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REPORT OF THE COMMISSIONER OF PATENTS FOR 1888.

The special report of the Commissioner of Patents to Congress, for the year 1888, has lately been presented, and is in many respects a very able and interesting document. The Commissioner, the Hon. Benton J. Hall, gives a very forcible statement of the existing condition of the Patent Office and the changes or reforms most urgently needed to improve the working and increase the utility of the bureau.

The number of patents granted during the year 1888, including designs and reissues, was 20,506, being about one thousand less than for the year 1887, and nearly four thousand less than for the year 1885. The applications filed during 1888 were 37,797, and about the same number have been filed every year for six years.

The Commissioner shows how seriously the business of the office is crippled for lack of sufficient room. He says:

"The various divisions of the Patent Office are crowded into narrow, inconvenient, and, in many instances, unhealthy limits. The records and drawings and other material, which should be conveniently arranged and made accessible in proper rooms, are stored in corridors and by-way places, where classification is almost impossible, and where access can only be had to the particular subjects desired after long search and delay. Not only this, but great quantities of valuable records, descriptions, specifications, and drawings are constantly exposed to the danger of conflagrations involving the safety of the entire building. It needs only an examination or investigation to demonstrate the absolute necessity that exists for making some change in the arrangement between the bureaus occupying this building, in order that each shall have proper room and facilities to discharge its respective functions. The force under the control of the Commissioner of Patents is scattered and located in remote parts of the building on different floors to such an extent that in order to communicate with the various divisions, transfer records back and forth, and conduct the business, much more time and a greater amount of labor are required than would otherwise be involved."

Of the Official Gazette, 6,500 copies are printed weekly, of which 2,265 copies are sold, and 4,235 given away to libraries, members of Congress, etc.

The Commissioner dwells upon a number of different subjects, all of greater or less importance. The difficulties of making official examinations of inventions are constantly increasing; but if more space were afforded, he thinks the present force of employes could do the work. He favors the protection of the inventor in the enjoyment of the exclusive right to his invention, but asks that the patent shall be dated from the time the patent was allowed and passed for issue, thus practically reducing the life of the patent.

The present law by which the term of the American patent is reduced to that of the term of the previously granted foreign patent he thinks should be repealed. He favors the allowance of caveat registration to foreigners; also a modification of the record law for assignments. The renewal of lapsed cases is found to be attended with complications, and a change is recommended. A modification of the law in the case of joint inventors is also proposed. The Commissioner defends the present system of official examination of inventions, but at same time indicates that it is full of serious difficulties. He shows the hardships of interference proceedings, and offers suggestions for a partial remedy. He points out some of the absurdities and difficulties attending the international union respecting trade marks and patent properties. He thinks the examiners should have an increased compensation. Attention is also called to the importance of perfecting and finishing the abridgment of patents.

The total number of patents granted since the organization of the United States government is 405,262.

A REPLY TO THE NEW YORK "WORLD."

Principal Examiner W. W. Townsend has recently published in pamphlet form an able and scathing reply to the recent attacks of the New York World upon the good name and fame of the Patent Office. We regret the limits of our space prevent us from giving Examiner Townsend's essay in full. It would occupy almost two of our pages. We are obliged to content ourselves with an extract from the concluding portion, which will convey some idea of the author's views and the vigorous, clear style in which he presents them:

"The inventive genius of the country may, in truth, be aptly compared to a great tree, deep rooted in a general climate, constantly budding, blooming, and fruiting. But it is a tree that produces both good and bad fruit; and oftentimes a great deal of husk covers a very small kernel, scarcely worth the saving."

"The Patent Office is the great winning machine,

through whose operation vast masses of rubbish which would otherwise obstruct the industries of the nation are consigned to the waste heap. To abolish the official search would be to destroy this machine, and substitute what? A host of similar machines, badly made, unfinished, and left to run themselves at enormously increased aggregate expense. Do away with the system of official examination, and you are more likely to practically legalize a species of robbery now but rarely practiced, and only upon the easily duped, rather than to effect an improvement such as would warrant such an extreme measure.

