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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.

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.

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.

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.

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.

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.

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."

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,

the very least that should be done is to reserve the present building for the exclusive use of this department.

We heartily indorse the suggestion that an exhibition hall for models should be established in which the valuable collection of models already in possession of the office could be permanently housed and open to public inspection. Our readers will agree with the commissioner that it was "a public calamity when the office was compelled to suspend receiving models for want of space in which to exhibit them." The success of the exhibit of Patent Office models at the Chicago and Atlanta expositions and the very instructive historical exhibit now to be seen at the Electrical Exposition at New York, indicates how instructive and historically interesting such a national hall of models would be. It would be a concrete history of our national progress in the industrial arts.

The report finally draws attention to the need for a more thorough system of classification of the accumulated records of the world relating to the granting of patents or the description of inventions. The necessity for complete and readily accessible records will be understood when it is remembered that "while all patents are prima facie valid, no patent will be finally sustained by the courts which purports to secure to the grantee the exclusive use of an improvement which has been before patented in this or in any foreign country, or which has been described in any printed publication in any language before the invention thereof by the patentee." The matter at the Patent Office has been classified "with great care, and yet not with that full perfection" which is indispensable. This "full perfection" can only be secured by a "separate division of experienced examiners, devoted exclusively to the work of classification." The commissioner is of the opinion that the work could be so exhaustively carried out by such a division that no patent could be issued without an inspection of all that is in print pertaining to the same art. The work could be completed in five years at a cost of \$64,500.

We think that the sum named is reasonable in view of the great value of the result. A perfect classification of the above records is absolutely necessary to the protection of the inventor. In granting a patent the Patent Office should be in a position to know with certainty that there could be no possible subsequent loss to the inventor on the ground of previous publication.

The commissioner closes the report with an extremely valuable categorical review of the growth of industrial arts during the past twenty-five years. The object and the execution of this work are alike admirable. It reflects the greatest credit upon the Patent Office, and is a clear evidence of the earnest sincerity with which it has always endeavored to safeguard the interests of the inventor.

The commissioner's report is published in the current issue of the SUPPLEMENT.

The New Columbia.

The spacious and charming site of Columbia University, New York City, was dedicated on May 2, with impressive ceremonies, in the presence of many thousand visitors. In the morning the exercises attending the laying of the cornerstones of the Physics building and Schermerhorn Hall were of a semi-private nature, the real celebration taking place in the afternoon. The morning ceremonies took place amid workmen's sheds and piles of cement, derricks and heaps of granite blocks, but the friends of Columbia could picture to themselves the imposing group of buildings which are so soon to rise on Morningside Heights. The procession included the members of the faculty, officers of the college, trustees, architects and speakers. Dr. Marvin R. Vincent acted as chaplain and Prof. Ogden N. Rood applied the mortar to the foundations and the heavy cornerstone of the Physics building was lowered into place. J. Howard Van Amringe, Dean of the College, delivered an address. Dr. Dix acted as chaplain when the foundation of Schermerhorn Hall was reached. The cornerstone was then laid by Mr. Wm. C. Schermerhorn, the donor of the building and chairman of the board of trustees. Dr. Henry Fairfield Osborn delivered the address. The procession then reformed, and the next two hours was spent at luncheon and enjoying an informal reunion. Luncheon was served in a big tent near the partially completed library.

At two o'clock the procession began to form for the afternoon exercises. The procession was made up in the main as in the morning, and included the clergy, professors and tutors, officers of the college, undergraduates, alumni, guests and speakers. While the professors and students in their caps and gowns were assembling in the college grounds, the Seventy-first Regiment was marching up Amsterdam Avenue escorting Lafayette Post, G. A. R. The band struck up "Hail to the Chief," and a mighty cheer went up as soon as Governor Morton arrived in his carriage. In the meantime the procession was passing into the great tent which had been erected in the south court. It was soon filled with the undergraduates and the under-

graduates of Barnard College, the members of the faculty and the invited guests. The exercises were begun by a prayer by the Rev. Edward J. Coe. He was followed by Seth Low, the President of the University, who made an eloquent address. Members of Lafayette Post and their escort then came forward to perform the ceremony for which they had assembled. Adjutant Wilbur F. Brown presented the national flag, with a flagstaff and pedestal of granite and bronze, with fitting remarks. The colors were then accepted by President Low. When this ceremony was ended the dedication ode, written in Latin for this occasion by Prof. H. T. Peck, was sung by the student body under the leadership of the glee club, then came the speech of the day, which was delivered by the Hon. Abram S. Hewitt. When Mr. Hewitt had finished, Dr. Charles W. Eliot, the President of Harvard University, delivered an address. By this time darkness was beginning to steal over the heights, and the audience was dismissed after the benediction, which was pronounced by Bishop Potter.

