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O. D. MUNN, S. H. WALES, A. E. BEACH.

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THE NEW PRESIDENT AND THE COMMISSIONER OF PATENTS.

The President elect has recently passed through this city, on his way to Washington, to assume the duties of Chief Magistrate; but, while he has been warmly welcomed everywhere by thousands of people, if we take the concurrent testimony of the daily press, a crowd of hungry office-seekers have followed the Presidential train, the number increasing at every point of arrival and departure, doubtless much to the annoyance of the "coming man." Even the legislative and executive authorities of this State got into a petty squabble as to which should do the honors at the State Capital, one facetious Senator, looking on and enjoying the fun, having moved to telegraph the President elect to switch off at Schenectady, and proceed direct to New York by the way of Troy. All the way down to the Federal Capital the expectants pushed on, and are now waiting under the eaves of the Presidential mansion, in breathless suspense, for the working of the political machine.

These free demonstrations are entirely in consonance with our ideas of enlarged freedom. All native-born citizens being eligible to the highest office in the gift of the people, and few unwilling to accept it, or almost any other on the sliding scale; patriotism to serve the State thus becomes a business commodity, which drought and rains cannot affect. It is supposed that no office has less than one hundred applicants, while for some a State or city directory might be filed in with a list of patriots to be selected from at random. We understand that there are half a hundred aspirants for the office of Commissioner of Patents, fifty of whom we hope to see doomed to disappointment. This matter is not to be left to the free choice of the President, to whose judgment we would gladly defer, but that special engineering is to be resorted to, in order to fill the office with a Simon Pure politician, one who will be true to all the blinding behests of party.

Our readers will bear witness that we have earnestly contended against debasing the Patent Office into a political cesspool, to be groveled in by a mess of loafers, such as hang about Custom Houses and other hot beds of political corruption. The Patent Office has gradually become demoralized, and is losing that dignified position which it enjoyed even but a short time ago, some of its attaches being unfitted, either mentally or morally, to fill the places they now occupy; and inventors have become, in some degree, disgusted with the whole concern. Who is qualified to assume the important office of renovating this great national repository of genius, and administering its legal and scientific details? who shall succeed Judge Mason and Joseph Holt in this important office? are questions that concern every citizen. Shall he be a Congressional lobbyist? Shall he be a broken down politician, without wit, wisdom or reliability? Or shall he be a man against whom the breath of suspicion cannot be raised? It is well understood that no man can administer the duties of that office acceptably, without proper legal qualifications. He may have all the scientific knowledge of Solomon Hills, be able to make a clock, take down the north star and weigh it, solve all the difficult problems in Euclid, operate for cataract on the eye, stuff patients with gamboge, bleed, blister and bolus—he may even have been a mem-

ber of Congress—served in patent committees and tried his hand in vain attempts to patch up the patent system, and yet utterly fail to make an acceptable Commissioner of Patents.

For our part (and we utter the views of thousands), the office can best be filled by the appointment of some one who has had little or no experience in the corrupting influence of Washington life—a new man—who can grasp the details of the office, and administer its duties without fear or favor. Such a man can succeed, and gain the approbation of all. But if certain aspirants who are struggling for the office succeed in imposing themselves upon Mr. Lincoln, he will have occasion to regret his unwise choice, as such an appointment will surely degrade the office, and disappoint the just expectations of the people.

