THE NATIONAL ELECTRICAL EXPOSITION AT THE GRAND CENTRAL PALACE, NEW YORK.

The National Electrical Exposition, now being held in the Grand Central Palace in this city, has been organized in connection with the third convention of the National Electric Light Association in this city. It was formally opened by Governor Morton on the evening of Monday, May 4, and if the dense crowd which thronged the building is an earnest of the attendance throughout the month during which it will be open, it should be a complete success.

The excellence of the exposition was somewhat marred by the incompleteness which so often marks an opening night; as may be judged from the fact that neither Mr. Tesla nor Mr. Edison had their promised displays in working order. The various belated exhibitors, however, will soon have everything in place, and the opening of the second week will see the exposition in full swing. At the close of an oration by Commodore P. Vedder on the subject of "The Electrical Era," Governor Morton, using the same golden key with which President Cleveland set in motion the machinery of the World's Fair, turned on a flood of electric illumination, and a framework of vacuum tubes which surrounded him was set aglow with a blue fluorescent light. The pressing of the button also fired guns in San Francisco, New Orleans, St. Paul and Augusta, Me., and a message announcing the opening of the Exposition was dispatched to London, England.

EXTERIOR OF EXPOSITION BUILDING.

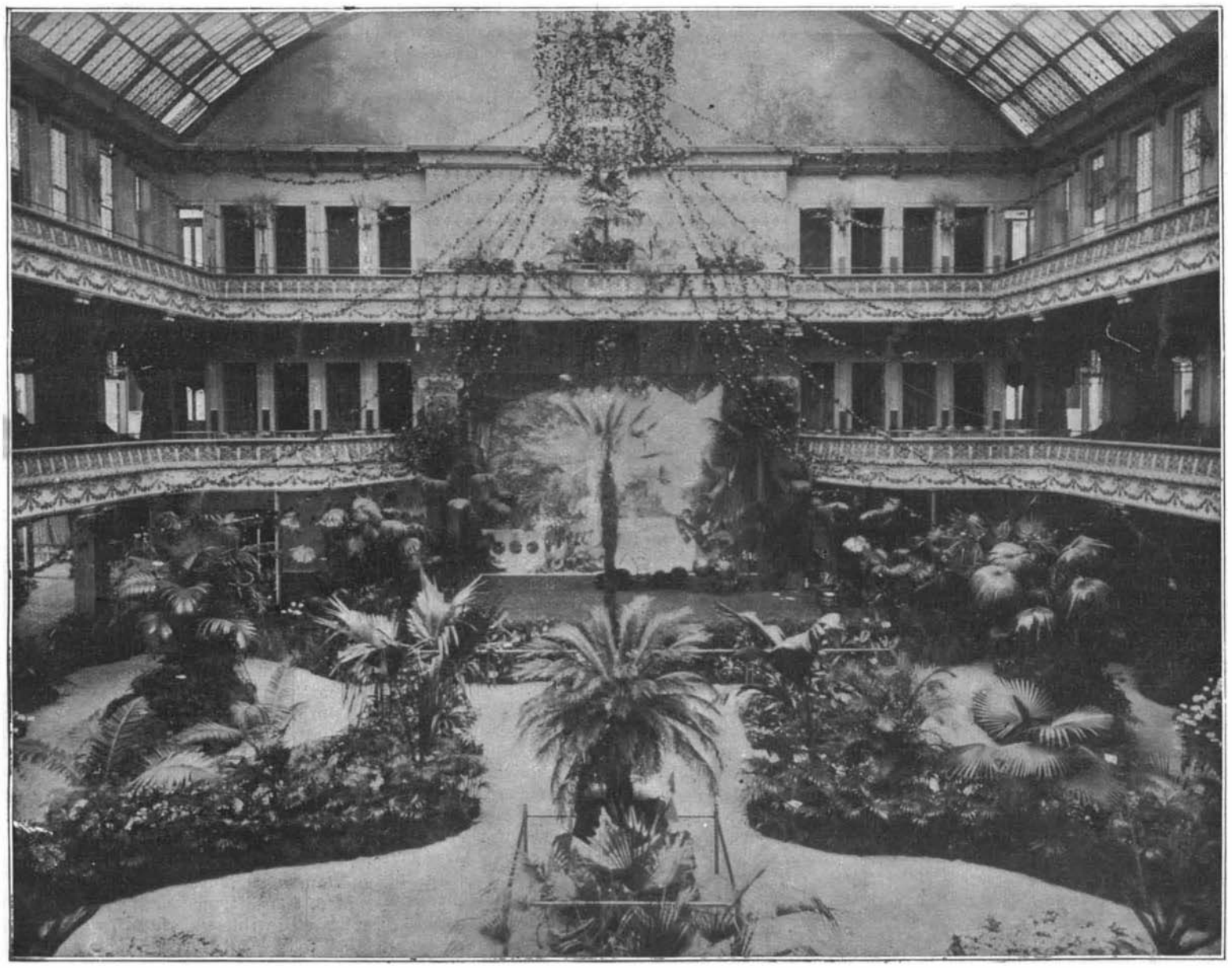
The steam and electric plant, located on the lower floor of the building and forming an important section of the exhibition, is thoroughly up to date. Steam is supplied by two equal units of the Root water tube boiler, forming one battery of five hundred horse power. Fuel is fed by the Wilson Manufacturing Company's automatic stoker, and the coal is brought from the rear of the boiler by the Hunt coal conveyor, and the ashes are returned by the same means. The engines and dynamos are good specimens of the latest practice in steam and electrical engineering, and nearly all are direct connected. As an instance of what can be done in the way of intelligent handling of the counterbalance problem in high speed engines, the visitor should notice a Harrisburg Ideal self-oiling engine direct connected to an Eddy multipolar dynamo. The engine (horizontal) is secured upon the same casting with the dynamo, and the whole stands clear of the floor upon three steel points. At 300 revolutions there is practically no vibration. On the same floor will be found full size sections and a complete model showing the construction of the Babcock & Wilson boiler. Adjoining this the Stirling Company show a water tube boiler.

