

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

TERMS FOR THE SCIENTIFIC AMERICAN.

(Established 1845.)

One copy, one year, for the U. S., Canada or Mexico, \$3 00

The Scientific American Supplement

(Established 1876)

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, for the U. S., Canada or Mexico. \$6.00 a year to foreign countries belonging to the Postal Union. Single copies 10 cents.

Building Edition of Scientific American.

(Established 1885.)

THE BUILDING EDITION OF THE SCIENTIFIC AMERICAN is a large and splendidly illustrated periodical, issued monthly, containing floor plans and perspective views pertaining to modern architecture. Each number is illustrated with beautiful plates, showing desirable dwellings, public buildings and architectural work in great variety.

Export Edition of the Scientific American

(Established 1878)

with which is incorporated "LA AMERICA CIENTIFICA E INDUSTRIAL," or Spanish edition of the SCIENTIFIC AMERICAN published monthly, uniform in size and typography with the SCIENTIFIC AMERICAN. Every number contains about 50 pages, profusely illustrated. It is the finest scientific, industrial export paper published. It circulates throughout Cuba, the West Indies, Mexico, Central and South America, Spain and Spanish possessions—wherever the Spanish language is spoken.

MUNN & CO., Publishers, 361 Broadway, New York. The safest way to remit is by postal order, express money order, draft or bank check. Make all remittances payable to order of MUNN & CO.

NEW YORK, SATURDAY, MAY 16, 1896.

Contents.

(Illustrated articles are marked with an asterisk.)

Arctic sunburn, 313; Beetles, elm, how to kill, 310; Books and publishers, new, 316; Botanical notes, some queer, 312; Coal crusher, Evans and Morgan's, 308; Columbia University dedication, 307; Cycling notes, 308; Digestibility of butter and oleomargarin, 310; Dog power in wheeling, 312; Electrical exposition, the, 306, 309; Electric light, the ethereal, 314; Electric wires damaging trees, 314; Exhibition, Budapest, 314; Gramophone, the, 307; Henry, Frank, inventor, 307; Horseless carriage race, a new, 307; Hunting trap, the Dela Vergne, 312; Ice shaver and shaker, Raubold's, 308; Inventions recently patented, 315; Mail notes, some queer, 312; Mosaic, a great, 313; New York rapid transit, 306; Ocean storms, measuring, 313; Olympic games, the, Athens, 314; Patent commissioner's report, 316; Patents, recent, 311; Patents granted, weekly record of, 316; Photographic prints on plain paper, 308; Rennets, vegetable, 310; Science notes, 307; Seat, a novel spring, 308; Steel tempering (S.S.), 315; Trees damaged by electric wires, 314.

TABLE OF CONTENTS OF SCIENTIFIC AMERICAN SUPPLEMENT No. 1063.

For the Week Ending May 16, 1896.

Price 10 cents. For sale by all newsdealers.

I. ARCHAEOLOGY.—Life in Babylonia in Patriarchal Times.—By THEO. G. PINCHES, M.R.A.S.—Containing the results of recent explorations. 16984
II. ARCHITECTURE AND BUILDING.—The Mosaic Decoration of St. Paul's.—An account of this extensive decoration, which has just been completed.—1 engraving. 16990
III. CIVIL ENGINEERING.—The Mexican Drainage Canal.—A detailed description of the old and recent plans. 16992
The Chamonic Railway.—This new project for a railway between Chamonic and the Mer de Glace.—If the scheme is carried out, it will be one of the most remarkable railways in Switzerland.—3 illustrations. 16994
A Chinese Railroad.—The line from Tientsin to Shao-Hai-Kuan.—A report by the United States consul at Tientsin. 16995
IV. ELECTRICITY.—Recent improvements in America and Europe in the Storage of Electricity.—By HERBERT LLOYD.—This important paper gives a resume of all of the principal storage battery installations that have recently been made. 16997
V. ETHNOLOGY.—The New City Museum in Bremen.—Engravings are given of two groups illustrating incidents in the life of the German state in East Africa.—2 illustrations. 16991
VI. MARINE ENGINEERING.—The Bazin Roller Boat.—This vessel is now being built on the Seine and designed to roll over the water.—1 illustration. 16995
VII. MISCELLANEOUS.—Ancient Toys.—An interesting account of the toys of the ancient Egyptians, the Greeks and the Romans.—Many curious engravings. 15 illustrations. 16986
The Chronicles of Froissart.—A review of the new translation of the mediæval chronicles of Froissart.—2 illustrations. 16987
Watches for Oriental Countries. 16985
Electrical Notes. 16996
Engineering Notes. 16996
Miscellaneous Notes. 16996
Selected Formulas. 16983
VIII. NATURAL HISTORY.—The Composition of Expired Air and its Effects upon Animal Life.—The investigations were carried on by means of a grant from the Hodgkins fund, Smithsonian Institution.—It deals with the peculiar substances of organic origin contained in expired air, with special relation to ventilation problems. 16988
IX. PATENTS AND INVENTION.—Report of the Commissioner of Patents for the Year 1895.—A summary of the tables printed in the report; also giving the actions of the office, the prosecution of cases by applicants, the scientific library, the patent bar, recommendations of the Patent Committee, the American Bar Association, the necessity of more room in the Patent Office, etc., together with a list of inventors who have taken out more than 100 patents each. 16987
Notice.—Announcement of the SCIENTIFIC AMERICAN prize for an essay on "The Progress of Invention During the Last Fifty Years." 16999
X. PHOTOGRAPHY.—Halation—Why it Occurs and How to Prevent it.—By T. BOLAS, F.C.S., F.I.C. 16992
XI. TECHNOLOGY.—A New Glass Product. 16985
The Commercial Value of Acetylene Gas as an Illuminant.—By LEWIS A. FERGUSON.—An interesting paper read before the National Electric Light Association. 16991
Division Table for a Photometer Bar. 16992
XII. TRAVEL AND EXPLORATION.—Travels in Cambodia and Java.—Mr. Albert Tissandrer's travels in the Indies.—4 illustrations. 16985
The Egyptian Army and the Nile Campaign.—This article gives an account of the recent events in Upper Egypt.—1 illustration. 16983

