

The proposal to establish a national map at the capital city of the United States is certainly, on the face of it, not unattractive, and no doubt it commanded the ready support of the members of the Senate. It is safe to say, however, that the gentlemen who cast their complacent vote on this occasion had not the least conception of the financial burden which they were preparing to lay upon the tired shoulders of the taxpayer; for it now appears, according to a competent authority, that the proposed map, if carried out strictly on the lines of the resolution, would cost in round numbers some \$500,000,000!

Of course the commission of five would not have gone far in its inquiry before it began to realize the gigantic nature of the undertaking; and if it had included an expert in relief map construction, it would have seen at the very outset that the scale proposed, namely, "one square yard of map surface for each square mile of actual area," was altogether out of the question. Indeed, the most cursory estimate of the size of the completed work shows the impossible dimensions which it would attain, and we think the august body that committed itself to the scheme will learn with un-mixed astonishment that it would be a six or seven mile drive to get round the map if it were built.

The United States have an east and west measurement of 3,000 miles and they extend north and south about 1,900 miles. On the proposed scale of 3 feet to the mile the ground map would be over a mile and a half long and over a mile wide, and there would be 5,700,000 square yards of ground surface to be modeled. If the model were to be given the proper degree of curvature, it would rise to a height of 1,440 feet above the ground level, or to over two and a half times the height of the Washington monument! But supposing that the scheme as it presented itself to the mind of the Senate was more modestly outlined, and that the proposed map was to be built on the flat, the cost, judged by the current prices that are paid for such work, would more than absorb the whole annual revenue of the United States government. Models that have heretofore been made for the scientific bureaus of the government have cost, we are told, \$10 to \$50 a square foot, and generally the higher price. If the work could be done at the lowest rate, it would cost, as anyone may readily estimate for himself, over \$500,000,000.

The passage of this peculiar resolution has brought to this office a characteristic contribution from Mr. Cosmos Mindeleff, of Washington, in which the utter impracticability of the scheme is set forth. The writer, who is entitled to speak with authority on a matter of this kind, makes this incident the occasion for a lengthy and interesting account of the art of relief map construction. The paper, which is illustrated by diagrams and a map, will be found in the current issue of the SUPPLEMENT.

The utter impracticability of the scheme is shown by a consideration of some of the details of the cost, as worked out by Mr. Mindeleff. As a material of construction, earth is out of the question, that is, if the model is not to be quickly worn away by the elements. Asphalt or cement is suggested; but the first costs over \$2 a square yard, and cement more. If the asphalt surface could be laid for \$1 per yard, this would require an appropriation of over \$5,000,000 for surfacing the model. To build up the contours in wood, as would have to be done to secure permanent work, would require some 1,000,000,000 feet of lumber, and the total cost of the material of all kinds would be not less than \$30,000,000. At 50 cents per square foot for modeling, instead of \$50 (the price which has been sometimes paid), this item would cost \$25,000,000, and taken altogether, the estimate for the completed map cannot be brought down below \$75,000,000.

At the same time, if the scheme were properly modified, there is no doubt but an effective work could be produced. On a scale of 3 miles to 1 inch, the map would be less than 100 feet in diameter, and the whole of it could be placed under cover. The scale would allow the topographical details to be brought out with sufficient distinctness, and the cost would be about fifty thousand dollars—a by no means prohibitive figure.

JAPANESE PATENTS.

The interest that is being taken by American manufacturers in the extension of the rights of protection by letters patent in Japan to American citizens is shown by the great number of inquiries that have been received by the Department of State during the past two months for information concerning the new convention between the two countries. The Japanese patent laws were established some years ago, but the privileges of the patent system were only extended to natives. The Japanese, being a progressive and inventive people, eagerly sought after and introduced American inventions and devices which could not be protected by the foreign inventor. On January 13 of this year a treaty was drawn up providing for the reciprocal protection of patents, trade marks and designs. The exchange of ratifications took place at Tokio on February 8, and on March 9 President McKinley issued a proclamation

promulgating the terms of the treaty. This is a great step forward for Japan in the march of civilization, and will serve to develop the country industrially and will doubtless serve to advance greatly our commercial relations with that country.

A commercial museum is being established at Osaka, and Americans should protect their wares by letters patent before sending them to Japan for exhibition.

AMENDMENTS TO THE PATENT STATUTES.

THE OLD STATUTES.

SEC. 4886. Any person who has invented or discovered any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, and not in public use or on sale for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceedings had, obtain a patent therefor.