We referred, a few weeks ago, to the fact that Hon. Butler G. Noble, of Wisconsin, had been suggested as the person most likely to be appointed to the office of Commissioner of Patents. That his appointment would give general satisfaction, we have no doubt; but what his views of the matter are we do not know, as we never exchanged a word with Mr. Noble, either directly or indirectly, upon this subject, nor do we intend to. Some of his friends are urging his appointment on the ground of fitness, a question upon which there is but one opinion among those who know him: We wish very distinctly to be understood that we have no candidate for this office, and are prepared to support any man who is able and reliable. We think the selection should be made of some Western or Southern man, who is above all suspicion of complicity with patent schemes. We have no favors to ask, and shall expect none, from whoever is appointed, and shall support or oppose him according to his official acts. There are very many inventors who would rejoice to see Judge Mason returned to the office; but political considerations would overrule this. A few patent agents and their political friends are at work trying to secure the office for Hon. C. C. Chaffee, an ex-member of the House, and now Librarian of Congress. Dr. Chaffee is a very clever and deserving gentleman, and would make a polite and accessible Commissioner; but he is now enjoying a good office, for which he is well qualified, and this renders his appointment improbable. Dr. Chaffee, while in the House, was a member of the Patent Committee; but this Committee did nothing to benefit either inventors or the Patent Office, and his appointment therefore would not give satisfaction. Thaddeus Hyatt at one time had his eye on the office, but the wants of Kansas have called him off. Not to name others, we would state that the most formidable candidate, and the man most likely to succeed, is the Hon. Thomas C. Theaker, of Ohio. He has a host of friends, who are working for his appointment, knowing him to be not only free from all objection, but well qualified for the position. We have no personal acquaintance with Mr. Theaker, but letters to us, from reliable and influential sources, speak of him in the very highest terms. Such a man is wanted to fill this important position, and such a man only can succeed. We believe, from all we can learn about Mr. Theaker, that he would make a popular and able Commissioner—one who can be trusted.

BREECH-LOADING CANNON.

Both of the great military powers—France and England—after a long series of experiments by the ablest engineers of each country, have adopted rifled cannon for their armies and navies; but the two governments have come to opposite conclusions in regard to breech-loading cannon. Louis Napoleon's extensive experiments satisfied him that it is best to load heavy guns at the muzzle, while the government of England is expending an immense amount of money in providing the army with the Armstrong gun, which is loaded at the breech.

The disadvantages of breech-loading cannon are very manifest. The greatest and most palpable of these is their complicated structure. In an implement which is subjected to the rough usage unavoidable in the transportation and handling of field artillery, simplicity of structure is of prime importance. An ordinary cannon consists of one single piece of metal with no joints or movable parts, while the Armstrong gun is made up of a number of pieces, and at least one of the parts has to be so nicely fitted to the others that it is

necessary to carry a file into the field in order to repair it after every two or three discharges.

Besides this great objection to breech-loading cannon, arising from their complicated structure, rendering some of the joints or parts liable to become impaired by smoke or wear or rust, there is another very manifest one that has certainly not been overcome in the Armstrong gun. In large guns the explosive force of the powder re-acts against the breech with such tremendous power that it seems impossible to make any arrangement of iron or steel that will resist it, except the single one of welding or casting the metal into a solid mass. We have seen accounts of several series of experiments with the Armstrong gun, and in a considerable number of them some part of the breech was blown away.

We have read many columns and pages of discussions on the subject in the London papers in the endeavor to learn what the advantages are which compensate for these great and manifest disadvantages. It has been distinctly stated that an Armstrong gun cannot be loaded as quickly as a muzzle-loader. We have seen no contradiction of this statement, but if it has not been contradicted it is almost the only assertion in connection with the whole subject that has been suffered to pass undisputed. In truth, the treatment of this matter has not been creditable to the English press; we have had descriptions and engraving of the gun which were publicly pronounced by Sir William Armstrong himself to be entirely erroneous; and if the publishers of the London *Engineer* would now send an artist to make a sketch of this famous weapon as it actually appears, and would accompany the engraving with an intelligible description which they could warrant to be correct, they would convey an interesting piece of intelligence to their readers.

In one respect there is no doubt of the great excellence of the Armstrong gun—the wonderful accuracy with which it carries. We recently re-published the statement from an English paper that, at a late trial, a target one foot square, at a distance of more than half a mile, was hit at every shot! Whether this precision results from anything connected with the breech-loading we are not informed, and if it does, it is doubtful whether it would give any greater efficiency in the field than the degree of precision which is obtained with the French muzzle-loaders.

The experiments by the officers of our own army have established a general, if not universal opinion in favor of rifled cannon; but we think that Congress should at least wait for further developments before adopting any breech-loading device yet suggested.

