the various signalling and indicating purposes in the car and at the various landings?

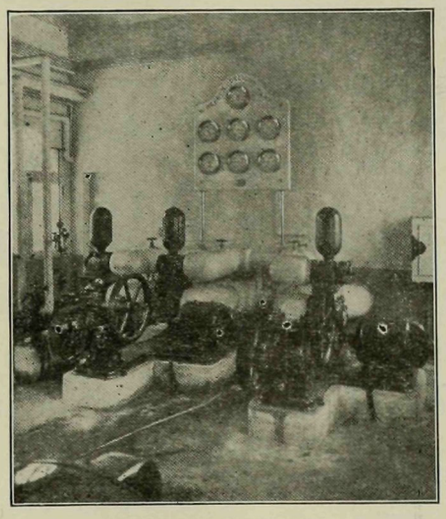
It is a convenience to be hoisted and lowered from one floor to another, but if such a convenience is not accompanied with proper signals by which the operator may know the floor to go to and indicators so that the party traveling may know where and in which direction the car is going, more time may be wasted waiting around for something to happen than would be gained by its indefinite operation. This more or less indefinite kind of elevator service may be found in many buildings today and this alone cause a tenant to move out to a building that has the latest conveniences in the elevator service for their class of business. It should be understood that the mere fact that a building was built fifteen years ago is not sufficient excuse for poor elevator service; the system originally installed no doubt has been vastly improved since its original installation, but there is practically no reason why an electric elevator system cannot be brought up-to-date at a comparatively small expense. This is one of the great advantages of electric power for any purpose, practically no expensive foundations are required and comparatively little space for the motors and the conductors for transmitting the power require little space, are flexible and very easily installed. The same is true for the signalling system. The importance of building up-to-date when building now is only emphasized by the added expenses of an earlier change, if the building is to be one of those most sought after for any purpose.

Sidewalk elevators are very important for some buildings, and these can be most satisfactorily driven by an electric motor and at a minimum cost of installation and operation.

Conveying Systems.—In many buildings a conveyor system for carrying packages about the building, possibly from some particular sales department to the packing or shipping department, such conveyors can best be motor driven, including the desired electric control.

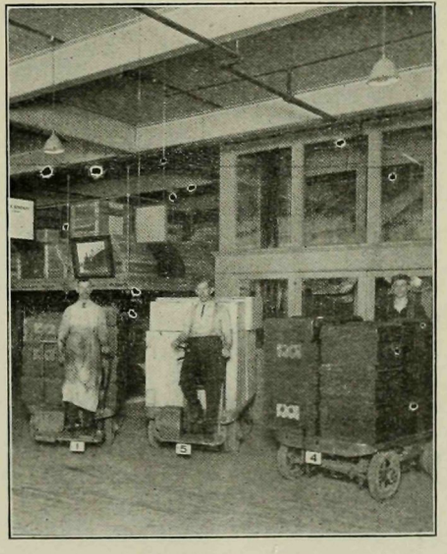
Cranes.—Frequently a crane for handling the heavy freight in the basement or possibly on other floors is very convenient. The type of crane may be merely the swinging jib crane erected at some particularly busy place or a monorail type or the double track traveling crane or any other type as may best fulfill the requirement. Electric motors and controllers will be found the best means of operating them.

Pumps.—There will doubtless be pumps of some kind to drive. If they



CIRCULATION PUMPS.

be of the centrifugal type, the driving motor can be directly coupled to it, and mounted with it on a common bed plate. This means they will occupy the smallest amount of space possible, a most important point; also that their operation will be practically noiseless and very efficient, if the pump is the reciprocating type, where high pressures are needed. The motor can be geared directly and mounted on the same bed plate, which will require the smallest amount of



INDUSTRIAL TRUCKS.

space possible for that type of pump; also high efficiency. But it will be necessary to have comparatively slow speed gears or perhaps a pinion on the motor shaft made of built-up fibrous material to prevent objectionable noise. Such fibrous pinions or gears can readily be purchased as a standard article in the market.

Ventilating Systems.—Every building should have some positive ventilating system. Good air throughout the building at all times means high efficiency in the men and women employed there. That is the kind of a building everybody wants to work in, where they can do things and feel like doing them.

A blower for such a ventilating system can be motor driven at the speed desired to meet the requirement of each hour in the day or day of the year, and can be automatically controlled if desired; space required and noise of operation a minimum, while efficiency is maximum.

Refrigeration.—A refrigerating plant may be required. Here motor drive is just as applicable with as satisfactory results.

Heating Plant.—If a heating plant is installed a coal handling and ash handling conveyor may be desirable. Either or both can be driven with a small motor.

Electric Trucks.—Trucks for handling heavy materials about a building having their electric power required for operation all self-contained are very convenient. They have a storage battery mounted right in the frame of the truck which furnishes power to the small motor that drives the truck about with only the single man to operate it, regardless of the size of the load. It is surprising how quickly and conveniently these trucks can be handled. Such service in a building may be a most attractive feature to a prospective tenant.

There are many uses of small power units throughout a building. It may be for cleaning. The vacuum cleaner is most convenient. This may be of the portable type or the stationary type, which has the plant located in the basement or some more central location, with the system piped throughout the building. The floor cleaner and polisher can be motor driven and thereby save much hard, disagreeable work. Fan motors for the hot days in summer and motor-driven typewriters and duplicating machines, and even pencil sharpening machines are also in this class.

A small repair shop may be desirable in which the different machine tools can be individually motor driven or grouped together and driven by a single motor, if a large per cent. of the tools were driven at the same time.

It is very important that proper baseboard outlets be provided throughout the various rooms in the building, so that the different appliances can be most conveniently attached and operated. It is not enough to be merely able to do a thing. A way must be provided for doing it most conveniently.

The different points of advantage of installation and operation of electric motors for driving anything in connection with a building as described herein can be summed up as follows:

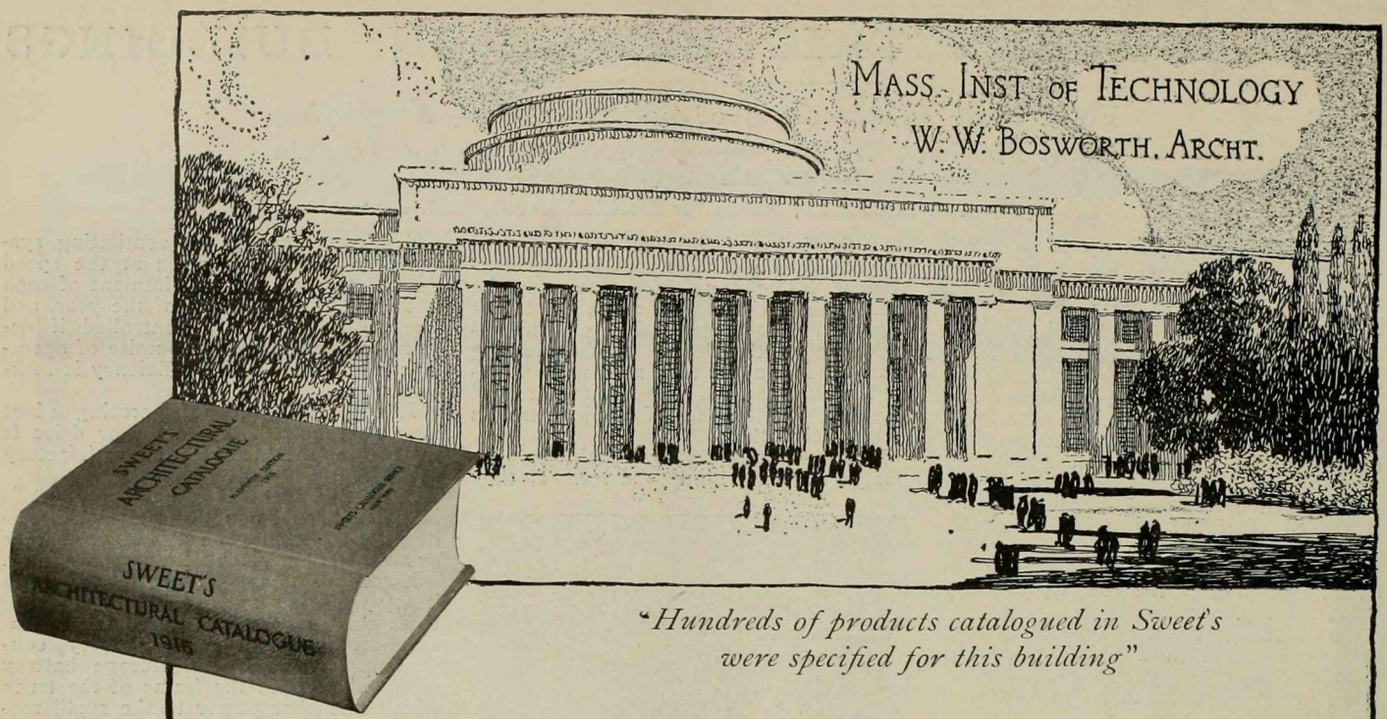
The power most easily applied.
The power most easily controlled.
The power installed in least space.
The power installed at lowest cost.
The power operated at lowest cost.
The power operated with least noise.
The power operated with least dirt.
The power which can be most universally applied.
The power which gives greatest satisfaction.

It is impossible to specify the exact amount of power which may be required to drive each machine until the size, type, capacity and make of the machine has been determined, but when these points are known, the maker of the machine to be driven can always specify the exact horsepower required for that particular service.

One of the most important advantages of using electric power in most buildings is that the power can be obtained from so many different sources: central station, some nearby plant, or their own isolated plant.

Space is of great value in any building on any floor. First cost of total equipment is also very important, as well as cost of care, upkeep, depreciation, etc. See if you cannot save these items of a power plant by obtaining your power from the local central station.

(Continued on page XV.)



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ELECTRICITY, THE WONDER OF MODERN TIMES

Forty Years Old but Only a Babe So Far As Its Life and Usefulness are Concerned

By STACY ALEXANDER PAXSON

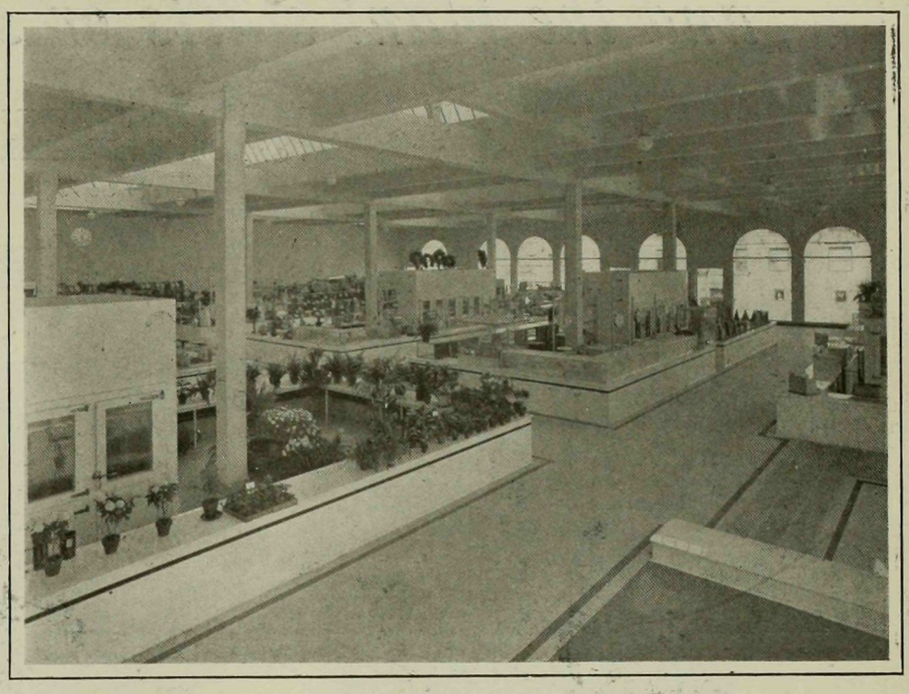
TONIGHT at the hour of twelve when the last lights flash off it will signal the close of the observance of "America's Electrical Week," a week in which an entire nation has paid its homage to the manifold uses of electric service, a gigantic industry, representing an investment running well into the billions, and transacting a business of more than $2,300,000,000 annually.

It has been seven days of the wizards who have wrought the wonders of modern civilization. It has been a week that has brought into the spotlight the Edisons, the Marconis of the present, the Watts, the Franklins and the Faradays of the past. These men have all been Aladdins of their times. By the rubbing of their magic lamps, they brought into being the genii whose might and power are ever at the instant command of the world's millions.

The electrical industry, while forty years old, is yet only a babe, in so far as its life and its usefulness in the future is concerned. The electrical industry, including telephones, telegraphs and railways, has invested $8,125,000,000 in the business of America. Its utility companies alone pay Uncle Sam $200,000,000 every year for taxes, seven out of every ten use it in some form every day. It is beyond question the vital factor in America's prosperity.

Electricity has completely revolutionized business methods. The telephone and the telegraph with its night and day letter service is man's ally in the keen competition and pursuit of business, and makes the world only a neighborhood. Stop the flow of this mysterious force and you check transportation, put an embargo on commerce, plunge cities into darkness, lessen the capacity of the ever increasing revenue derived from space in office and industrial plants due to its agency, and set everything back into the days of the stage coach and packet boat.

The thousand and one uses that electricity has been put to in the building and real estate field and the part it has played in advancing rental values, protection of property and the facilitating of delivery of building materials by motor trucks all electrically driven, the erection of skyscrapers in record breaking time, due to the agency of electric hoists and electrically driven rivets, are too well known to need more than passing comment.



ELECTRICALLY REFRIGERATED PLANT IN MARKET.

In the great departments of electric light and power great opportunities are offered through the introduction of many kinds of novel devices which can be attached to the circuits at convenient hours to equalize the loads and increase the revenues from the plants. Many municipal improvements based upon the use of electric current will soon be introduced, which will include smoke annihilators, dust absorbers, ozonizers, sterilizers of water, air, food and clothing, and accident preventors on streets, elevated roads and in subways. It will become next to impossible to contract diseases from germs or get hurt in the city.

Today the surface cars, elevated or subway trains will carry you somewhere —electrically. An elevator will carry you safely and quickly to your floor— electrically. The magazines you read are printed on presses driven by electric motors. The daily press news is collected from the four corners of the compass by telegraph, telephone, cable and wireless—all electric. The things you eat and wear are manufactured by electrically driven machines.

Electricity touches every phase of modern life, aiding civilizaton with its light, heat and power and bringing countless conveniences, comforts and economy to the whole world. "America's Electrical Week" has demonstrated new and needed things for every alert American.

By the setting in motion of the intricate machinery of manufacturing.