"It is admitted that the present system has many defects. But they are not inherent in the system itself; they are rather the result of the manner in which the system is administered, and largely of the disposition to consider public office as spoils of war and not as a public trust; of the niggardly policy which allows upward of three millions of dollars to lie idle in the Treasury to the credit of the Patent Office, while the salary of the Commissioner is at such a figure that in the last thirty-eight years there have been nineteen incumbents of the office. Experience has developed defects in the details of the law; but Congress utterly ignores the Commissioner's oft-repeated recommendation as to the cure.

"But what is the remedy? The inventors of the country have it in their own hands. Let them insist that the office shall have ample means, ample room, ample force, so that there shall be an end of inaccessible records and extra hours of labor, with their demoralizing tendency to lax and hasty work. Let them insist upon having a commissioner and assistant commissioner trained in science as well as in the law, and with such a salary as will insure their incumbency for a reasonable period, and consequently a much needed stability in the practice of the office. Let them insist upon an examining force selected and tested and promoted by rigid competitive examination and not by political influence, as has too frequently been the case. Let the organized inventors insist upon these things, and they will get them; and having got them, I will undertake to say that the business of granting patents will be carried on with as little friction and individual hardship as necessarily accompany the administration of any great public function. But without the requisites named, inventors will continue, as now, to suffer occasional hardship, while as a class obtaining substantial justice and protection, and the public will continue sometimes to be robbed in the name of the law through the wrongful issuance of patents."

OFFICIAL TRIAL OF THE GUNBOAT YORKTOWN.

The gunboat Yorktown was subjected to an official trial on Wednesday, February 13, to determine her acceptance or rejection by the government. The trial as far as reported was a complete success, the contract requirements of speed and horse power being exceeded. Four hundred tons of pig lead were distributed through the ship so as to represent her stores, guns, and other equipments. Thus seventy-two tons of lead was placed in six piles at the positions to be occupied by the guns. This weight brought her down to draught in fresh water of 13 ft. 4 in. forward and 15 ft. 4 in. aft—a mean draught of 14 ft. 4 in., with a displacement of 1,703 tons. The day before the trial she ran down the bay and anchored inside the breakwater. Early the next morning preparations were made for the trial. This was to be a four hours' run. The run over the measured mile has been discarded as a satisfactory test, as the speed thus shown is fallacious, in the sense that it may be largely in excess of that which can be maintained for any length of time. Three to five minutes is not sufficient time in which to prove a vessel's capabilities.

The Yorktown ran out to sea, and at 9:45 A. M. the official test began. Quite a heavy breeze was blowing, with considerable sea. The chip log and taffrail log were kept in use continually, and a large corps of government inspectors took indicator diagrams from her different cylinders, so as to obtain full data for speed and developed horse power.

The ship started nearly southeast, with the wind abeam, her speed increasing quickly from 16.7 to 17.2 knots per hour. After an hour's run the ship was turned so as to bring the wind on one bow, and the speed dropped off to 15.3-15.9 knots. The wind was next brought dead ahead, when a speed of 14.9 was shown. The four hours' run ended where it began, off Cape Henlopen. The steam pressure varied from 145 to 168 lb. In all the four hours' work no journal became heated.

The chip log, used at 15 minute intervals, showed an average of 15.67 knots, and the average of two taffrail logs was almost exactly 16 knots. Every 15 minutes twelve different indicator cards were taken, giving 192 to be calculated. The indicators are first to be tested for accuracy, and it is probable that the slower of the two taffrail logs will need a correction in favor of the ship. The results of the trial are, therefore, not yet definitely known; but it is thought that they will show about 3,550 horse power and over 16 knots speed,

This will give the contractors a bonus of upward of \$50,000. The consumption of coal was about 120 tons a day under forced draught and at high speed. For a 10 knot speed it is about 30 tons a day.

Evolution was next tested, and it was found that a little over five minutes was needed for a full turn, whether by running her engines in opposite directions or by the rudder only. The diameter of the smallest circle was estimated at from 150 to 200 yards. Nothing was gained by reversing one engine. The full speed could be checked and the ship brought to a dead stop in 1 m. 1 s., in about 200 yards. Taking the warships and merchant vessels together, it is estimated that the Yorktown could overtake 95 per cent of them.