THE NATIONAL ELECTRICAL EXPOSITION.

The managers of the National Electrical Exposition, of which we give a detailed notice on another page, have every reason to be gratified at the success which marked the formal opening at the Grand Central Palace, New York, on Monday, May 4. It speaks well for the future extended use of electrical appliances among the people at large, and for the increasing popular interest in matters of purely scientific and technical interest, that for half an hour previous to the opening hour the street was filled with an expectant crowd, and that the interior of the spacious hall was closely packed with an enthusiastic audience. This is not the first occasion during this season on which industrial and artistic exhibitions have been crowded, while the various local theaters and amusement halls have been complaining of the paucity of their attendance. Without in any sense decrying the value and necessity for the latter institutions, we cannot but express our gratification at this growing popular interest in the various arts and sciences, to the awakening and sustaining of which interest we have endeavored to do our share during the past half century.

After a careful inspection of the exhibit it is difficult to realize that all this practical development of the electrical art has been the work of a single generation; yet if we turn from the modern to the historical section, it is at once evident that the date of the birth of the practical age of electricity falls easily within the last twenty to thirty years. While it is true that some of the simplest properties of electricity were dimly perceived by the ancients, and its history dated from the remote past, it was not until the seventies of the present century that electric light and power demonstrated to the public satisfaction their practical commercial value. The very excellent historical exhibit lends a special interest to the exposition as showing this later development in concrete form; and the principle crudely embodied in the models in the Patent Office exhibit may be seen expressed in a perfect mechanical form in the varied display of modern industrial and domestic appliances.

RAPID TRANSIT IN NEW YORK CITY.

In a recent issue we drew attention to the fact that the rapidly increasing traffic on the New York surface and elevated roads demanded a more immediate relief than could possibly be afforded by the proposed Broadway tunnel, and suggested that the speediest way out of the difficulty would be to extend the existing elevated roads and enlarge their capacity. The Rapid Transit Commission have claimed that though they have been open to suggestions from the elevated roads, looking to an extension of the system, no proposition has as yet been laid before them.

We are glad to notice, however, that Mr. Gould and Mr. Sage, in an interview with Mayor Strong, on May 4, submitted a proposition for an extension of the elevated roads and a considerable increase in their present capacity. The proposed new lines consist of an extension of the Ninth and Sixth Avenue lines from the present uptown terminus to the west side city limits. It also provides for crosstown connection by way of Canal and Center Streets with the terminal station of the Third Avenue line, at City Hall Park.

The proposed west side extension will, of course, be very welcome to the residents who will be served by it, and it will do much to build up the district through which it passes. A proposal, however, which is of greater importance, and will benefit a far larger portion of the traveling public, is that to lay a third track on all the existing lines upon which there are but two tracks at present, and upon all the extensions, and to run express trains over the whole system. It is the intention of the Mayor to submit the proposition to the Rapid Transit Commission; and as there is no necessary antagonism between it and the proposed tunnel, it is to be hoped that they will give it their full indorsement.

Even if the proposal of the elevated roads be immediately carried out, it is likely that there will be a strong demand for the tunnel line by the time, or soon after, it is completed. In the lower part of the city it will serve a district which lies midway between the Third and Sixth Avenue lines, and it will help to accommodate a traffic which has already overtaken the capacity of the existing surface roads.

The pressing need, however, is a scheme which will give speedy relief, and the proposal now before Mayor Strong is the only one in sight which promises to do this.