SEC. 4920. In any action for infringement the defendant may plead the general issue, and having given notice in writing to the plaintiff or his attorney, thirty days before, may prove, on trial, any one or more of the special matters:

Third. That it had been patented or described in some printed publication prior to his supposed invention or discovery thereof; or,

SEC. 4887. No person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid, by reason of its having been first patented or caused to be patented in a foreign country, unless the same has been introduced into public use in the United States for more than two years prior to the application. But every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent, or, if there be more than one, at the same time with the one having the shortest term, and in no case shall it be in force more than seventeen years.

SEC. 4894. All applications for patents shall be completed and prepared for examination within two years after the filing of the application, and in default thereof, or upon failure of the applicant to prosecute the same within two years after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

SEC. 4898. Every patent or any interest therein shall be assignable in law by an instrument in writing; and the patentee or his assigns or legal representatives may, in like manner, grant and convey an exclusive right under his patent to the whole or any specified part of the United States. An assignment, grant, or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent Office within three months from the date thereof.

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SEC. 4887. No person otherwise entitled thereto shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid, by reason of its having been first patented or caused to be patented by the inventor or his legal representatives or assigns in a foreign country, unless the application for said foreign patent was filed more than seven months prior to the filing of the application in this country, in which case no patent shall be granted in this country.

SEC. 4894. All applications for patents shall be completed and prepared for examination within one year after the filing of the application, and in default thereof, or upon failure of the applicant to prosecute the same within one year after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

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If any such assignment, grant, or conveyance of any patent shall be acknowledged before any notary public of the several States or Territories or the District of Columbia, or any commissioner of the United States Circuit Court, or before any secretary of legation or consular officer authorized to administer oaths or perform notarial acts under section seventeen hundred and fifty of the Revised Statutes, the certificate of such acknowledgment, under the hand and official seal of such notary or other officer, shall be prima facie evidence of the execution of such assignment, grant or conveyance.

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vested with jurisdiction of cases arising under the patent laws shall have power to grant injunctions according to the course and principles of courts of equity, to prevent the violation of any right secured by patent, on such terms as the court may deem reasonable; and upon a decree being rendered in any such case for an infringement, the complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby; and the court shall assess the same or cause the same to be assessed under its direction. And the court shall have the same power to increase such damages, in its discretion, as is given to increase the damages found by verdicts in actions in the nature of actions of trespass upon the case.

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But in any suit or action brought for the infringement of any patent there shall be no recovery of profits or damages for any infringement committed more than six years before the filing of the bill of complaint or the issuing of the writ in such suit or action, and this provision shall apply to existing causes of action.

SEC. 7. That in every case where the head of any Department of the Government shall request the Commissioner of Patents to expedite the consideration of an application for a patent it shall be the duty of such head of a Department to be represented before the Commissioner in order to prevent the improper issue of a patent.

SEC. 8. That this Act shall take effect January first, eighteen hundred and ninety-eight, and sections one, two, three and four, amending sections forty-eight hundred and eighty-six, forty-nine hundred and twenty, forty-eight hundred and eighty-seven and forty-eight hundred and ninety-four of the Revised Statutes, shall not apply to any patent granted prior to said date, nor to any application filed prior to said date, nor to any patent granted on such an application.

Approved, March 3, 1897.

ANOTHER NEW PATENT LAW.

An act defining the jurisdiction of the United States circuit courts in cases brought for the infringement of letters patent. H. R. 10,202.

Be it enacted, by the Senate and House of Representatives of the United States of America in Congress assembled, That in suits brought for the infringement of letters patent the circuit courts of the United States shall have jurisdiction, in law or in equity, in the district of which the defendant is an inhabitant, or in any district in which the defendant, whether a person, partnership, or corporation, shall have committed acts of infringement and have a regular and established place of business. If such suit is brought in a district of which the defendant is not an inhabitant, but in which such defendant has a regular and established place of business, service of process, summons, or subpoena upon the defendant may be made by service upon the agent or agents engaged in conducting such business in the district in which suit is brought.

Approved, March 3, 1897.

PATENT ATTORNEYS APPEAL.

Charges of violation of the law have been made by a number of local patent attorneys before Postmaster-General Wilson against the National Recorder, a periodical devoted to patents, and John Wedderburn & Co. The spokesmen were J. R. Edson, Walter R. Rogers, ex-Commissioner W. H. Doolittle, and Ernest Wilkinson, who claimed in substance that Wedderburn & Co. publish and circulate through the mails the National Recorder, which it was said had for its chief object the advertisement of a private business which is ostensibly that of securing patents for inventors. It was asked that the paper be barred from the mails as a fraud, and that a fraud order be issued against the company for obtaining money under false pretenses.

