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APPEAL IN THE CORDITE CASE REJECTED.

It is not the less regrettable, because expected, that the appeal of the Maxim-Nordenfolt Guns and Ammunition Company against the judgment delivered by the English courts in the celebrated Cordite case has gone against the appellants. The judgment was given in such strong and explicit terms that it is scarcely to be expected that the Maxim-Nordenfolt Company will carry the case to any higher court. Whatever may be the technical merits of the case thus concluded between Mr. Maxim and the English government—and to our mind they lie entirely with the former—it must be generally admitted that the decision is a distinct "hardship," as it has been termed by a prominent English journal, upon the distinguished inventor. Mr. Maxim's smokeless powder was not one of that class of inventions that are suggested or prompted by some existing and profitable device. It was produced as the necessary counterpart of the Maxim rapid-fire gun, in experimenting with which it was found that the ordinary powder produced such a dense volume of smoke as to make it impossible to see the target. The smoke of the old powders, which was merely an inconvenience when the interval between shots was measured by minutes, became a positive obstruction when the interval was reduced to seconds. Mr. Maxim set out to produce a smokeless powder, and the result of a long series of costly experiments was the smokeless powder maxinite. It was by a mere rearrangement of the proportions of maxinite and the substitution of a constituent which differed from the one replaced, as was proved by its experts' own testimony at the trial, merely in name, that the English government succeeded in producing cordite—a powder which has never shown the stability possessed by maxinite, and only recently exploded in large quantity during some tests at the government proving grounds. It is certainly a hardship that after so many years of toil and expense the inventor should see the largest share of the material fruits of his labors, estimated by Mr. Maxim at several million dollars, snatched away from him on a legal technicality of the flimsiest description.

THE COMMERCE OF THE PORT OF NEW YORK.

There is food for thought and not much room for encouragement in the pages of the last report issued by the New York Chamber of Commerce. The first thing that is apparent in looking over the tables of imports and exports is the fact that, though in the preceding decade the volume of trade had been growing at a steady and rapid pace, in the present decade it has remained about stationary, the totals for 1896, indeed, being somewhat less than those for 1891. In view of the fact that the trade of the whole country that crosses the Atlantic seaboard is steadily increasing, this stagnation will come as a surprise to those citizens of New York who have never believed that it could possibly have a successful competitor as the great port of entry for the United States. The facts, however, are indisputable. What are the causes? One of these, to which we drew attention in a recent issue, is to be found in the difficult entrance to New York Harbor, and its inadequate depth as compared with the rapidly increasing size and draught of the large freighters which are being built for the American trade. It was only yesterday that a freight steamer of from 5,000 to 7,000 tons was considered to be exceptionally large, yet to-day we have a vessel plying regularly between this port and Europe which has a displacement of over 23,000 tons, and draws from 29 to 32 feet of water. A winding channel, with a mean depth of 30 feet, will be a constant menace to the safety of vessels of this class, and yet the present indications are that on account of their great earning power they will be built in increasing numbers in the near future. There are indications, however, that this difficulty is in a fair way to be removed, and surveys are now in progress looking to the creation of a 35-foot channel with a minimum width of 1,000 feet.

A more serious check to the commercial prosperity of this port—more serious because it is even now actively in operation—is the costly handling which most of the freight has to undergo between rail and ship when it reaches the Hudson River. New Yorkers who speak with some degree of pride of the vast and well organized system of lighterage on the East and North Rivers forget that, however well it may be carried out, this transfer by lighters is a heavy handicap upon New York in its competition with other Atlantic ports where the cars unload directly into the ship's hold. It is a well recognized fact among railroad men that the cost of handling is relatively far greater than the cost of haul, and this explains the fact that the mere transfer at New York figures as a far larger item in a through rate from Buffalo than the expense of the journey by rail. Although it is not our intention at this time to enter fully into the question of remedies, it may be pointed out, in passing, that just here is found one of the strongest arguments in favor of the construction of the North River bridge; for this structure, taken in connection with a belt line around the lower end of Manhattan Island, and the proposed railroad bridge

across the East River, would enable a train load of freight to be shipped from interior points and landed at any pier in New York and Brooklyn.