By the lighting of homes and highways, playhouses and market places.

By the manipulation and control of battle ships, whose electrically operated guns and searchlights make safe the trade avenues of the seas, and protect the nation from invasion.

By the carrying of the human voice across the distance that spans the Atlantic and the Pacific Oceans.

By the speedy transportation of man and foodstuffs from one center of commerce to another.

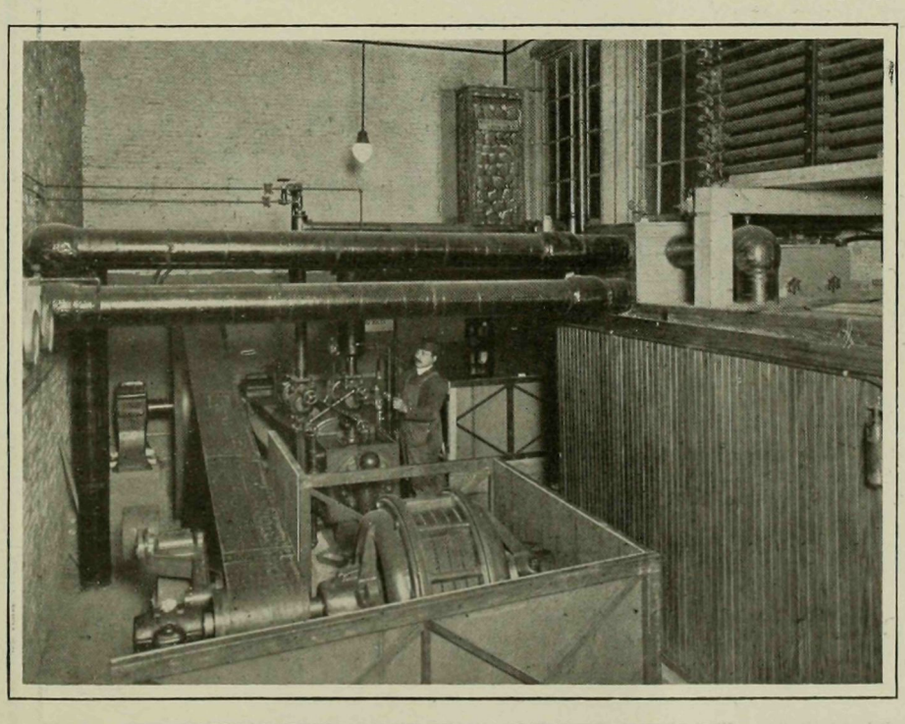
By the advancement of the cause of medical science through the agency of the X-rays and in manifold and sundry ways the past week has borne witness to the world that electricity's unceasing mission is to make all life better.

Equally interesting and instructive are some of the newest triumphs in illumination. A Brooklyn man has built a searchlight of one and a quarter billion candle power, searchlights have made the mighty Niagara visible at night, and the tall skyscrapers on lower Manhattan are made to look like towers of fire in the darkness.

The Statue of Liberty is an example of flood lighting that will occupy a permanent place among the world's most remarkable electrical achievements. Arising in a flood of light out of the darkness of New York's harbor it amply typifies the upbuilding of the Liberty of Man and the wonders achieved by the use of electric current.

Terrible in its unfettered power, electricity, when subjected to the will of man, becomes a miracle-worker for all humanity. Today the central station rocks the cradle, and the hand that so long performed this dutiful task has not ceased to sway the world.

The Record and Guide has endeavored in its two Electrical issues to demonstrate the advancement of the electrical industry. To what prodigious destiny is electricity, the servant of man, guiding this gigantic nursling of history?



MOTOR DRIVEN COMPRESSOR FOR REFRIGERATION.

DEVELOPMENT OF THE TRACTION ELEVATOR

Several Styles Described, Together With Their Uses and Applications—How They Should Be Installed

By THE OTIS ELEVATOR COMPANY

AN electric elevator, basically, consists of a car, a counterweight, hoisting cables, a motor which drives a sheave or drum about which the hoisting cables wind and an electro-magnet controller which is actuated by a master switch in the car and which regulates the starts, stops and speeds of the elevator.

The first electric elevators were confined entirely to the drum type of machine, that is, a machine with a grooved drum about which the hoisting cables are wound and which is driven through worm gearing by an electric motor. This type of machine was highly satisfactory until, with the advent of steel skeleton skyscraper construction, buildings were designed 200, 300, 500, and recently 600 and 700 feet high. For buildings of such heights the drum types of machines were found wholly inadequate not only because of the very large drum sizes necessary to accommodate the cables of these high rise elevators, but also because of the practical speed limitations of these types.

Accordingly the traction principle of construction was adopted and developed, resulting in the geared and gearless traction types of elevators.

The electric traction elevator derives its name from the fact that motion is obtained by means of the traction existing between the driving sheave and the hoisting cables. In order to produce the necessary tension for this result, the hoisting cables, from one end of which is suspended the car and from the other end the counterweight, pass partially around the traction driving sheave in lieu of a drum, continuing around an idler leading sheave, thence again around the driving sheave, thereby forming a complete loop around these two sheaves.

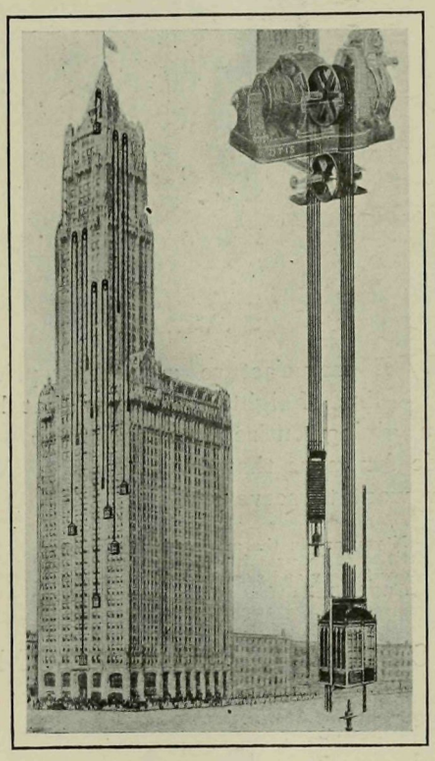
Gearless Traction Elevator—1:1 Roping.

The gearless traction elevator is the logical result of the present-day tendency toward simple construction, economical operation and the highest possible degree of safety. No one who has ridden in one of these elevators has failed to appreciate that the machine which accomplishes what this one does so easily and smoothly, at the same time impressing the passenger with such a feeling of solidity and security, is the machine which the public has wanted and will want from now on.

In this type of elevator the working parts have been reduced to the fewest possible elements, but at the same time absolute safety and perfection of operation have been secured by the application of a sufficient number of highly ingenious devices and controlling features.

The machine itself consists essentially of a motor, a traction driving sheave and a magnetically released, spring applied brake, all compactly grouped and mounted on a continuous heavy iron bed. Instead of the high speed motor customarily used with the geared electric elevator, a slow speed motor designed especially for the service is employed. These motors, due to their special design, have a remarkably high efficiency. The armature shaft which is of high tensile steel serves merely as a support for the load and on it are mounted the brake pulley and driving sheave. The actual drive from the armature spider to the sheave is effected through a flange integral with the spider and bolted directly to the sheave, thus eliminating all torsional strains to the shaft, and the use of keys.