It was alleged that the company offers to subscribers prizes for valuable inventions; the originators of ideas in certain cases receive also from the firm certificates of patentability from a "board of experts." The prizes and certificates, it was claimed, by their manner of issue, are calculated to deceive inventors. Some fifty-five patent attorneys signed the charges left with the Postmaster-General. Among them were F. L. Middleton, F. L. Dyer, W. H. Myers, ex-Commissioner Ellis Spear, ex-Commissioner E. M. Marble, James L. Norris, Butterworth & Dowell, W. A. Bartlett, Whitaker & Prevost, Franklin Hough, V. R. Catlin, and E. B. Stocking.—Washington Post.

**American Excavations in Greece.**

The American School of Classical Studies at Athens was founded in 1882 under the auspices of the Archaeological Institute of America. It has enjoyed the steady favor of the Greek government. Its excavations have been prolific of results. A review of these by J. Genadius appears in the January Forum, says the New York Sun. By 1885, when the finds made in Asia Minor by the Wolfe Expedition, so called because its expenses were borne by Miss C. L. Wolfe, of this city, had been added to those secured during the previous two years, M. Waddington wrote: "European scholars have hailed with delight the entrance of America into the old field of archaeological research and will welcome such additions to our knowledge of Asia Minor as are contained in the account of the Wolfe Expedition." By this time Assos had been excavated and the site of the New Testament Lystra, as well as the sites of several ancient cities, determined.

Systematic explorations may be said to have begun in 1886 at Thorikos, within easy reach of Athens, early celebrated in fable as the home of Kephalos, the lover of Prokris. It is referred to by Homer and Herodotus, as well as others, and had fallen into ruins before the first century of our era. The remains of Thorikos theater had long been a puzzle. The American excavations showed it to be nearly the smallest of Greek theaters known, responding to the needs and poor resources of a small rural community, with seating capacity for barely 5,000 spectators. There is no trace of a stage; the orchestra was a complete circle, showing that both choruses and actors performed on the floor of the orchestra. This crude rustic structure undoubtedly preserves the arrangement of the archaic Greek theater. In this same year the American school excavated the theater of Sicyon, where Hesiod places a contest between gods and men, a town that through out its duration was more famous as a center of art than of political activity. Its school of painting produced Apelles. The object of the American excavations was to obtain the plan of the Sicyon theater one of the largest in Greece.

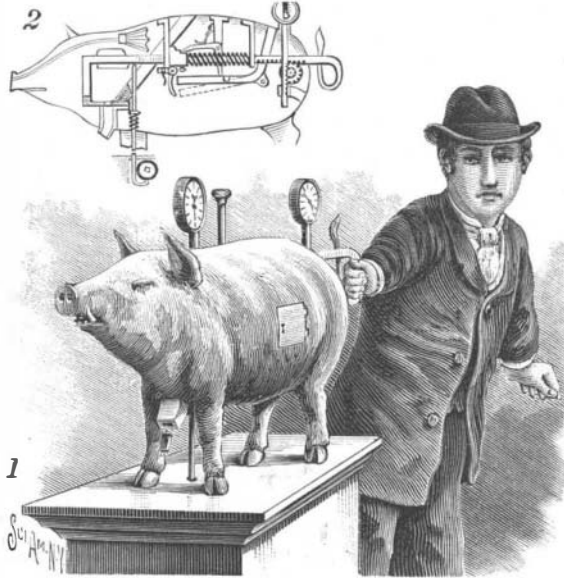
The two front rows of seats were found to consist, as usual, of seats of honor made of porous stone, each having a back and arms. As many as five other rows are cut in the rock. Fourteen stairways divide the auditorium into thirteen divisions. An elaborate drainage system forms a prominent feature of this theater adequate to carry off a heavy rainfall. But was drainage the sole purpose of an imposing aqueduct running under the orchestra and communicating with a line of earthen pipes under the stage? Complete excavation showed this to connect with a tank, and this tank was mainly intended for stage effects on the orchestra, the aqueduct also serving as a concealed passage way for the actors. Certain statements of Greek authors confirm this explanation. Certain large and small holes, worked at regular intervals in the stone floor, are shown to have served to secure the wooden columns of the early Greek stage.