In its report to the Chamber of Commerce on improving the dock facilities of the port of New York the committee on the harbor and shipping mentions the following disabilities under which the port is laboring: A lack of proper and sufficient wharves and docks; exorbitant charges by the city; the requirement that steamship lines shall build their own sheds, which revert to the city at the expiration of the lease; that steamship lines have to pay for the dredging of the docks; and that there is a movement on foot to subject to taxation the very sheds for which the city practically receives rental, which the lessee never really owns, and which must revert to the city at the end of the lease.

On the face of it these appear to be very severe conditions, and viewed in the presence of the fact that competing ports are pursuing a very liberal policy toward steamship companies, the New York methods would seem to be almost suicidal.

Coupled with the above, which might be called the internal difficulties of the situation, are others of an external nature in the shape of discrimination by the trunk railroads in favor of other ports such as Baltimore, Philadelphia, and Boston. Freight can be shipped by rail to these ports for from 2 cents to 5 cents per hundred pounds less than it can to New York. Moreover, the railroads make an extra charge of 2½ cents per hundred pounds, or \$6 per car, on each car load of produce from Chicago to Europe by way of New York that has more than one bill of lading—a charge that is not made on freight through any other port. The injustice of this discrimination is too glaring to call for any comment. On the whole, it is satisfactory to note that every one of the evils above mentioned is remediable, and it is to be hoped that the rude awakening which has come to the business men of the metropolis as to the fancied commercial impregnability of the port will result in energetic measures to remove every stumbling block to the city's continued growth and prosperity.

ALLEGED FRAUDULENT PATENT BUSINESS.

As announced in the SCIENTIFIC AMERICAN of June 26, proceedings looking to the debarment of Wedderburn & Company from practice before the Patent Office were officially begun in Washington July 24, Assistant Commissioner A. P. Greely having been designated by Commissioner Butterworth to hear the evidence. The government was represented by Examiner F. W. Winter and Law Clerk Charles C. Stauffer, and the defendants by Judge Jere M. Wilson, William L. Ford and William H. Bond. The trial was begun with the presentation by the government of a large amount of documentary evidence which had been carefully arranged and alphabetically assorted. The charges are said to have contained many specifications of unprofessional methods pursued by the defendants, and to have cited cases of alleged fraudulent practice, Examiner Winter going over the evidence and claiming to have abundant proofs to sustain all the charges. "There were," said Mr. Winter, "devices submitted to this office by Wedderburn & Company that were unpatentable and upon which no two men could differ, all tending to bring the department into bad repute, the defendants in such cases excusing their failure to obtain patents for their clients by casting reflections upon the department," the clients in many cases proceeding with patent cases "on account of the prizes held out to them by the defendants," as part of a widely advertised scheme of awards for those who should obtain the greatest number of patents. It was also charged that the defendants were guilty of unprofessional practice in their advice to clients on the taking of appeals from the Commissioner's decisions, "thus securing large fees that were not deserved and were unfairly obtained."

In regard to searches, or preliminary examinations conducted in the Patent Office on the part of the defendant firm for their clients, to determine the probable patentability of an invention, one witness declared that he was employed by the defendants as a searcher, though he was known to be "without experience in the patent business or with mechanics or inventions," and that he was instructed to "report favorably" on cases which he "could not understand, or that seemed very complicated." This witness also mentioned several cases on which he was instructed to report favorably without any search. Other witnesses testified to similar effect.

On the part of the defendants it was claimed that they had always endeavored to practice before the department in an upright and honest manner; that they had not defrauded a single client; that they had always instituted a careful investigation in the office records before accepting fees or applying for patents, and that their offer of prizes was merely for the purpose of "stimulating the dormant inventive genius of Americans."