The Brush Electric Company exhibit a 125 light arc machine and two others of 100 and 80 light capacity. The last named will be in operation on a rack of 80 lamps of 2,000 candle power. This will be driven by a 60 horse power General Electric motor, the total voltage being 4,000. They also show the first machine which Mr. Brush ever built—a one-lighter—and a 60 light machine which has been fourteen years in operation without repairs.

The bulk of the exhibit will be found on the main floor in the large hall. The Edison Illuminating Company, of New York, show, by means of a large painting, the interior of the Duane Street station, with its 600, 1,200 and 2,500 horse power generators—the last of which, they state, is the largest ever built. Here can be seen a full size model of the regulating section used in this station, and also full size sections of the station cable, and of the underground feeder, with a large size feeder box. On the walls is a photograph of the original direct connected "Jumbo" dynamo used at the old Pearl Street station, which had a capacity of 2,000 lamps, and opposite to this stands a full sized half model of the great dynamo at Duane Street, which has a capacity of 30,000 lamps. They also show applications of electricity to medicine, cooking and printing. In a separate room are to be found various applications of the new system of interior lighting by reflection, in which the lamps themselves are concealed. In the same room is a handsome board of various incandescent lamps, among which will be noticed a lamp with two carbons, for use in the sick room,

The Electric Storage Battery Company, of Philadelphia, show a very handsome electrobat motocycle, built by the Electric Carriage Wagon Company. It is furnished with the chloride accumulator, manufactured by this firm, and is driven by two 1½ horse power motors. At 8 miles per hour it will run 32 miles on one charging. This machine is similar to that which took the gold medal at the late Chicago contest. They also exhibit an entire battery of 128 cells, which may be charged from the Edison Company's street circuit when running under light load, at low rates.

Henry R. Worthington exhibits two electrically driven house tank pumps, one of 250 gallons per hour capacity and another of 500 gallons per hour. They are wonderfully compact and handsome machines,



MAIN HALL OF THE NATIONAL ELECTRICAL EXPOSITION, GRAND CENTRAL PALACE, NEW YORK.

and the latter covers only about two square feet of floor space. They exhibit also a triplex steeple power pump, which they build up to 1,000 gallons per minute capacity, to work against a 300 foot head.