An important discovery in connection with the history of architecture was that of two arched passages built without a trace of mortar or brick and corresponding with the masonry of the Hellenic walls that underlie the Roman work. These passages are therefore undisputable Greek work. When considered together with a similar instance in the Senate House of Olympia, they establish beyond a doubt the fact that the arch was not a Roman invention imported into Greece, but originated with the Greeks themselves, though used by them, as

it would appear, only in underground structures. This review is only a beginning of all the work done by the American school, but it is at least suggestive of the value of its operations.

**AUTOMATIC STRENGTH TESTER AND VENDING MACHINE.**

The curious and novel nickel-in-the-slot machine shown in the accompanying illustration has recently been patented by Mr. John Milo, of Williamsbridge, New York City. As will be seen from the sectional view, the mechanism is inclosed in a case formed to represent some kind of animal, and it is so arranged

**AUTOMATIC STRENGTH TESTER AND VENDING MACHINE.**

that, by placing the purchase coin in a slot, and applying strength in the form of a pull or a blow to the proper handle, the force applied will be measured upon a dial and the article of purchase will be automatically delivered to the purchaser.

A horizontal bar extending longitudinally through the body terminates in a handle which is shaped to represent the tail of the animal. This is kept in its normal position by a coil spring. At its front end it is bent down and back to form a flat, horizontal plate, in which is cut a hole large enough to receive a package of the articles to be sold. This plate slides horizontally beneath the end of an inclined tube, which is filled with a supply of these packages, and when the bar is drawn forward the hole is brought beneath the end of the tube and receives one of the articles therefrom. Upon being released, the bar is drawn back by the coil spring

and carries the article over an outlet tube, through which it falls and is delivered to the purchaser.

The purchase coin falls into an elbow tube, which is so pivoted that the weight of the coin causes it to rock forward and release a catch which prevents the horizontal bar from being moved, except when the coin is inserted. After releasing the catch, the coin rolls out of the tube into the body of the figure, from which it can be recovered by unlocking a door placed conveniently in the side of the machine. At the rear end of the bar is formed a suitable horizontal rack, whose teeth mesh with a pinion which in its turn serves to operate a vertical rack. The latter rack terminates in a rod, which, extending through the back of the animal, carries a pointer which indicates on a graduated scale the force of the pull.

At the forward end of the horizontal bar are attached two cams, one above and the other below. The first serves to compress a small bellows, which is arranged to produce a noise in imitation of the animal's cry. The lower cam depresses a rod which starts a music box concealed in the base of the machine.

The second indicator scale and the vertical rod shown projecting from between the shoulders of the animal are for registering the force of a blow. The internal mechanism is similar to that already described, the article being automatically presented to the purchaser as before.

**THE BOSTON GAS EXPLOSION.**

We have several times illustrated the Boston Subway, which is intended to give relief to the traffic on some of the densely crowded streets of that city by running the trolley cars in the subway.

One section of the subway is practically finished, but at the corner of Tremont and Boylston Streets the space between the roof of the subway and the street was left open to permit of some repairs being made to pipes, and the excavation left open was boarded over. For several days before the accident, which occurred on Thursday, March 4, at 11:43 A. M., the smell of gas had been noticed coming from this cutting, but little attention was paid to it. The corner where the accident occurred is one of the busiest in Boston. The explosion occurred just inside the Common, at the northwest corner of Tremont and Boylston Streets, which during the busy hours of the day is always thronged by pedestrians. The streets which come together at this point are two of the most important of the city's thoroughfares, and it was largely on account of the congested traffic at this point that the subway was undertaken. It is an everyday sight to see electric cars in a practically unbroken line extending along Tremont Street fronting the Common, and up Tremont Street beyond Boylston Street, toward the west, Boylston Street is equally crowded. The cutting, which was covered over

by boards, was crossed by two six inch gas mains. It is believed that a spark from the wheels of an electric car caused the sad havoc which produced the most serious results ever caused by an illuminating gas explosion in the whole history of Boston, causing nine deaths. The exact moment of the explosion was indicated by many of the clocks in adjacent buildings, which were stopped by the shock.

The sidewalks were crowded and carriages and cars were passing in almost unbroken succession. A Mount Auburn car was rounding the curve from Boylston Street into Tremont Street, a Back Bay horse car was passing it in just the opposite direction, while a Brookline street car was crossing Tremont Street into Boylston Street. Just as the three cars were

**SCENE OF THE BOSTON GAS EXPLOSION LOOKING TOWARD THE MASONIC TEMPLE.**