THE PATENT COMMISSIONER'S REPORT FOR 1895.

The Patent Commissioner's Annual Report is a document which has a special interest in a country like our own, which owes its wealth and power so largely to the genius and patience of the inventor and to the recognition and protection which are afforded him by our admirable system of patent laws.

The report for 1895 shows that there were 39,145 applications for patents in 1895, and 21,998 granted. There was a surplus of receipts over expenditures of \$160,750,

bringing the total balance to the credit of the Patent Office in the United States Treasury up to \$4,529,886. In every year since 1861 there has been a surplus over all expenditures.

In proportion to population, more patents were issued to citizens of Connecticut than to those of any other State—one to every 927 inhabitants. Then follow the District of Columbia, with one to every 1,047; Massachusetts, one to 1,248; Rhode Island, one to 1,528; New York, one to 1,694; Colorado has one to every 1,917. The fewest patents in proportion to population were granted in the South, where Mississippi has one to every 34,854 inhabitants; North Carolina, one to every 24,891; and Georgia, one to every 16,117. Of the patents issued, 2,049 were granted to citizens of foreign countries, and of these, 614 were to residents of England, being a larger number than to residents of any other foreign country.

As the result of an effort made through the various diplomatic representatives of the United States residing abroad, the library now possesses a record of 981,961 patents issued by foreign countries. A comparison with the United States shows that, prior to 1870, the total number of patents granted by the United States was 108,416 and by foreign countries 222,615. The total number granted up to date is for the United States, 562,458, and for foreign countries, 981,961, making a grand total for the world, from the earliest records up to 1895, of 1,544,419.

The following is an alphabetical list of twenty-five inventors to each of whom the Patent Office has granted more than 100 patents, the whole number granted to these inventors being 4,894: Edward J. Brooks, 116; George D. Burton, 128; Luther C. Crowell, 147; Peter C. Dederick, 107; Thomas A. Edison, 711; Rudolf Eickemeyer, 158; Louis Goddu, 131; Rudolph M. Hunter, 228; John W. Hyatt, 198; Hiram S. Maxim, 131; Arthur J. Moxham, 144; Lewis Hallock Nash, 119; Edwin Norton, 125; Feeborn F. Raymond, 2d, 144; George H. Reynolds, 101; Francis H. Richards, 343; Cyrus W. Saladee, 148; Walter Scott, 109; Charles E. Scribner, 248; Sydney H. Short, 111; Elihu Thomson, 394; Charles J. Van Depoele, 244; George Westinghouse, Jr., 217; Edward Weston, 274; William N. Whiteley, 118.

In the whole of the report there is no question of more vital importance to the inventor than that of the enactment of rules and regulations concerning the admission to a solicitors' bar of those entitled to practice before the Patent Office.

The commissioner strongly recommends that such a bar be established. As the matter now stands, there is practically no guarantee required either of the character or capacity of a practitioner. "Any one who has not been proved before the Patent Office to have retained the money of his client, or to have been guilty of other gross misconduct, is permitted to practice before the office," and it is a fact that there are to be found unscrupulous and unqualified men who do not hesitate to go before the office having in charge cases for the conduct of which they are utterly unqualified. The report states that, "it not infrequently happens that a practitioner . . . instead of bestowing the requisite labor and care" upon a meritorious invention, most of the claims for which have been poorly drawn up, and have been rejected by the office, "promptly directs the cancellation of all claims objected to, and thus puts the application into condition for allowance with an inadequate claim." Appeals are also taken upon a case "for no assignable reason other than to secure from some unlettered client the appeal fee." Another class is spoken of as "lying in wait" for those who come to present their inventions in person. They are to be found around the Patent Office elevator, "and they have no other place of business than the attorneys' room in the Patent Office."

It is high time, both in the interests of the reputable attorney and his client, that such a patent bar as the commissioner suggests was established; and this strong denunciation of so-called patent attorneys and bogus firms, whose sole object is plunder, is very timely. They not only rob the "unlettered client," but they cast a shadow upon the reputable practitioner, and bring discredit upon the Patent Office itself—and this just at the very time when the hands of that institution need to be strengthened.

The report makes favorable reference to the bill prepared by the patent committee of the American Bar Association, and now before the House of Representatives, which we discussed editorially in our issue of April 18.

The attention of Congress is called to the pressing need of the Patent Office for enlarged accommodation. It seems that a large part of the building, which was originally intended for the exclusive use of the Patent Office, has been appropriated to the use of other governmental departments. The result is that "the force of the Patent Office is scattered in remote parts of the building; its valuable records are disposed upon all the floors and are at all times exposed to the danger of conflagrations and other loss;" and there are other disabilities which render the passage of Senate bill 429, for the construction of a building for the use of the Patent Office, an imperative necessity. Failing this,