The Interior Conduit and Insulation Company, of New York, in addition to a display of their methods of insulation, have a very handsome exhibit of direct connected motors and dynamos. These include a direct driven printing machine, an organ with electrically driven automatic organ blower in place, and some direct connected motors driving exhaust fans. A specially interesting feature of this exhibit is an electrically driven dental outfit, with foot controllers for starting, stopping or changing speed. This is one of the handiest applications of the motor in the whole exhibition.

The Crocker-Wheeler Company display comprises a 200 kilowatt belt driven generator, a 50 kilowatt direct connected dynamo, and a very compact drilling machine in which the armature is mounted directly on the shaft. A curiosity in this exhibit is a 10,000 volt direct current armature, built for Prof. Crocker, of Columbia College.

A very complete exhibit of arc lamps is shown by the Adams-Bagnall Company, of Cleveland, which includes an oxidized copper 100 hour lamp, 1,600 alternations; an oxidized silver constant potential lamp, and many others of the A. B. pattern; also a line of their A. B. incandescent lamps. There is no centering to the carbons of these arc lamps, the arc remaining stationary in the lamp.

Not the least interesting booth in the Exposition is that of the Van Nostrand Company, of New York, which is filled with the latest electrical literature; and across the hall and on the second floor will be found the stands of some of our esteemed contemporaries which are devoted to the electrical industries.

The Electrozone Company occupy considerable space with a display of apparatus for the manufacture of electrozone, which they describe as a product of the electrolysis of sea water, having powerful disinfectant and antiseptic properties. It is claimed that this fluid is more effective than carbolic acid, and a microscopical demonstration is made of the destruction of germ life in a drop of water by spraying it with the electrozone.

An interesting exhibit is that of the Herzog teleseme, which is a telegraphic call that depends for its action upon the principles of electrolysis. It is shown in its application as a hotel office call and as a police call. The messages are read by the change of color in a metallic button.

Electric elevators are represented by the Sprague Electric Elevator Company, which shows a multiple sheave screw elevator machine and a worm gear driven machine.

The Niles Tool Works, of Hamilton, O., show the application of the motor to large shop tools—a specially interesting application being a No. 1 boring and drilling machine, driven by a constant speed motor attached to the countershaft, and a 37 inch boring and turning mill operated by a motor direct connected to the driving shaft.

A feature which is deservedly attracting much attention is the display of vacuum tube illumination by the D. McFarlan Moore system. Some samples of the application of this system to street signs and for the purpose of illumination are shown, a detailed description of which system will be found in the SCIENTIFIC AMERICAN of February 29.

Two large models occupying the center of the large hall are of special interest just now, viz., a model of the Lamb electric cable way, as now being applied for towing on the Erie Canal, and a model of the Niagara power plant. On one side of the latter model are some thirty receivers which have connection with Niagara and are claimed to give the roar of the Falls with a distinctness which makes it easily recognized.

At the far end of the main hall will be found the historical exhibit. It is very complete, and reflects great credit upon the management of the exposition. It includes a Patent Office exhibit of 360 models of electrical inventions, in which will be noticed Edison's first electric light station, telephone, telegraph and converter; the magnetic motor of Joseph Henry; the electric motor of A. Eickmeyer; the C. F. Brush magneto-electric machine; and models of a score of other machines destined to become famous at a later date.

If space allowed, one would wish to make detailed mention of the fine auto-telephone exhibit of the Tasker Electrical Construction Company, of New York; of the John Berry printing telegraph system; and of a host of other compact and well selected exhibits.

The W. J. Hammer historical collection of incandescent lamps contains models showing the early efforts of such men as Edison, Swan, Maxim and others. It is the result of seventeen years of diligent collecting, and has been gathered from all quarters of the globe.

The Morse collection comprises models, correspondence, and general relics relating to Morse, Vail, Henry and others connected with the early history of the telegraph. Particular interest attaches to a model of the first wooden telegraph apparatus, made entirely by Morse. The original, now in the National Museum at Washington, was completed in 1835, and with it, in the University Building, Washington Square, Morse first demonstrated the possibility of sending and receiving messages by electricity. Here also will be found a daguerreotype of Prof. Morse and his eldest daughter, taken by himself in 1840.