THE REPORT OF THE COMMISSIONER OF PATENTS.

Our readers will not fail to peruse the brief report of the Acting Commissioner of Patents, Mr. Shugert. It is a modest and business-like document, and the statistics, which are very suggestive, represent the condition of the Patent Office in a favorable light.

The number of applications for patents, it will be seen, have increased in a healthy ratio since 1837, as during that year only 435 patents were granted. During the year 1859, 6,225 applications were made for patents, 4,538 of which were granted. In 1860, the number of applications was 7,635, and the number of patents granted, 4,819. The receipts of the office during the year amounted to \$256,352.50; expenditures, \$252,820.80. There is now to the credit of the Patent fund \$89,437.41, thus showing that the Patent Office is not only a self-sustaining, but an independent office, asking no other favor of the government than the appointment of honest and faithful men to manage its affairs. No stronger argument can possibly be adduced in favor of a speedy reduction in the amount of fees required of the applicant for a patent, and instead of 38 applications for patents from foreign countries the number would be increased ten fold. Reference is made to the eminently satisfactory manner in which cases of interference have been decided; but not one solitary crumb of comfort is thrown out to Commissioner Thomas' monolith of folly, the Revisionary Board. Why was not some sop thrown out to this modern Cerberus, which has kept such close guard over the subordinate examiners?

We suppose this ridiculous farce must go on, at least until a new Commissioner is appointed, when some much-needed reformation will be required, or the public will not rest satisfied.

Molded Cast Steel Plows.

Owing to the peculiar adhesive nature of the soil on our western prairies, steel plows polished as bright as mirrors, are generally used for plowing. Hitherto all the steel plows made for the west have been formed of rolled sheet steel of uniform thickness, the different parts being cut out of the sheets, then forged and fitted together. Such steel did not provide for the unequal wear of different parts of plows, and as a consequence some of the parts, such as the heel of the landside, the sole of the point, and the underside of the moldboard would be worn out, while the other parts were nearly as good as when first made. An important improvement was patented by F. F. Smith, on the 20th of November last, which will, in our opinion, revolutionize the entire manufacture of steel plows for the west. This improvement consists in forming the sections of such plows of molded cast steel, the parts being so cast as to have the greatest thickness of metal where the plow is exposed to the greatest wear. A much greater amount of steel is therefore cast in the exposed part of the point, the landside, and the moldboard thus rendering such plows not only much more durable, but much stronger. As each section of such a plow is cast alike, farmers can keep duplicates on hand, and replace them without employing a blacksmith, which cannot be done with forged plows.

As the castings of these plows are made by pouring steel into iron molds, the surface of the metal becomes much harder and wears longer than common hardened steel. Each plow is adjustable for either two or three horses, and Western farmers, we believe, will find them deserving of general adoption. They are manufactured by Collins & Co., Collinsville, Ct., where the inventor resides, and specimens may be seen at No. 212 Water street, this city, where we examined them a few days ago.

New Pilot Boat.

The New York pilots are distinguished all the world over for their skill, daring, and enterprise, and their boats have an unrivalled reputation for beauty of model and great speed. They are really yachts so far as model and rig can make them, and a strong feeling of emulation exists among our shipbuilders to construct, and our pilots to own and sail, the best and fastest pilot boats. The New York pilot craft were in fact our first American yachts, as they furnished the original models for the very swiftest of such vessels. The first trip of a new pilot boat, therefore, is an event of considerable interest to our shipbuilders and pilots, and such an occurrence took place on the 11th inst., in the case of the *Wm. H. Aspinwall*, a new pilot yacht of beautiful model, built by Vandeusen Bros., at their yard, foot of Eighteenth-street, E. R. This vessel is schooner-rigged, 100 tons burden, 75 feet in length, 19 feet 6 inches breadth of beam, and 7 feet 10 inches in depth. Her owners and pilots are Captain Walter Brewer, Gideon Mapes, Wm. H. Anderson, Geo. Burger, and John N. Dale. She made a run out of 26 miles, sailing around the lightship, and returned. The trip was considered highly successful and gratifying to the builders and the pilots in all that relates to superior speed, obedience to the helm in steering, and other qualities which constitute a good sea boat.