The gearless traction elevator may be used for any rise whatsoever, since this invention does not have to consider a drum upon which the hoisting cables are wound. The direct drive and consequent elimination of all intermediate gearing



TWENTY-SIX ELEVATORS INSTALLED.

between the motor and driving member results in a machine of very high efficiency and absolutely prevents any possibility of vibration or noise. With the slow speed motor employed the momentum is much less than with a smaller high speed motor, permitting of greater ease in starting and stopping and resulting in a smooth and practically faultless movement of the car. Moreover, the compact and simple arrangement of parts effects the greatest simplicity of installation and economy of space.

The controller used with these elevators embodies the very latest application of electro-magnetic switches. It is actuated by a master switch in the car and gives unexcelled starting, accelerating, retarding and stopping effects.

The controller is so designed in connection with the motor that the initial retardation of the car in coming to rest is independent of the brake, the latter being requisitioned to bring the car to a final and positive stop and to hold it at the landings.

The motor is also governed in such a way, electrically, as to prevent the car from attaining any excessive speed, no matter what the load in it may be.

In designing the controlling equipment, one of the features demanding greatest consideration, in view of the very high speed at which the cars run, is the automatic retarding of their speed to a final stop at the upper and lower terminals of travel. This result is very satisfactorily attained by a multi-arm switch located on the car. This switch is operated by cams in the hatchway that open the contacts, one after the other, as the car approaches the limits of travel. This automatic feature is entirely independent of the operator in the car and is effective even though he hold the car operating device in the full speed position.

The usual safety devices installed in connection with modern high-grade apparatus are used with this type of elevator, including speed governors, safety devices for gripping the rails in case of the car attaining excessive speed and potential switches. One particularly prominent safeguard resulting from the arrangement and the method of driving the cables is the decrease in traction which follows the bottoming of either the car or the counterweight on its oil buffer. This minimizes the lifting power of the motor, until normal conditions are resumed. Inasmuch as in any properly constructed elevator the roping is so arranged that the counterweight will rest on its oil buffer before the car reaches the overhead work, or vice versa, it therefore will be seen that the above mentioned decrease in tractive effort is a very valuable and effective safety feature inherent in this type of elevator.

A feature of security of the greatest interest and importance is provided in the patented oil cushion buffers. These are placed in the hoistway, one under the car and one under the counterweight, and are arranged to bring either the car or the counterweight to a gradual and positive stop. through the displacement of the oil in the buffer at a carefully calculated rate of retardation which is regulated by the escape of oil from one chamber of the buffer to another. The buffers have by test been proven capable of bringing a loaded car safely to rest from full speed without discomfort to those in the car and in this respect are unique among elevator safety features.

In general it may be said that the refinements that have been worked out and the perfection that has been reached have resulted in an apparatus which is giving a remarkable demonstration of its safety, economy and traffic handling efficiency, and which is adequately satisfying the demand for a safe, high speed elevator. This is conclusively indicated by the large number of existing installations in all parts of the country.

Gearless Traction Elevator—2:1 Roping.

This elevator is an adaptation of the high speed gearless traction type, permitting of slower speeds by roping the car and counterweight 2:1, still retaining a slow speed motor with gearless drive. It has a wide application, being an ideal equipment for buildings of moderate heights in which elevators with speeds of from 250 to 450 feet per minute are desired.

The modern adaptation, in the gearless traction elevator, of the traction drive for high speed elevator service showed so conclusively the merits of the traction principle that the question naturally arose as to the feasibility of employing this method of drive in the slower speed machines as well. The result was the introduction of what is commercially known as the geared traction elevator, which embodies many of the good points of the gearless machine.

The geared traction machine is similar in appearance to the standard drum machine, except that a multi-grooved driving sheave is mounted in place of the drum, and a non-vibrating idler leading sheave takes the place of the vibrating sheave necessary on the drum type. The car and the counterbalance weight hang directly from the driving sheave—one from each end of the cables—in precisely the same manner as with the gearless traction elevator, the necessary amount of traction being obtained by the extra turn of the cables around the idler sheave.

Geared traction machines are built in two classes, single screw and double screw.

The gearing of the single screw machines consists of a worm which meshes with a single gear, ball thrust bearings being utilized to take up the end thrust of the shaft. The worm, partly submerged in oil, the gear and the thrust bearings are all enclosed in an oil-tight iron case and are well lubricated in every part.

The gearing of the double screw machine consists of a right and left hand worm accurately cut from a solid forging. This worm, coupled directly to the

(Continued on Page XV.)

INDUSTRIAL AND FACTORY LIGHTING

The Importance of Good Illumination—More Work, Better Work and Safer Conditions

By W. T. BLACKWELL, of Benjamin Electric Mfg. Co.

IN this age of efficiency, it seems strange that illumination as a factor in production has been so much neglected. While manufacturers are gradually coming to a realization of this fact, it is safe to say that only a very small percentage have taken action toward remedying the deplorable conditions existing in so many factories and plants. It is interesting to note that recently the State of Pennsylvania, through its Department of Labor, has adopted a Code of Lighting for Factories wherein standards are set forth for the intensity of illumination. Legislation of this character would be unnecessary if manufacturers realized the direct bearing of this factor on their output.

Good lighting is good seeing. The test for good seeing is the ability to see detail with comfort and efficiency; the cost of good illumination is very small, amounting to approximately ½ of 1 per cent. of the average employee's wages. Aside from the financial side of the subject, there is the physiological effect to be considered. Insufficient illumination or unshaded lights produce eyestrain which compels the operator to do his work slowly and with discomfort. The physiological effect of a poorly lighted factory is bad, as it produces slovenly work and has a demoralizing effect on the men.

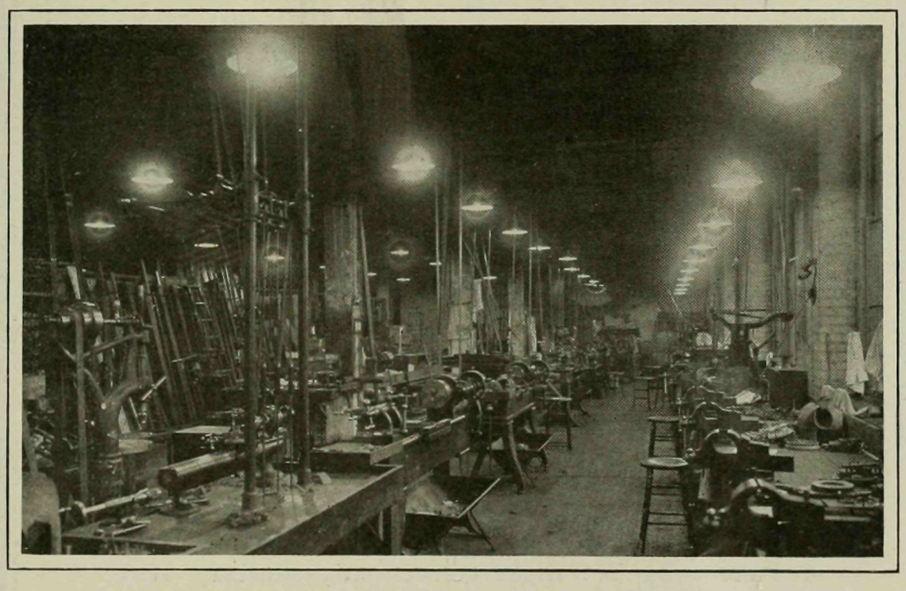
A large casualty company has ascertained from its records "that the greatest number of accidents occur during the months of diminishing light; dirty windows and insufficient artificial illumination often make conditions much worse than they need be."