The trial is likely to be somewhat prolonged. It has attracted great attention in legal circles, and is necessarily of great importance to all who have business

with the Patent Office. That a firm of patent attorneys doing a large business should be specifically charged with the offenses here made the subject of a trial is not only calculated to reflect discredit upon all trustworthy practitioners, but is a matter of serious concern to all who believe that the progress of inventions is facilitated and greatly promoted by our patent system.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The forty-sixth annual meeting of the association is to be held in the city of Detroit, Mich., on Monday, August 9, and is to continue to August 14.

The place of the meeting is the spacious Detroit high school building, having a large auditorium, near which are several class rooms where the different sections will meet.

The meeting on the first day in the morning will be given up to the organization of the several sections. In the afternoon at the different rooms the following papers are announced to be read by the respective vice presidents: in physics, "Long Range Temperature and Pressure Variables," by Carl Barus; in anthropology, "The Science of Humanity," by W. J. McGee; in geology and geography, "The Pittsburg Coal Bed," by I. C. White; in mathematics and astronomy, "A Chapter in the History of Mathematics," by W. W. Beman; in social and economic science, "Improvement Civilization," by Richard T. Colburn; in chemistry, "Sanitary Chemistry," by W. P. Mason; in botany, "Experimental Morphology," by George F. Atkinson; in mechanical science and engineering, "Applied Mechanics," by John Galbraith; in the zoological section L. O. Howard will read a paper in place of Prof. Goode, who died during the year.

The general session will meet in the evening in the auditorium, when a memorial address on the life and work of the late president, Edward D. Cope, will be given by Prof. Theodore Gill, of Washington, D. C.

On August 10, 11, 12 and 13 there will be meetings of the general session in the morning and of the sections in the afternoons. On Saturday, August 14, a complimentary excursion is arranged to inspect the United States ship canal in Lake St. Claire Flats.

About the same time or shortly after, the British Association of Science will hold its annual meeting in Toronto, and there is to be a visitation of members of the American Association and a general interchange between the members of both associations. The meeting of this year promises to be full of interest to all who are able to attend.

PREPARING FOR CIVIL SERVICE EXAMINATIONS.

The recent action of President McKinley, requiring removals to be for cause only after proper examination of complaints in a large number of positions under the government, gives greater importance to the matter of civil service examinations, the whole scope of which is yet but partially apprehended by the general public. The qualifications required and the nature of the questions to be asked of one who desires to qualify for any of the offices which have thus been opened to public competition may be learned without difficulty, but in large numbers of cases the applicant does not realize the absolute necessity there is of proper preparation until he fails to pass the examination. The National Correspondence Institute, of Washington, D. C., organized in 1893, undertakes to prepare applicants for examination on the correspondence plan, in this way drilling them in just the line of information and knowledge they will be required to possess in any particular place for which they apply. The Institute is conducted by a combination of specialists familiar with the classifications made in the different departments of the public service, and its scope is so extended that it undertakes even to prepare applicants for examination for the position of examiner in the Patent Office. The position is not an easy one to obtain, the examination embracing physics, technics, mathematics and mechanical drawing and chemistry, but the course of instruction by correspondence, as carried on by the Institute, is arranged to prepare an applicant for this as well as any of the other numerous positions open to public competition.

THE AUTOMOBILES RACE IN FRANCE.

Under the auspices of the Figaro and the Journal des Sports, the race for automobile vehicles between St. Germain and Dieppe, a distance of 170 kilometers (105 miles), was run on July 24. The weather was splendid and the roads were in perfect condition. The organization of the race was perfect, mounted gendarmes keeping order at the start. Fifty-six competitors were checked at the start alone, and others left at a later hour. Nearly all forms of the horseless carriage were represented, and some of them carried as many as six passengers. The race took place under the most successful conditions throughout the whole length of the course. Crowds of people eagerly waiting for them were at the towns and cities through which the vehicles passed. The start was made promptly at nine o'clock, and the competitors were expected at Dieppe

any time after one o'clock. Unfortunately, the special train which left St. Germain at the same time as the automobiles only arrived twelfth at Dieppe, the engine breaking down beyond Rouen. As might naturally be expected, the motorcycle arrived first, that of M. Jatin reaching Dieppe in 4 h. 13 m. 33 s. The motorcycle of M. Pellier arrived 4:43:55. The first horseless carriage to arrive was that of MM. De Dion et Bouton, which arrived in 4 h. 18 m. 34 s. The second to arrive was the carriage of M. Gilles Hourgieres, the time being 4:36:00. M. Gilles Hourgieres wins the first prize for carriages of two seats and MM. De Dion et Bouton won the prize for the carriage with four seats. The race was free from incidents and there were no accidents of any importance. The Paris-Dieppe race of 1897 is considered to be the most successful one which has ever been held. This is largely owing to the excellence of the arrangements in regard to the race.