Inventors in Seceding States.

Applicants for patents in South Carolina, Georgia, Louisiana and other seceding States, experience a difficulty in executing their papers from not being able to find an officer who will administer the oath of citizenship required of inventors. Many worthy inventors residing in these States have had their papers prepared for the Patent Office, and while some have no compunctions in regard to taking the oath of citizenship, they cannot find a Justice of the Peace in their vicinity to administer it. Others regard themselves citizens of another republic, and write to us that they cannot conscientiously take the prescribed oath.

To the latter class we have no advice to give; but to the class who would take the oath of citizenship could they find an officer to administer it, we would suggest to such that, by stepping into an adjoining State, where the ordinance of secession has not passed, they will have no difficulty in finding a Justice of the Peace, judges, or clerks of some courts, before whom they can execute their papers, which transaction will hold as legal as if they had been executed in the State and county in which the applicant resides.

THE POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

[Reported for the Scientific American.]

The usual weekly meeting of the Polytechnic Association was held, at its room in the Cooper Institute, this city, on Thursday evening, Feb. 21, 1861—Professor Mason in the chair.

Mr. JOHNSON proposed the subject of Soluble Quartz for future consideration.

Mr. ENGLEBRIGHT proposed, subsequently, the subject of "Ventilation."

VENTILATION.

Col. RUTTAN, of Canada, presented some of his views of ventilation, and exhibited drawings in illustration. As to the necessity for ventilation, all were agreed upon that. The question was merely as to the *modus operandi*. Perhaps no man living had expended so much time or money in experimenting upon ventilation as he had. He had come to the conclusion that the principles upon which ventilation is usually based are wrong *ab initio*. The common method is to ventilate by mechanical, and not by natural means; and the mechanical means are a departure from nature in this wise, that they are predicated upon the theory that hot air naturally goes upward. That is not the fact. Air has weight; and heating it does not deprive it of its weight. Hot air, therefore, naturally goes downward. It usually goes upward, because we usually allow cold air to force it up. If we provide means for taking the cold air from under it, hot air will fall as certainly as lead. Warming a house by a true ventilating process is the cheapest and most healthful mode. When a man's feet are cold, he is cold all over; and when his feet are warm he is warm all over. The method which he would propose, founded upon the true theory, was substantially this. The floor joists are to be furred off about two inches, so that there shall be a connected stratum of air between the floor and the ceiling below. This air chamber communicates all around the edge of the room with the room, and communicates also with the chimney or ventilating flue. This stratum of air effectually prevents cold feet; for even if it should sink to 40°, the feet being always covered with leather and woolen, the natural heat of the body will prevent them from becoming cold. The air is warmed in the hall, and admitted into the room at the top. It is not necessary that it should feel warm to the hand; for air at 90° will feel cold to the hand, and yet will warm a room sufficiently. The chimney acts as a pump drawing out the cold air first from the space between the floors and then from the lower part of the room, while the warmer air in the upper part of the room falls to take its place, and the heated air rushes in to fill the vacuum in the top of the room. It is not necessary that rooms to be heated should be immediately connected with the hall. He had warmed a room where there were two intervening rooms which were not warmed. The cold air being drawn off from the third room only, the warm air passed through the other two rooms along the ceiling, being buoyed up by the cold air in them, and entered and warmed the third room.

THE PRESIDENT—How do you ventilate cars?

Col. RUTTAN described the process for winter and also for summer ventilation, in each case the air being drawn from the lower part of the car and being supplied above.

Mr. STETSON said that, in the ordinary ventilation, taking the air from the top of the room, as the heated air immediately rises to the top of the room the lower part of the room is poorly warmed. In a car, he had found a thermometer to stand at 110° at the top of the car and at zero at the bottom. While our heads, therefore, suffer from the heat, our feet are cold. Col. Ruttan's process always takes out the coolest air in the room, which is not only the greatest economy, but allows the room to be completely filled with the warm air.

Mr. JOHNSON inquired what was the economy of fuel?