Another report which was recently published showed that a very high percentage of accidents in industrial plants were due to the lack of adequate light, and were therefore preventable. This statement should provide food for thought for those who operate factories in states where workmen's compensation laws are in effect. Accidents not only cause financial loss to the firm, but also the loss of services of skilled operators.

While this article is supposed to be confined to the discussion of artificial lighting it would be well to consider the daylight conditions. Recent tests show that where daylight and artificial light are used at the same time, the efficiency of the operators is not as great as where one or the other is used alone. This is due to difference in the color content of the lights and the effort of the eye to keep adjusted to momentarily changing conditions. This condition may be remedied to a great extent by the use of the new "Daylight Nitrogen" lamp which produces a light closely approximating daylight.

The hours of natural or daylight may be lengthened somewhat, not by turning the clock back, as practiced abroad, but by painting the walls with mill white or light colored paint, so that they will act as reflectors and diffuse the light. A further saving in artificial light may be made by having the windows washed periodically.

To give complete satisfaction an illuminating system must combine certain characteristics in proper proportions. They vary in importance under different conditions, but may be balanced and their relative order of importance determined. These characteristics are: Efficiency, diffusion, appearance, uniformity, eye protection and color value.



MODERN LIGHTING METHODS USED IN A MACHINE SHOP.

Better lighting facilities, along with practically all other improvements, are installed for the purposes of lessening the production of cost to a minimum.

Artificial lighting for industrial plants may be divided into four general classes: Localized, general, combined general and localized and modified general.

Localized lighting may be exemplified by the familiar drop cord pendent so frequently seen in factories. This form of lighting should not be used except where it is impossible to use any of the other methods. It has the objection of being hard to keep in repair, and causing lamps to break through accidental contact with machinery. Considerable time is wasted by the operators in adjusting cord to suit their desires.

Where the process of manufacture requires local lighting, such as certain departments in shoe factories or other plants where sewing machines are used, it is advisable to use a small unit, located close to the work, and install it in conduit rather than to use the drop cord construction.

HOW LIGHT CAN BE DISTRIBUTED IN AN AUTOMOBILE FACTORY.

General lighting signifies uniform illumination, and is admirably suited to such places as machine shops, spinning mills; in fact for all classes of manufacture where work of a similar character is conducted.

Combined general and localized lighting may be used in shops where general lighting is preferable, but where there are widely separated places which require a much greater intensity of illumination.

Modified General Lighting is similar to the general lighting except that here and there are larger lights to meet special conditions.

Great care should be taken in designing a lighting system. Objects are seen by the direct or reflected light which comes from them. If therefore the direct rays from a light enter the eye, it is that source which is seen; if the light is reflected from a machine tool, the tool itself is visible. A lighting unit when installed in an industrial plant is placed there primarily to illuminate objects upon which work is being performed, and should therefore not be so placed as to allow the direct or reflected rays to enter the eye, otherwise eyestrain and discomforting effects follow.

No two conditions or buildings for illuminating present the same problems Classes of work, type of machinery shafting, and the architectural construction of the building all have a bearing on the solution.

There are certain empirical rules which must be borne in mind:

1—Light sources should be kept out of the line of vision. The eye adjusts itself to the brightness by shutting out some of the light rays, thus reducing the ability of the operator to see clearly.

2—Flickering light sources produce eyestrain and should therefore be avoided.

3—Areas should be divided into squares with one light in the center of each square. The size of the square depends upon the construction of the building and the size of unit to be used. Uniform spacing is necessary to produce uniform illumination.

4—Lights should be located symmet-

(Continued on Page XV.)

FIRE ALARM SYSTEMS, OLD AND NEW

Electricity Has Lessened Loss by Conflagration and Present-day Methods Require Its Use

By T. H. S. CONE, of Aero Alarm Co.

GROWING complexities of city life, due to the enormous increases in population and the resultant intensive occupancy of land, have been accompanied by great increases in the fire hazard, and greater possibilities of disastrous conflagration. The problem, therefore, of prompt and efficient summons of the Fire Department and other agencies designed for the protection of life and property has become one of the most important at present confronting the guardians of public safety in large cities. It is interesting to note in this connection the contribution which electricity has made in the production of new signaling and warning apparatus.

AN unbiased investigation into the important subject of the control of fire outbreaks, taking a straight line course to fundamentals, will bring to light some neglected means of supreme importance, indifference to which on the part of some experts is hard to understand. At the present time it is evident that the popular line of development is in the direction of elaborate and efficient extinquishing apparatus, and auxiliaries thereto. The Fire Department in cities, large and small, provides a popular means of demonstrating civic pride in gratifying and spectacular fashion.

Progress Made.

Much progress has been made in the direction of efficiency in the electrical equipment of these departments. The men who bear the brunt of conservation are the fire fighters themselves and it is pleasing to see that self-respecting communities consider it their first duty to properly support them with proper appropriations. The visible result is found in up-to-the-minute outfits—powerful pumps and self-propelling equipment which are ready to speed through the streets as fast as public safety permits. Flying squadrons equipped with chemicals (first aid) are becoming more and more general in use and statistics show that a large percentage of the fires are put out by such means. It can truly be said that nothing is sacrificed to offer means for extinguishing fires by municipalities today.

Every element of such protective means should be stimulated and the fire fighters encouraged by being supplied with the best obtainable equipment; but the net value and efficiency of the most perfect outfit is determined by the length of time that elapses between the kindling of the fire outbreak and the arrival of the firemen. In other words, the amount of loss is regulated by the amount of progress the fire has made before extinguishing means are applied. This claim is fundamental and has no exception. Thus, the logical direction of energy should be toward the reduction of the interval of peril. Inventive genius has brought out various signaling systems by which fire outbreaks can be announced through the medium of electricity.

Old Methods.

Under primitive conditions, on the discovery of fire someone was sent on foot or by horse to the town alarm, which might be a factory whistle, church bell or rim of a locomotive wheel, hung up on a post, the sounding of which would call out the volunteers and start the apparatus to the scene of the trouble. Amplifying these crude methods are electrical systems by which fire companies can be summoned from fire alarm boxes conveniently placed about towns or cities; and still more complete systems by which buildings have their own direct connection and auxiliary stations through the premises.

Much has been done in facilitating the transmission of alarms. Municipalities all over the country are fitted with street boxes and auxiliary systems, and supervision is provided to assure constant working order. Manual fire alarm boxes are located in effective places and master boxes are placed in large buildings with auxiliary stations throughout the premises, which if operated will send the alarm the same as if master boxes are pulled. Many large cities have the benefit of elaborate office service supervising fire alarm sprinkler connections and night watch system. In some communities arrangements are made with the telephone company to give fire calls over the telephone.

Some of these alarm systems being purely local, the fire bell rings only on the premises, the Fire Department being notified by telephone. There are still others having direct connection into the city system. But in all these equipments, however complete, the human equation is interposed and after an outbreak is discovered it remains for the watchman, janitor, caretaker, or passer-by as the case may be, to determine whether efforts should be made to extinguish the fire or a department call given; and as a natural result, when the first efforts fail and it is apparent that help is needed, and the alarm is given, a serious handicap is at once imposed on the department and an attendant heavy loss on the owner.

It is an inconvertible fact that the Fire Department should know as far as possible of fire outbreaks in their incipiency and thus assure the maximum degree of safety as far as the property is concerned as well as the lives of not only the occupants of the building, but the firemen themselves who are called upon to face undue hazard through delay in reaching fires.