The Park Benjamin collection of ancient and mediæval literature relating to electricity is arranged in chronological order in several long cases. It commences with a set of Latin books which tell for themselves the story of ancient knowledge of the properties of amber and the magnet.

In the Edison historical exhibit are the tin foil phonograph; the pyromagnetic motor, one of his earliest dynamos, a large variety of telephones, and some valuable photographs and letters.

The Doremus historical exhibit contains among other interesting objects Henry's experimental induction coil; a "dithonotype," or copper electrotype of a daguerreotype, and a daguerreotype taken by Dr. Doremus in 1844.

Although it was not ready on the opening night, Mr. Edison will shortly have on exhibition on the second floor of the building his already famous fluoroscope, and many other samples of his later inventions and a practical exhibition will be made of the former. Mr. Tesla also will exhibit his new oscillatory machine, and the apparatus by means of which he hopes to do away with metallic circuits in telegraphing.

The above is but a brief review of an exposition which will well repay a visit not only by electrical experts, but by the general public. It is at once rich in historical interest and thoroughly up to date.

The Grand Central Palace, in which the present electrical exhibit is housed, is located on Lexington Avenue, between Forty-third and Forty-fourth Streets. The exterior view herewith presented is taken from Forty-third Street looking northwest. The building is a modern fireproof structure, seven stories in height. It is designed for use as a permanent exhibition building, the object of the Exhibition Company being "to facilitate the introduction of American products abroad by furnishing information to our people concerning foreign markets; and by exhibiting to the inhabitants of other countries specimens of our products, and disseminating among them comprehensive and accurate information as to our resources."

The building, which is seven stories high, consists of a large central exhibition hall, lighted from the roof, around which are arranged the various smaller exhibition rooms and lofts, which are devoted to the classified exhibits. The central hall was designed for the gathering of congresses of industrial, mechanical, and engineering societies, and for this purpose a wide gallery is carried round the hall at each floor level, the total floor space thus provided affording accommodation for a large concourse of people. In the accompanying cut the central hall is shown as laid out for a former flower exhibition. In the basement there is a power and light installation, which, of course, is largely increased to meet the necessities of such special exhibitions as that which is now being held.

How to Kill Elm Beetles.

Prof. John B. Smith, the entomologist of the New Jersey State Experiment Station connected with Rutgers College, at New Brunswick, N. J., has devoted a great deal of time to the subject of elm beetles and how to exterminate them. The ravages of these insects have caused widespread regret in various parts of New Jersey, New York and Connecticut, particularly New Haven, over the destruction of hundreds of noble elm trees, and Prof. Smith was particularly busy last season explaining his experiments and advising precautions against the insects.

He has found that the pests are vulnerable to stomach poisons, and he makes his exterminator on the following formula: One pound of Paris green or London purple, mixed with 150 gallons of water; add a sufficient quantity of stone or shell lime, a pound for each pound of the poison; in order to give better adhesive qualities, add two quarts of glucose, or thick molasses, to every 100 gallons of mixture; when the water and lime have come to the boiling point, put in the poisons. This formula will have no bad effect upon the trees, for the soluble arsenic is neutralized by the lime. Another exterminator prepared by the professor is: Lead acetate, 11 ounces; sodium arsenite, 4 ounces, in 100 gallons of water, add adhesives to the mixture as before; thoroughly stir and apply.

The cheapness of these preventives and exterminators is remarkable. A hundred gallons of the first formula, which will thoroughly spray four large elm trees, cost about fifteen cents. Arsenite of soda in the second mixture may be obtained at about eight cents a pound, and acetate of lead at fourteen cents a pound.

One of Prof. Smith's contemporaries has recommended an emulsion of kerosene as a remedy. This he declares ineffective because non-poisonous.

Notice.

A premium of $250 is offered by the SCIENTIFIC AMERICAN for the best essay on

THE PROGRESS OF INVENTION DURING THE PAST FIFTY YEARS.