Overcoats.

The teaching of modern science and of ancient custom goes to show that heat production within the body has much to do with the tissue changes concerned in muscular activity and with healthy digestion. It is conserved by warm and moderate, wasted in evaporation by excessive, clothing. Finally, by a simple nervous reaction, it is increased after the contact of external cold. It follows from these observations that, if we be so clad with comfortable underclothing that surface perspiration is not formed in excess and is rapidly removed, one great cause of chill—sudden evaporation—is done away with. Outer cold, then, provided it is not too severe, only touches, as it were, the spring of the heat-making metabolism, and, exciting an elastic rebound in the chain of vaso-motor fibers, awakens that oxidative action by which every tissue is made to yield its share of heat to the body. This bracing influence is lost wholly or partly to those who are too heavily clothed, and in its place we may have a dangerous excess of surface heat. It is for this reason that we have before protested, as we now do, against the indiscriminate use of the thick and heavy overcoat. We would rather see men in fairly robust condition, especially if young, clad warmly next the skin, and wearing either a light top coat or none at all. There can be no doubt that the habitual use of great-coats is indirectly accountable for the chills which they are intended to prevent. Were the overcoat worn continuously, it might attain its object. Its intermittent use, even when ample underclothing is worn, affords no solid guarantee of safety, but rather the reverse. The man of sedentary habits has especial need to remember this. He emerges daily from a warm breakfast room clothed in his ordinary winter garments, with probably woolen underwear, and over all the heavy ulster or top coat. After a short walk he finds that the sense of warmth he began with is more than maintained. He arrives at his office or place of business, and off goes the overcoat, though the air of the newly opened room is as cold as that without, and draughty in addition. During the day perhaps he travels to and from adjacent business houses wearing only his house clothing. The overcoat is laid aside till closing time reminds him of the journey home. The frequent result is that somehow, between the hours of his departure and return, he is chilled. No doubt he would run as great a risk if, lightly clad, he were to face the rigor of a winter day. In this case, however, exercise and habit might do much to develop the power of endurance, and there would, at all events, be less danger of sudden cold acting upon a freely perspiring surface. Woolen underclothing represents a state of healthy comfort intermediate between these extremes, and more resistant to chill than either. In commending its use, however, we do not assert that the influence of age and constitution is to be overlooked. Youth can oppose a power of resistance to depressing agencies which does not reside in the worn-out nerve centers of a riper age. Similarly, that elastic reaction which characterizes the nervous and sanguine types is not to be looked for in the lax tissues of the lymphatic. The weaker physique naturally calls for fuller protection than the stronger; and any rule requiring the disuse of the overcoat should allow of reasonable exceptions in favor of the old and constitutionally feeble. Unusual severity of weather, especially if associated with night air and the loss of sleep which this implies, is another condition which might well constitute an exception. In such a case we are compelled to add some form of overcoat to the ordinary amount of clothing. Some parts of the body—for example, the chest, throat, and feet—are certainly more susceptible to cold than others. As a useful safeguard, cold or tepid bathing of such parts is in merited favor. The custom so common with many persons, especially women, of walking out in thin-soled boots often plays an important part in catching cold. The progress of time and of rational thought may be expected to bring in a more comfortable arrangement by clothing the foot in woolen hosiery and a stouter boot.—*Lancet*.

THE alligator of the South, like the buffalo of the West, is likely soon to become extinct. The slaughter of the alligator for its hide, like the slaughter of buffaloes for their hides, has been so great that it will be only a few years before the lonely lagoon of Florida will have lost its last survivor.

New York Cigar Makers.

Over 30,000 men, women, and children are employed in the tobacco industry of this city, of whom about 16,000 are cigar makers proper, the rest being cigarette makers, strippers, bunchers, packers, pasters, box makers. More than 6,000 cigar makers are women, girls, and small children. Some branches of the trade are almost monopolized by girls. For instance, the making of cigarettes. The nationalities which predominate among the cigar makers are the Germans, Bohemians, and the English, but there are also quite a number of Poles, Hollanders, Cubans, and Hungarians, with a sprinkling of Spaniards, Americans, French, and Russians.