The sum of $25,000,000 or so loss per month is fairly good evidence that something more remains to be done. That the fire waste is confined to these present figures, startling as they are, is attributable in a large part to the present facilities in alarms and automatic extinguishing systems, the development of which does credit to those responsible for same.

Automatic Sprinklers.

The automatic sprinkler in its control of the fire waste is well demonstrated for efficiency, but after all is in the class of heroic measures, the illustration of "the pound of cure" that could be made unnecessary by "an ounce of prevention."

Taking buildings, small and large, of every description and for all purposes, actually a very small percentage can and should be equipped with a water sprinkler supply sufficient to drown out any blaze that is allowed to get under way. Sprinklers have their defects and dangers—leakage, failure of supply, closed valves, corroded heads that will not open, and also the danger of freezing. Alarm valves of many types are in use, but hardly any of them have found acceptance with the laboratories to the extent of being on the list of standards.

Now going back to the first element, what has been done to reduce the interval of peril between the start and discovery of the fire? Various electrical devices have appeared from time to time intended to give an alarm through the agency of the fire itself—in other words automatic thermostats—and the results on the whole up to the present period were unsatisfactory.

All familiar with the work of fire prevention and fighting fires know that one or more watchmen or even regular fire patrol, however faithful and well organized, fail to prevent disastrous fires getting under way and probably all great conflagrations piling up the colossal fire waste, occur in premises supposedly fully protected with a watchman, but as it is impossible for a man to be in more than one place at a time, however regular the rounds have been, an incipient fire in an out of the way place, or even in plain sight, has all the chance necessary for a getaway between rounds.

There is enough in modern engineering practice to provide a sure means by which fire outbreaks will announce themselves. Such systems could be admirably adapted to the various sorts of premises and with a practically perfect score in performance.

Use Should Be Encouraged.

With such good automatic means available, the extension of their use on every possible opportunity should be required, for in spite of all the fireproof construction and good housekeeping, fires will occur and the danger grows by leaps and bounds as the seconds tick off after the first little tongue of flame.

The Atlantic Basin fire in Brooklyn, within easy reach of the greatest fire department in the world, got away because of late discovery. The fire evidently was caused by an overheated stove pipe against wood work of an unused room on the second floor.

The Baltimore grain elevator and ships lying alongside burned up more than a million dollars and destroyed five lives in the face of well equipped and hearty fire fighting veterans, because it got a free start before discovery. Such great fires could be prevented if the premises were equipped with a sensible and reliable system that would make a fire sound its own alarm at its incipiency.

Modern Method.

The highest development of such electrical signaling service is to be found in a system unlike other fire alarms heretofore in use, which is not a fixed point type, but of a compensating character that permits its actuating with equal efficiency in a refrigerator or cold storage room, or a dry kiln or boiler house. The fire detecting element is a fine copper tube extending throughout the premises to be protected, placed on the moulding at the ceiling, or along the cornice wherever desired, provided limits of spacing as required by the underwriters are observed, viz.: the distance between lines not to exceed thirty feet. The electrical working parts of the system are placed in a switchboard cabinet at a convenient location; the entrance to the building, the office or engine room, according to the class of building protected. These tubing circuits individually covering fire areas, originate in the switchboard cabinet and return thereto, terminating at sensitive diaphragm, pressure recording, devices. The air contained in this tubing always remains at normal, as the pressure is compensated by a vent, which feature precludes false calls.

The slightest outbreak of fire within these protected areas causes an expansion of air in the tubing far in excess of the capacity of the relieving vent, and the expansion of the diaphragms making electrical circuits complete, in turn forward the call for proper extinguishing means from the nearest Department Headquarters, at the same time giving annunciation of the impending danger locally.

JOIN IN CELEBRATION.

Musical Instrument Manufacturers Co-operate in Activities of the Week.

SUB-COMMITTEES on music were named to co-operate with America's Electrical Week committees in more than 200 cities and towns. These sub-committees comprise local dealers, representing the following manufacturers of electrically driven musical instruments, who have become affiliated with the society in a group, with Max de Rochemont, of the Laffargue Company, as chairman:

The Aeolian Company, New York; The Laffargue Company, New York; The American Piano Company, New York; The Melville Clark Piano Company, Chicago; The Autopiano Company, New York; The Columbia Graphophone Company, New York; Hardman, Peck & Company, New York; Simplex Player Piano Company, Worcester, Mass.; Holtzer-Cabot Electric Company, Boston, Mass.; Amphion Player Piano Company, Syracuse, N. Y.

These sub-committees were appointed to arrange appropriate electrical musical programs as a part of the local A. E. W. activities. The "how to" pamphlet addressed to all the dealers listed by the electrical instrument manufacturers urged each sub-committeeman to arrange an electrical concert either in his individual warerooms or to combine with other dealers upon his local committee and to stage an electrical concert as a feature of the "Week" in a prominent theatre in his city.

The sub-committees have received from the society window cards and window lithographs, advertising material and poster stamps and were also invited to join with local electrical interests in advertising the "Week" through the newspapers and otherwise.

The society has prepared an artistic brochure of 16 pages, entitled "Electricity, Interpreter of Music." This booklet has been distributed by electrical instrument manufacturers to their dealers. The booklet tellingly presents the perfection of electrically rendered music and has already met with a cordial reception from electrical musical interests.

"Electrical music represents a new and growing field of electrical activities," stated J. M. Wakeman, general manager of the society, in his letter to chairmen of the A. E. W. committees, announcing the appointment of sub-committees on music.

FACTORY LIGHTING.

(Continued from Page XI.)

rically around posts or columns in order to avoid dense shadows.

5—One large unit should not be used where several smaller ones will give better results.

6—Flat reflectors should not be installed where shallow bowl or deep bowl types may be used.

Often it is necessary to use the existing outlets, and in consequence care must be exercised to select reflectors or lighting fixtures which will distribute the light uniformly.

The use of reflectors on lights is essential. First, to redirect the light rays on the work or object to be illuminated, and, second, to protect the eyes from the intense brilliancy of the light.

The glare from the new nitrogen lamps makes it absolutely necessary to enclose the lamp in a reflector or fixture.

The selection of the type of reflector to be used depends largely upon the height of the ceiling and the distance between the outlets. This factor is arbitrary to a measure in buildings under construction, where the outlets may be located where desired, but in existing buildings, the reflectors must be chosen with reference to the conditions obtaining.

Reflectors may be classified as follows: Distributing, extensive, intensive, focusing and angle. There are certain definite rules governing the use of the various types mentioned in the preceding paragraph. The reflecting surfaces are formed with a variety of material, such as white porcelain, aluminized, white enamel, mirror-glass, glass, etc. The porcelain surface is considered the most durable, as it is readily cleaned, strong and not affected by acid fumes.

There is an endless variety of fixtures, which precludes close description. It is sufficient to state that they are designed to diffuse the light and eliminate glare. There is some objection to the use of fixtures having glass globes in factories owing to the danger of breakage of globes and to the labor necessary in cleaning the glass.

A feature often overlooked in the design of an illuminating system is economical control of the lights. Lack of forethought frequently results in the waste of current through the use of unnecessary lights. The most economical method is by use of key or pull sockets or pendent switches at the individual lights.

When a number of lights are required at one time the installation cost may be reduced by the use of wall switches or still cheaper by controlling the lights at the panel boards. In the past the latter method has been rather hazardous on account of the liability of a person coming into contact with the exposed electrical connections, but recently a safety panel has been placed on the market, where these live parts are concealed and made still safer by using push button switches and plug fuses.