It has been often said that the citizens of New York were not proud enough of Columbia, manifesting too slight a concern for its growth and contributing too little to its material support, but this is true no longer. It is to-day a university in the true sense of the word and a change of place was essential to its upgrowth, and the officers of the university have been wise and fortunate in choosing a site which will at the same time give it seclusion and which is well adapted for the pursuit of scholastic studies.

Obituary.

FRANK HENRY.

Frank Henry, inventor of the feller (foot hemmer) and many other devices in connection with sewing machine attachments, died at his home, 5520 Main Street, Germantown, Philadelphia, Monday, April 6, 1896, of pneumonia.

Mr. Henry was of Scotch Puritan ancestry, and was born at Norwich, Conn., in 1821. He was the only son of David Henry, M.D.

About 1840 he came to Philadelphia and graduated in pharmacy. He then began the study of medicine at the University of Pennsylvania, but before completing his course, he became interested in the manufacture of artificial limbs. This diversion from his original bent inclined his mind toward mechanical devices, and changed his career. In 1853 his penchant for experimenting with sewing machines began, which business was then in its infancy.

Among those of his colleagues interested in his work were the late Mr. Charles Lennig, the well known chemical manufacturer; the late Dr. D. Eldredge Rice, of the Elliptic Sewing Machine Company; Mr. Cheney and Mr. G. B. Sloat, of Philadelphia; the late Mr. Wheeler, of the Wheeler & Wilson Manufacturing Company, of Bridgeport, Conn.; Mr. E. H. Craige, of the Domestic Sewing Machine Company, of New York, and Mr. H. C. Goodrich, attachment manufacturer, of Chicago, Ill. Mr. Henry's name was seldom seen in connection with his many inventions, he preferring others to carry out his ideas; but his name was familiar from its long and intimate association in the minds of the older sewing machine fraternity. From 1853 until 1866 he was connected with the Wheeler & Wilson Manufacturing Company. The first intricate sewing machine stitching exhibited at the Chestnut Street office, Philadelphia, was done by his skillful hands.

Among other devices he invented in 1856 the spiral scroll hemmer and feller combined; in 1857 the Wheeler & Wilson presser arm tucker; in 1860, the star cluster hemmer; in 1867, the foot corder patent, etc. Of the many inventions of the past, few have ever proved more useful to the public or more profitable to the maker than the little device known as the "feller" for felling seams on a sewing machine. This was probably the most valuable of Mr. Henry's inventions, and is now in general use on all sewing machines.

In 1870 Mr. Henry became associated with Mr. Goodrich in the manufacture and improvement of their many inventions at Chicago, Ill., until 1890, when he retired. While Mr. Henry's inventions were chiefly connected with sewing machine works, he invented and patented many other novelties and household articles, among them, in 1875, the hand hem folder; in 1880, the Monitar jar, etc.

A New Horseless Carriage Race.

The Rhode Island State Fair Association announces that \$5,000 will be given in prizes in a series of horseless carriage races to be held during its annual exposition week at Narragansett Park, Providence, R. I., in September. Racing of this kind has been attempted before, but never on so large a scale. The series of races will be held on a regulation trotting track, and the results promise to be interesting. One of the exhibition buildings will be set apart for a horseless carriage exposition. Certainly no "infant industry" was ever so coddled and fostered by the offer of large rewards; up to the present time the results in this country have not been worth the cost.

Science Notes.

The Fort Pitt Street Railway Company, of Pittsburgh, has given \$100,000 for a zoological garden at Highland Park.

According to Prof. Bodio, of 8,254 communities in Italy, 1,454 have no supply of pure water, and 4,877 no regular sewage system.