The best cigar makers are the Germans and Bohemians; the Cubans and Spaniards rank next. The Poles are ruining the trade here by cheap work done in basements in Division Street and its neighborhood. They work, as it is termed, "below zero," just as the Chinese are doing in San Francisco. The Cubans and Spaniards make a special grade of goods called "Spanish work." Cigar making has of late years become so unprofitable to the working people that the average weekly wage ranges only from \$6 to \$7. Even the best workers, making cigars by hand, average only \$15 per week if working full time all the year round on first class material, but this fortunate class comprises hardly fifteen per cent of all cigar makers. The poorest class of workers average only \$5.50 per week, and therefore their wives and children must help by their work to swell the income of the family. The working time is about eight hours a day—a result of their strong organization.

Eleven manufacturing firms own tenements in this city in which they house their workers under the so-called tenement house cigar making system. These mean firms keep the tenement horror alive by employing 546 entire families. Counting at the lowest estimate five working members to each family would give us the correct number of tenement house cigar makers, viz., 2,830. Each family has either two or three rooms, small, poorly ventilated, and dark. In these accommodations they have to pay \$3 more for their monthly rent than they would if they were allowed to live where they liked. But—and here the fine game of the cigar manufacturing landlord comes in—no rooms, no work. So these poor people have only the alternative to accept low wages, high rent, and long hours of work (fourteen hours daily on an average) or walk the streets and starve. In these houses, which cannot be called homes, one finds the greatest filth, misery, and degradation imaginable.

To sensitive persons a description of the horrors would be insupportable. It is happily true that "one-half the world does not know how the other half lives." Cannot these conditions be amended or abolished? For years the cigar makers have banded together in unions to suppress this terrible, inhuman system. Some headway they have made in their endeavors—for which they have been called conspirators and revolutionists. If American workmen were obliged to live in this manner, they would have been revolutionists long ago.

There are 1,800 cigar factories in New York City. Of these the great majority employ from one to fifty hands each. Large factories, of which there are 350, employ from 50 to 500 hands, while the largest class of factories, of which there are only ten, employ from 500 to 1,000 hands. The vital statistics gathered in the course of years by some organizations show that among the cigar makers lung troubles are of common occurrence. Women must frequently stop work to recuperate from the bad effects tobacco has upon them.

There is another danger which threatens the cigar makers and promises to thin the ranks already thinned by competition among themselves. Last year bunching machines threw 400 persons out of work. Yet cigar making machinery is only in its infancy. In the opinion of many cigar makers, the trade is leaving New York City, and will never be as good and prosperous as it was in past years. New York is fast losing its former prestige by manufacturing cheap cigars in too great quantities.

Since 1864 the cigar makers have made determined efforts to organize themselves and, through organization, to better their condition. They have succeeded in accomplishing a great amount of good to their craft. The Cigar Makers' International Union of America has been in existence for thirty-five years. The number of its members is very large and probably exceeds 25,000. Of the cigar makers in this city about 8,000 are organized. They stick to their organizations faithfully and are among the best, most intelligent, and most energetic working men.

Since 1879 the International Union has paid out for strike benefits \$369,833, for sick benefits \$182,425, for death benefits \$21,843, and for traveling benefits \$196,882. The present fund in its treasury amounts to over \$253,000. The powerful agitation for the suppression of the tenement house system has resulted in greatly mitigating that evil. Their union label is an effective weapon against unfair employers, and has brought many of them to terms. At present it is used

by 386 manufacturers in this city alone, who have to observe certain rules of the union for the privilege of using it. Manufacturers who sell tenement-made goods are debarred from its use.—*The Metropolis*.

George Simon Ohm.