In large factories where night watchmen are employed, it is desirable, in the interest of economy, to install a secondary illuminating system of small lights which will afford sufficient light to patrol his rounds, without having to use the higher candle power lamps.

While the information in this article simply covers the topic in a superficial way, it will serve as an elementary guide to those who desire to improve their operating conditions. Expert advice may be obtained gratis from lighting companies and reflector and incandescent lamp manufacturers.

TRACTION ELEVATORS.

(Continued from Page IX.)

electric motor, meshes with two bronze gear wheels, which in turn mesh with each other. The complete gear is fully protected in an oil-tight housing.

When three bearings are provided to support the driving sheave, worm wheel and shaft, the shaft passes directly through the driving sheave and the worm wheel center, and is securely keyed to both, providing a strong and satisfactory drive.

When two bearings are used for the support of the driving sheave, worm wheel and shaft, the method of driving through the use of keys in the shaft is eliminated, the power being transmitted direct from the gear center to the driving sheave.

The machine is equipped with a mechanically applied and electrically released double shoe brake. The shoes are applied against a pulley of ample diameter and width to dissipate any heat generated, this pulley serving as a coupling between the motor shaft and the worm shaft.

The brake shoes, normally, are bearing against the pulley with a pressure corresponding to the compression of the two helical springs. When current is admitted to the solenoid brake magnet, and then only, the action of the springs for the time is overcome, so that the shoes are released. It will be seen, therefore, that the brake will apply with full force should a failure of current occur, resulting in an immediate stop of the elevator.

The motor for direct current is compound wound and runs usually at about eight hundred revolutions per minute at full car speed and load. The series field is used only at starting to obtain a highly saturated field in the shortest possible time and is then short-circuited, allowing the motor to run as a plain shunt wound type.

In stopping, a comparatively low resistance field is thrown across the armature, providing a dynamic brake action and a gentle slowing down of the car, the brake being called upon only to effect the final stop and to hold the load at rest. Resistance in series with this "Extra Field," as it is called, is controlled by magnets which depend, in their operation, on the speed of the armature. It is therefore evident that the dynamic or retarding effect of the field is proportional to the speed, and therefore to the load in the elevator; hence good stops under all conditions are easily obtained.

Rope guards are provided to prevent the cables from leaving their grooves in the event of either car or counterweight bottoming. The same effect is obtained on these machines as on the gearless traction elevators when the cars or counterweights strike their buffers in the pit, namely, that the tractive effort is so much reduced as to make it impossible for the sheave to drive the cables. This is a most desirable characteristic inherent in all traction machines for the reason that rope strains can never increase beyond a certain limit, well within the factor of safety of the cables and fastenings. This means that the danger of the car or weight dropping, as a result of being pulled into the overhead work and thus breaking cables or fastenings, is eliminated.

The controller, whose magnets operate the various switches, is complete in every detail and consists of "Potential," "Reversing" and "Fast Speed" switches, "Accelerating," "Load" and "Auxiliary Load" magnets. The resistances are all carried on the back of the controller and are easily accessible.

These machines can be arranged for car speeds up to 400 feet per minute with 2,500 pounds, or for decreased speeds with correspondingly increased loads.

To meet the demands in districts where alternating current is in use, the same apparatus described is furnished except that the direct current motor and controller give place to an alternating current motor and controller.

The alternating current machines are also made in two classes, single and double screw. The brake is slightly different in appearance but performs the same functions as does the direct current brake.

The widening use of alternating current in congested sections has prompted a particularly important development in the design of an alternating current motor and controller giving variable speeds. This achievement not only adds to the smooth travel of the car and to its starting and stopping qualities, but throws open a broad field for the use of a comparatively high speed geared traction machine in alternating current districts.

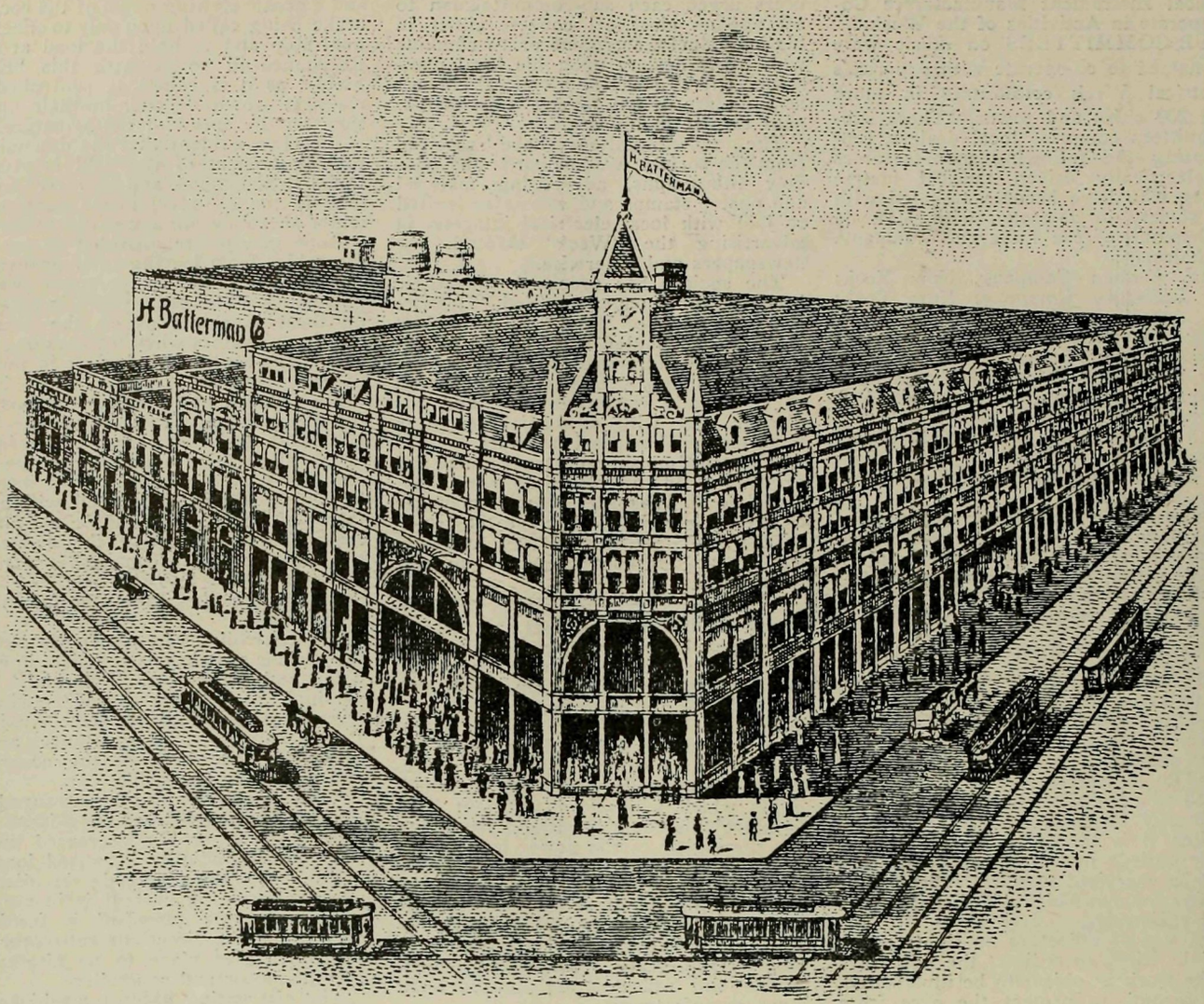
The main difference between the two machines lies in the ability to use on the latter a small high speed motor with gearing, instead of the large, slow speed, highly efficient, but more expensive motor of the gearless traction elevator.