PROF. LIBBEY CONQUERS THE MESA.

In our issue of June 19 we described the preparations which Prof. William Libbey, of Princeton University, had made to scale the "Mesa Encantada," which is near the Indian village of Tacoma, in New Mexico. Prof. Libbey was entirely successful in his efforts and reached the top of the famous height. By means of a $2\frac{1}{2}$ inch brass cannon he succeeded in throwing a cord over the crest of the Mesa, and by means of this cord the ropes required in making the ascent were pulled up. Fifteen hundred feet of rope was required to reach from one side to the other, and when all was in readiness a traveling block was attached to the pulley which had previously been spliced to the main rope, and pulled up to the edge of the overhanging ledge. A chair was then rigged on the traveling block and it was filled with pieces of rock which equaled the weight of a man. This was then sent up to the crest of the ledge, and the experimental trip was found to be entirely successful. Prof. Libbey then took his place in the chair and was raised to the top of the Mesa. All that was found at the top which indicated that it might have been inhabited was a monument of rocks which looked as if it were erected by man. With this exception, there were absolutely no indications that it had ever been inhabited, so that there is now authoritative proof that there is absolutely no ground for the romantic legends which have always clung about this mysterious table land.

THE CURIOUS DEATH OF A WHALE.

The white whale which was brought from Canadian waters to the New York Aquarium on June 5 died on July 24, of oedema of the lungs. On July 23 one of the keepers noticed that something was wrong with the whale, as he was attracted by the loud wheezing that accompanied each blow the whale made when he came to the surface for fresh air. It was thought that the lungs of the whale had become diseased, but it was afterward found out that some foreign substance had got into the blowhole, and one of the keepers found a piece of eel floating on the surface of the water. The true cause of the whale's trouble was then found. It was discovered that a piece of an eel was hanging from the blowhole. The water was at once drawn off from the tank, but this did not save the whale, which died in the evening. The whale's blowhole was examined after his death, and what appeared to be part of an eel was found protruding from it. One of the men started to pull this out, and he pulled until he got to the end of an eel about two feet long, which had become partially digested in the whale's stomach. The eel was preserved in alcohol.

A whale is obliged to come to the surface every ten seconds to blow. There is a valve in the blowhole which works very rapidly as the whale exhales the impure and inhales the fresh air. The whale Seltzer took the whole eel into the air passage, thus preventing the air valve from closing tightly. By continued wheezing he pushed more and more of the eel upward, thus opening the air valve wider. Finally the valve became so open that the water rushed in and flooded the lungs, and Seltzer drowned.

PULUJ'S PHOSPHORESCENT LAMP.

Puluj, the Austrian scientist, some fifteen years ago invented what he called a phosphorescent lamp, but, as it seemed a sort of imitation of Crookes and Geisler, it did not attract attention. He has, however, been pushing forward with the idea. The lamp is lighted by means of an induction coil or a glass plate electric machine. The static electricity thus produced is the same in every respect as lightning. The lamp can be operated even though only one terminal of the induction coil (the negative pole, for instance) is connected to it. The lamp itself is shaped very much the same as an ordinary Edison incandescent lamp, except that the wires leading into the lamp do not extend up the neck from a socket. They extend directly through the side of the bulb. They are made of aluminum. The negative pole of cathode ends in a small reflector-shaped disk. Hanging from the point or apex of the lamp globe is a small square sheet of mica. The piece

of mica faces the reflector disk or negative pole, and is painted with sulphide of calcium, an extremely phosphorescent substance. When the negative pole of the lamp is connected with an induction coil, the current is, as it were, concentrated by the little disk in the lamp, and a stream of radiant electricity flows from it to the painted sheet of mica, which immediately glows with an intensely brilliant phosphorescent light. This is Puluj's lamp as it is at present, but it is not, in its present stage, available for general lighting purposes. Puluj is experimenting with a view to arriving at a solution of this problem. He is carrying on a series of investigations to the end of producing a chemical lighting system. Not the production of light through the consumption of chemicals, but, as far as can be learned, the development of ethereal light vibrations by chemical means.—Photography.