At Calcutta University 2,743 students are matriculated, more than five times as many as in 1865. There are ninety-nine Indian colleges affiliated with the university, which receives no public money in any shape.

Prof. Wortoff, of Moscow, who held the chair of bacteriology at that university, has died of blood poisoning caused by a wound in the neck, inflicted upon him by the explosion of a flask containing a bacterial culture.

It has been decided to honor Pasteur in the district where his first experiments in vaccinating sheep stricken with anthrax were carried out. These experiments were made at Pouilly-le-Fort, in 1881. The statue is to be erected at Melun, near Fontainebleau.

Dr. Wm. H. Wahl, for many years resident secretary of the Franklin Institute, has been honored by the French government by election as "Officier d'Académie," with the decoration of the "palme académique," in recognition of his labors as secretary of the Franklin Institute.

Prof. Raoult, of Grenoble, has received the biennial prize of \$4,000 from the Academy of Sciences for his discovery of the numerical ratio between the molecular weight of a substance and the difference produced on the freezing point of the liquid that dissolves it by its addition thereto, as well as on the expansion of the vapors in the liquid.

The carbon dioxide in the atmosphere of Edinburgh has been determined daily for the last three years by Dr. C. H. Stewart, of the Public Health Laboratory of that city. In 1893, the proportion 3.96 in 10,000; in 1894, 3.72; in 1895, 3.45. It should be remembered that comparatively little carbon dioxide is yielded by clay soil like that of Edinburgh.

In French surgery, hypodermic injections of artificial serum are used to combat the weakness following operations, says the Medical Record. The serum used is known as "Hayem's," and consists of sodium chloride, 5 grammes; sodium sulphate, 12 grammes; distilled water, 1 liter. This fluid is sterilized by being brought to the boiling point.

Oxalate of lime is found in the bark of trees. The strange discovery has recently been made by Dr. Kraus, in Germany, showing that there is a steady loss of these crystals during the winter season. Just after spring growth had commenced a currant (*Ribes sanguineum*) had lost 16 per cent, the common dog rose 28 per cent, and the common apple 50 per cent. Just what part this change of proportion plays in the economy of plant life is unknown.

Drs. Gebhard, Fraenkel, and Grawitz have shown, says Modern Medicine, that there is a notable increase in the proportion of the number of corpuscles in the blood in persons who go from a low to a high altitude. This increase takes place in from twenty-four to thirty-six hours. It is possible that this fact may be one of the reasons for the beneficial effects of high altitude in cases of pulmonary tuberculosis. The increase in the red corpuscles is attributed to the desiccating effects of a high atmosphere.

The use of oxygen in combination with chloroform in anæsthesia originated, according to the British Medical Journal, with Neudorfer, and was in vogue in Vienna about ten years ago. Bertel, in a communication to the St. Petersburg Medical Society, asserted that more rapid and successful anæsthesia followed its use. A number of other Russian surgeons have employed it. According to the Medical Press, sixty-one deaths have occurred during the administration of anæsthetics in the United Kingdom in the past year. Fifty-two of these have been due to chloroform.

Since it has become known that milk in a bucket standing in a sick room will absorb germs, a recent writer (Medical Press and Circular) has applied the idea in the treatment of smallpox, fevers, diphtheria, etc., with marked success. The patient is laid on a mattress covered with blankets. He is then packed in a sheet saturated with milk, covering the entire body, in which condition he remains an hour. A warm water bath is then given, after which the surface is dried and the patient is put to bed.

Dr. Deninger, of Dresden, says the Practical Engineer, is reported to have prepared carbon monosulphide pure for the first time, and finds that, instead of being, as described in the text books, an amorphous red solid, it is really a colorless gas. He prepared it by heating dry sodium sulphide with chloroform, or preferably iodoform, in sealed tubes, to 180° C., the gaseous products being made to bubble through aqueous caustic potash, which absorbed the sulphureted hydrogen, and the carbon monosulphide passed through unabsorbed. By acting upon carbon disulphide with sodium, in the presence of some aniline, the new gas was also obtained. It is colorless, and easily condensable to a clear liquid, which evaporates rapidly and is extremely explosive.