In view of the near approach of the hundredth anniversary of the birth of George Simon Ohm, which took place on March 16, 1789, a meeting was held recently in the meeting room of the Royal Society, London, under the presidency of the Right Hon. Lord Rayleigh, secretary of the Royal Society, for the purpose of appointing a committee to co-operate with the committee formed in Germany to promote the erection in Munich of a statue of the great physicist, to whom the science of acoustics owes no less than does that of electricity. In the course of the meeting the following gentlemen were selected to act on the English committee: Sir F. Abel, D'Atkinson, Mr. Vernon Boys, Mr. Conrad Cooke, Professors Ewing, Fitzgerald, Fleming, G. Carey Foster, Mr. Glazebrook, Professor D. E. Hughes, Mr. Norman Lockyer, Professors Hugo Muller, John Perry, Mr. W. H. Preece, Lord Rayleigh, Professors Reinold Rucker, Stokes (president of the Royal Society), Mr. Swinburne, Sir William Thomson, and Professor S. P. Thompson. Lord Rayleigh was elected president; Professor Hugo Muller, treasurer; and Professor G. Carey Foster, of University College, London, and Professor John Perry, of the Finsbury Technical College, undertook to perform the duties of secretaries, and to receive subscriptions.

Tragic Fate of Mr. Ryland.

An accident lately occurred at Hawkesbury Bridge, Sydney, New South Wales. Mr. Ryland, of Messrs. Ryland & Morse, of New York, sub-contractors for the erection of the superstructure of this great bridge, was walking along the top of one of the spans when he missed his footing and fell some fifty feet into the river below. Even as he was falling a huge shark was observed immediately below, and the unfortunate man had scarcely reached the water when the monster seized him, and both disappeared under the water, which at once became tinged with blood. A number of workmen and others on the bridge who witnessed the accident remained horror-stricken and helpless. The deceased, with his partner, was just bringing to a successful close a contract of considerable magnitude. The Hawkesbury Bridge, it will be remembered, was built by the Union Bridge Company, of New York. Messrs. Anderson & Barr, of this city, were sub-contractors for the piers.

Hard Work at the Post Office.

Some idea of the vast amount of matter which passes through the New York City post office may be gained from the following statistics:

Last year there were 128,131,755 letters, 32,310,025 postal cards, and 35,943,203 miscellaneous packages delivered during the year by carriers, and 52,994,536 letters, 8,519,869 postal cards, and 30,995,086 miscellaneous packages through boxes, making a total of 287,994,464 pieces in all. In the registered letter department, there were 1,317,168 pieces delivered, and 1,049,029 pieces of domestic and 453,850 of foreign origin recorded and distributed to other offices. At the general post office, 1,095,915 money orders were issued and paid, amounting to \$10,230,895.50, and 783,872 postal notes, amounting to \$1,263,378.79. At the sixteen branches the number of orders issued and paid was 220,144, amounting to \$3,250,961.10, and the number of postal notes 88,311, amounting to \$174,476.66. The aggregate business of the money order department for the year amounted to \$87,299,158.95, giving an increase in the business over the previous year of \$4,788,347.21. The total receipts of the office were \$5,162,968.81, and the total expenditures \$1,891,982.48 (including \$802,017.91 expended for free delivery service), giving a net revenue of \$3,270,986.33. The receipts for the last quarter of the year aggregated \$1,458,585.27, an increase of \$121,084.65 over the receipts of the corresponding quarter of the previous year. There were sold during the year 178,218,226 postage stamps, equal in weight to thirteen tons net, 35,302,500 government stamped envelopes, and 46,437,150 postal cards. The total weight of mails received and dispatched daily during 1888 was 248 tons.

Venus, the Evening Star.

Mr. Walter H. Smith, President of the Astro-Meteorological Association, Montreal, has been making special observations on the planet Venus with the aid of a reflecting telescope, and reports rapid changes in the shape and outlines of the horns, due to the planet's rotation bringing mountain ranges to the edge of the disk.

A peculiar indentation has been seen at the north horn, similar to observations made by De Vico, Pastorf, and other astronomers. Three spots, believed to be continents, and similar to those seen at the Roman College in Italy, were also noticed. Mr. Smith is the founder of the society, and is well known as a careful observer.