THE PARTHENON INSCRIPTION DECIPHERED.

Mr George S. Horton, United States consul at Athens, Greece, has just transmitted to the State Department at Washington a most interesting report regarding the deciphering of an inscription on the architrave of the east end of the Parthenon. The face of the eastern architrave is thickly dotted with small holes, and for many years scholars have been under the impression that these holes were the traces of nails which had once held fast the letters of an inscription. It had also been suggested from time to time that a study of the nail holes might give some clue as to the letters themselves, which long ago were torn down, doubtless for the sake of the metal which they contained.

The difficulty of such a task, which has defied the archaeologists until now, is at once evident. The architrave is about 100 feet long, and the holes extend over 90 feet of its length. They dot thickly spaces from 3 to 4 feet in length, between which are circular blanks, where shields about 4 feet in diameter hung at fixed intervals.

Various attempts have been made, chiefly by German archaeologists, to read the nail holes. The most notable of the methods employed have been photography and transcribing with the aid of magnifying glasses. No attempts met with any success until Eugene Plumb Andrews, of the American School of Classical Studies at Athens, hit upon a practical method. He threw a rope over the eastern end of the ruined building and pulled up a rope ladder. Then he suspended a swing in front of the architrave 37 feet from the marble step below, and took what is known as a "squeeze" of the holes. His method was ingenious. Damp "squeeze" paper was first applied to the surface of the stone and patted well down with a brush. The paper broke through over the holes. Mr. Andrews then poked extra strips into each of the openings and lapped their ends down on the large sheet. When he had thus treated all the holes, he laid another sheet over the first, to hold the ends of the strips in place, and pounded all together into one solid sheet, on which the exact position of the nail holes was represented by protuberances or nipples. The time required in making these squeezes, twelve in number, was about one and a half months. The twelve squeezes represented the twelve spaces between the shields. He then arranged them in order and began studying. His greatest difficulty occurred at the start, for the reason that he did not know whether the inscription ran straight across all the squeezes or whether the squeezes were to be read separately, as the pages of a book. Moreover, the ancient workman who had nailed up the letters had made numerous mistakes, so that many of the holes were treacherous and confusing.

Mr. Andrews, however, persisted and light began to dawn. He found, for instance, that three holes placed thus . . indicated either a Δ or a Λ the metal letter having been nailed at its three corners, and that three holes placed thus . . showed where an O had been nailed. He made a transcript of the squeezes on a long strip of paper, marking the locality of the protuberances with dots, and then attempted to form the ancient letters by drawing lines from dot to dot. Finally he deciphered the word "Autokratora," which proved that the inscription had been Roman, and not, as formerly supposed, of an earlier date. The word "Nerona" threw further light on the matter. Here was evidently the dedication of a statue to the Emperor Nero, and the reading was simplified by a study of other similar inscriptions, as the same phraseology is used in all, much the same as in modern legal language.

The inscription translated is substantially as follows: "The council of the Areopagus and the council of the 600 and the people of the Athenians erect this statue of the very great Emperor Nero Caesar Claudius Sevastos Germanicus, the Son of God, during the generalship over the hoplites for the eighth time of Claudius Novius, the overseer and lawgiver, son of Philenous, during the priestess-ship of —, daughter of —."

It appears, therefore, that the inscription recorded the erection of a statue to Nero, probably in the Parthenon. As it is known from another inscription that Claudius Novius was general for the eighth time in the year 61 A.D., we have the exact date of this inscription.