Col. RUTTAN stated that he was warming his house in Canada—a two-story house—at an expense of 25 cents per day, using coal at \$5.50 per ton. The ceilings were altogether too high for that climate; for in a cold climate, they should never be higher than 9 feet. It takes considerably more than double the fuel to heat a room 12 feet high than if it were 9 feet. The

open stairway, which is copied from southern Europe, is totally unsuitable for a cold climate. Every staircase should be so closed as to prevent the air from going up to warm portions of the house where the heat is not required. With a close hall, low ceilings and a true ventilation, you may defy the cold and the doctors too.

Mr. GARBANATI regarded the saving to the health as being by far the most important advantage of the proposed system of ventilation. It cannot be healthy to have the feet in an atmosphere so much lower than that which surrounds the head. What is needed is a system of ventilation which equalizes the heat, as this system claims to do.

COTTON AND SUBSTITUTES THEREFOR.

The subject for the evening, the "Mechanical and Chemical Properties of Cotton, and Substitutes Therefor," was then taken up.

Mr. STETSON said that the first reason why cotton was so extensively used was its cheapness. Nature produces this fibrous material ready to our hands, and all that we have to do is to reach forth our hand and take it. There is no rasping, or pounding, or grinding necessary to prepare it. Another reason is the uniformity in the length of its fiber. Different varieties have a fiber of different lengths, that of the Sea Island cotton being long and fine. The average of upland cotton is about three-quarters of an inch, and the variation between the length of the different fibers of the same variety is less than one-fourth of an inch. Other materials, as hemp, have a much longer fiber, which is convenient in coarse work, but will not answer for the purposes to which cotton is applied. In the manufacture of cotton it is passed through a series of pairs of rollers, each revolving twice as rapidly as the next before it, which draws it out to a great length and with uniformity. No other fiber can be drawn out upon that principle to the same extent. After being passed through the rollers once, a dozen or more threads are placed together and passed through again; and so on, until each ultimate strand of cotton thread has been passed through several thousand times. Another property of cotton is its adhesiveness, which gives it strength and enables us to draw it out to extreme fineness.

Mr. PELL read a paper upon the history and character of cotton, flax, hemp and other fibers. The filaments of cotton are from half an inch to two inches in length, and less than the two-thousandth part of an inch in diameter. Cotton entirely fails 425 miles from the salt water. Its qualities are length of fiber, fineness, softness, strength, equality of filaments and freedom from impurities. By means of a powerful achromatic microscope, it may be seen that, while the fibers of flax are cylindrical and jointed like a cane, those of cotton are flat, not jointed, and twisted similar to a corkscrew. Cotton may be distinguished from all vegetable fibers by this corkscrew form. Among the plants yielding fibers of sufficient strength to be made into thread are the golden rod, the sunflower, the nettle, the swallow wort, the broom, the aloe, and sundry plants of the lily tribe. Wool has many advantages over all other materials used for clothing. It is a much better non-conductor of heat than cotton or linen, and when worn next the skin, tends to preserve us from sudden changes of temperature, and also from malaria and epidemic influences. Of all known fabrics, silk is the most conspicuous. Two pounds of cocoons will produce a thread 1,176,000 feet long. More than 1,600,000 people derive their entire support from the culture and manufacture of silk.

Mr. SEELY said that attention had been called only for a few years to the chemical nature of cotton. Gun cotton, when first known, was generally considered valuable as a substitute for gunpowder. This idea has now been abandoned; but it has certain advantages, which will still make it valuable for particular cases, perhaps, for instance, in charging shells. It is unaffected by moisture, is more explosive, is more easily prepared, and the materials may be more readily obtained. But gun cotton has another value, for it is the foundation of the art of photography as it now stands. It has been suggested that cotton should be dissolved in hydrochloric acid, that any desired form should then be given to it and the acid evaporated. This can be done, but the cotton thus precipitated has no strength. Its strength is caused by its fibers. The composition of cotton, sugar, starch, gum arabic, dextrine and woody fiber is chemically the same, $O_{12} C_{10}$