ELECTRIC POWER.

(Continued from Page V.)

That is their business, their specialty. They ought to be able to furnish electricity to you for less money and in a more satisfactory manner than you can generate it yourself. If for some local reason you cannot make such satisfactory arrangements, see if there is some nearby plant that has sufficient extra capacity over and above their own requirements to supply you with the power you will need. Then always as a last resort you can generate your own, and at a very low cost compared to the cost of any other kind of power you could possibly generate and distribute to the various parts of the building as desired and obtain anywhere near equal service.

Electricity is the form of power which more than any other relieves man from performing the merely mechanical work, from doing the things which require simply motion, and gives him the opportunity to do the things which require thought. The building equipped for highest efficiency to its occupants is the building sought for.



Batterman Adopts Edison Service

Another Proof That EDISON POWER PAYS

Edison service has again demonstrated its superiority and economy over private plant operation.

H. Batterman & Co., Broadway's (Brooklyn) largest department store, has just closed a contract for the exclusive supply of electric light and power from Edison mains. This means the discontinuance of an expensive and efficient private plant, which has been supplying five hundred horse power in light and motors to this establishment.

Economy was the deciding factor in closing the contract. After six months of exhaustive tests and comparisons, the engineers of the Batterman Company became convinced that it would be cheaper to buy their power from the Brooklyn Edison Company than to continue to generate it by their private plant.

Private Plant Owners—Think!

If we can save money for the Batterman Company, we can do the same for you and in addition you will have the convenience and reliability of Edison Service. We have a competent staff of Power Engineers, who without any expense will make careful tests of your power equipment. We will render a complete and comprehensive report telling how much your power is now costing and what it can be bought for from the Brooklyn Edison Company. This report will be of exceptional value whether you accept our proposition or not.

Our booklet "Edison Power Pays" contains the experience of the largest power users of Brooklyn with Edison Service.

May we send you a copy?

Edison Electric Illuminating Company of Brooklyn

General Offices—360 Pearl Street

Telephone—8000 Main.

ATLANTIC

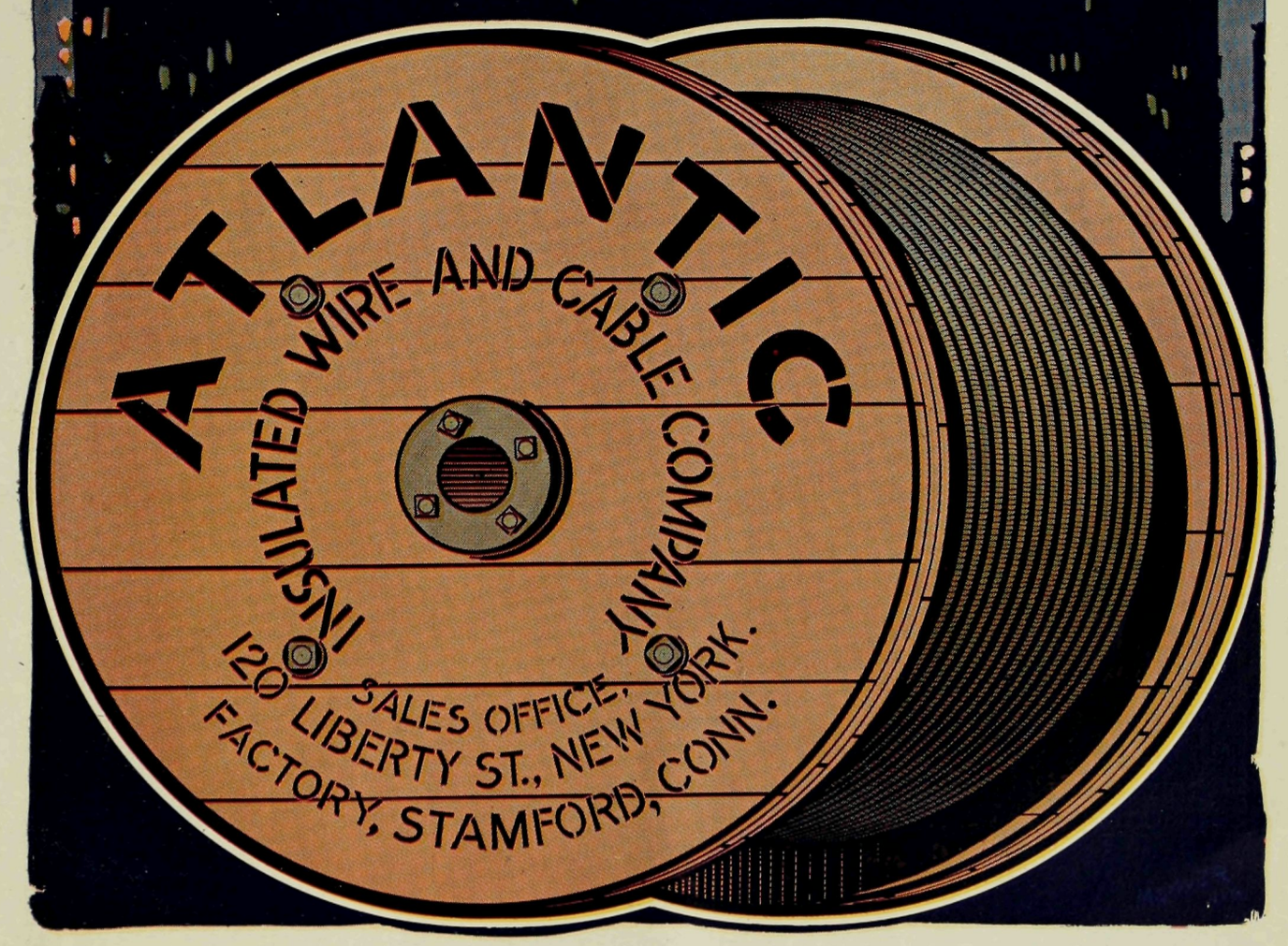
INSULATED WIRES AND CABLES

NEPTUNE ATLANTIC
EXTRA HIGH GRADE

TRITON ATLANTIC
HIGH GRADE

DOLPHIN ATLANTIC
COMMERCIAL CODE

THREE BRANDS OF INSULATED WIRE THAT MARK THE MAXIMUM OF QUALITY AND SERVICE IN THEIR RESPECTIVE GRADES.



A Building Without Gas Pipes Is One Divided Against Itself

THE interests of the owner and the tenant are best conserved when a building is equipped with all those things that make for comfort and meet every daily requirement.

EVERY ARCHITECT AND OWNER

should build for the future as well as the present. Conditions are ever changing in Manhattan and the Bronx. A dwelling today may be a factory tomorrow. The use of

GAS FOR INDUSTRIAL PURPOSES

is greater now than ever before. Gas Lighting is growing in popularity—it causes no eye-strain.

INCLUDE GAS PIPING WHILE BUILDING

We are assisting Architects every day in arranging gas-pipe installations. This service is free. Telephone Stuyvesant 4900 and ask for the

Department of Utilization

CONSOLIDATED GAS COMPANY OF NEW YORK

No. 130 East Fifteenth Street

GEO. B. CORTELYOU, President

"The Right Way is the Gas Way"