This paper should not exceed in length 2,500 words.

The above-mentioned prize of $250 will be awarded for the best essay, and the prize paper will be published in the Special 50th Anniversary Number of the SCIENTIFIC AMERICAN of July 25. A selection of the five next best papers will be published in subsequent issues of the SCIENTIFIC AMERICAN SUPPLEMENT at our regular rates of compensation.

The papers will be submitted for adjudication to a select jury of three, to be named hereafter.

Rejected MSS. will be returned when accompanied by a stamped and addressed envelope.

Each paper should be signed by a fictitious name, and a card bearing the true name and the fictitious name of the author should accompany each paper, but in a separate sealed envelope.

All papers should be received at this office on or before June 20, 1896, addressed to

Editor of the SCIENTIFIC AMERICAN,
361 Broadway, New York.

Botanical Notes.

In A. Lewinii, Herr L. Lewin (Ber. Deutsch. Bot. Gesell., 1894, pp. 283–290) discovered a poisonous alkaloid, to which he gave the name of anhalonine, and which was found to resemble strychnine in its properties. This alkaloid was found also in other species of Anhalonium, and in Mammillaria uberiformis, Cactus fimbriatus, C. pentagonus and Cereus flagelliformis.

Vegetable Rennets.—The common butterwort (Pinguicula vulgaris), a plant indigenous to Europe and America, has the property of giving consistence to milk. Linnæus says that the solid milk of the Laplanders is prepared by pouring it warm and fresh from the cow over a strainer upon which fresh leaves of the butterwort have been laid. The milk, after passing among them, is allowed to stand for a day or two until it begins to turn sour. It throws up no cream, but becomes compact and tenacious and most delicious in taste. It is not necessary that fresh leaves should be used after the milk has once turned; on the contrary, a small portion of this solid milk will act upon that which is fresh, in the manner of yeast.

The Yellow Bedstraw (Galium verum) also has the property of curdling milk, and has been used for that purpose, the leaves and flowers being the parts employed. "The people in Cheshire, especially about Namptwich," says Gerard (Herbal, p. 968), "where the best cheese is made, do use it in their rennet, esteeming greatly of that cheese above other made without it." The flower heads of the common artichoke (Scolymus) have long been known to possess the property of coagulating milk.

The Traveler's Tree.—The statement has often been made in the narratives of travelers and in botanical works that the Ravenala Madagascarensis, a splendid plant belonging to the same order as the banana, is called "Arbre du Voyageur" by the French in Madagascar on account of the water that is stored in the large cuplike sheaths of the leafstalks, and which is sought for by travelers to allay their thirst. Mr. E. Bureau in a lecture on the Flora of Madagascar reproduced in the Revue Scientifique disposes of this story as a myth. He admits the presence of the water, but says that the plant grows in regions where it rains all the year round, and where there is no difficulty in procuring water. Moreover, says he, the tree being very tall and the leaves being situated at the summit, it would be necessary for a person to climb to the top to get a drink. Nevertheless, the tree has very useful qualities. Its trunk furnishes an edible substance and is used for rough carpenter work; the flattened bark forms floorings, and the leaves are employed for the walls and roofs of huts. The leaves are also worked in different manners to form mats, plates, dishes, spoons and drinking vessels, that are changed at every meal. One is sure every morning of finding in the market a new supply of fresh leaves to renew his plates and dishes.

IN order to determine the relative digestibility of oleomargarin and natural butter, Dr. Adolph Jolles has carried out a long series of observations on dogs fed during four consecutive periods with natural butter and with margarin. According to a report made to the Imperial Academy of Vienna (N. Y. Med. Jour.), all other things being equal, it was found that from 97 to 98 per cent of the fatty matter was uniformly digested, whether it was butter or margarin which was used. During the first and third periods, while butter was given, 98·4 and 97·1 per cent; during the second and fourth, while margarin was used, 97·9 and 97·3 per cent of the fatty matter given was digested. It thus appeared in this experiment, where proper care was taken to have all the conditions similar, that natural butter and manufactured margarin had practically identical coefficients of digestibility and nutritive value.