

Scientific American.

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The Benefits of Science and Inventions.

Governor Bigler, of Pennsylvania, delivered an address on the 14th ult. before the Philadelphia Society for Promoting Agriculture, in which he described with great force the benefits which had been conferred on different countries by science and invention. Speaking of France and England he said: "A comparison between these two countries based on the statistics of Baron Dupin will illustrate most strikingly the influence of mechanical power upon the productive capacities of nations. On the ratio of population, as exhibited by the Baron, France should be as great a commercial and manufacturing country as England; but by means of machinery the latter had increased her force equal to a population of twenty-five millions—whilst that of the former but little exceeds eleven millions."

The statistics which we have examined makes the machine power of Britain nearer four hundred millions of manual laborers than twenty-five, and no doubt we are nearer the truth than Baron Dupin. What is it which enables Britain to expend greater sums of money at the present moment than any other nation; maintain steam war fleets equal in expense to half a million of soldiers, and with them sealing every port of the vast Russian empire. Could she do this with only the manual power of her small population? No. From this, then, we learn an instructive lesson respecting the power of machinery of all kinds, for without it all nations are about equal in proportion to the number of their inhabitants. The United States is a nation second to none in power, and this we attribute to the vast amount of machine power called into requisition. Governor Bigler takes the same view of the question. On this point he said: "But it is in the United States that genius has been most diligent to save work. The smallest amount of labor for the largest pile is the maxim of the progressive American. In the World's Fair at England, and now in Paris, the Americans have stood in advance, so far as relates to the useful inventions."

"A stroll through the Patent Office at Washington city, noticing the endless variety of machinery and the countless applications for new patents, will satisfy any man, when he compares what he has seen with what can be found in other countries, of the great prominence of this American characteristic. To my mind, it is the natural consequence of our free institutions, so calculated to render active and vigorous the intellect of all classes of people."

We agree with these sentiments to the letter, but we would go a step further in the way of explanation. It is our opinion that the intense activity displayed by our inventors in devising and improving machinery is, in a great measure, due to our low patent fees, and the facilities (defective though they still are in some few respects,) for obtaining and sustaining patents. Nearly all those useful machines, reapers thrashers, locks, telegraphs, sewing machines, &c., by which America has lately astonished the people of Europe, are of but recent origin. No doubt a standard literature devoted to American inventions, in directing the attention of our people to their importance and value, has much to do with these improvements, but as this is personal we say no more about it. The fact, however, cannot be denied, that nearly all those inventions which have imparted such renown to our countrymen, both at home and abroad, and for which prizes have been awarded at the recent great Industrial Exhibitions, have all been patented, and those patents are still in force. If our patent fees were to be raised as high as those of England, we are positive that the act would be the means of retarding improvements in the useful arts, and thus be a grievous hindrance to the advancement of our country in power, comfort, and wealth. Every man, therefore, who wishes well to his country will advocate and defend every wise measure which has for its object the encouragement of inventors, and "the protection of their rights; and, in the concluding words of Governor Bigler's address, we will see "invention

after invention continuing to chase each other like shadows over the plain, all tending to greater improvement, prosperity, brighter hopes, and a higher civilization in our much favored land."

A Lake of Pitch.

The last number of *Silliman's Journal* contains an account of that remarkable curiosity, "the pitch lake of Trinidad," W. I. It is situated on the western shore of the Island, near the village of La Braye, which is built on a foundation of hard pitch. The lake stands about 90 feet on a plateau above this village, is circular, and half a mile in diameter, surrounded on all sides with a dense forest. Its face is intersected with a network of water channels, which gives it the appearance of marbled paper. The surface of the pitch is pretty hard, and when the water channels are dry, it can be passed over on foot. In the center of the lake the pitch appears to be constantly and silently rising up *en masse*, and what is very singular, numerous pieces of wood are constantly coming up to the surface from below. These are from one to several feet in length, and are forced by the peculiar pressure to assume an upright position, so as to appear all over the lake like stumps of trees protruding through. It is believed that this pitch lake is boiling slowly below. Streams of sulphuretted hydrogen gas frequently issue from beneath, the temperature of which is 97 deg. Fah. The center of the lake is somewhat plastic, but around the sides the pitch is very hard. The water in the streams and small pools is pure and soft; fish are numerous in them, and alligators make them their habitation. Large springs of petroleum are in its vicinity, and about a mile northward there is a bed of brown coal cropping out upon the sea shore; it is about 20 feet thick, and appears from its dip as if it passed under the lake. The pitch is of great depth, for it has been dug into it in many places. It is believed to be a submerged bed of vegetable matter, undergoing slow distillation by volcanic action underneath. This store of bitumen appears to be inexhaustible. It is used with wood for fuel by the American steamers plying on the Orinoco river. Mixed with pebbles and sand it makes excellent pavements, and ground floors of houses. With ten per cent. of rosin oil, it makes a good pitch for ships. The Earl of Dundonald has purchased a tract of 26 acres of it, and has instituted experiments to discover, if possible, some means for making it a substitute for india rubber and gutta percha water-proof or vulcanized fabrics; and he has already made some vulcanized cloth, which, from appearances, bids fair of future success. If such a result crown his efforts—and every person must wish him success—such an inexhaustible supply of cheap material as this lake furnishes will soon bring down the price of such goods in our country, and thus confer unspeakable benefits upon our people.

Industrial Fairs.

Industrial Exhibitions have been the means of accomplishing a vast amount of good, and our people have become fully aware of their value and importance. Almost every State has its Agricultural Society and its Annual Fair, and in many States there are several County Clubs which also hold annual exhibitions. Some of these have been held already, this season, and with marked success; but the present month appears to be the favorite one with both mechanics and farmers. The Fair of the American Institute is now open in this city, as is that of the Maryland Mechanics Institute in the city of Baltimore. No less than twelve States hold their Annual Fairs this month, ranging from Canada in the North to Illinois in the West, Alabama in the South, and Connecticut in the East. These exhibitions should be countenanced and encouraged by every good citizen. They invite farmers and mechanics to exhibit their productions; they court competition; they incite to a noble rivalry in skill, industry, and science, and thus exert a most wholesome and elevating influence. By a comparison of the machines exhibited at one fair, defects are noted, while the merits of another are no less clearly pointed out. An unsuccessful exhibitor this year, in all likelihood will be successful the next, as he will go home determined to excel

his neighbor next year as far as he was himself excelled this one. This is a noble and an honest emulation. It stirs up the genius, and leads to improvement after improvement in every department of mechanism and agriculture.

The Industrial Fairs of old Greece in her glory, enabled her to excel all nations in the arts. Those of France, Germany, and Britain, in modern times, have conferred vast benefits upon these countries. The Highland Agricultural Society of Britain—the mother of all others—has made North Britain—a naturally barren country—the most famous for agricultural skill. We state it as our candid and carefully-weighed opinion, that the nation or people which encourages and sustains such exhibitions with the greatest amount of liberality, prudence, impartiality, and perseverance, must eventually stand first in the scale for improvement in every department of industry thus encouraged. When we see so many Industrial Societies sustained and encouraged throughout the length and breadth of our wide domain, it affords us the most solid hope for the future true glory of our country.

The Mason Testimonial.—Last Call.

The period originally fixed for the closing of subscriptions to the Mason Testimonial was Oct. 1st, and as that day has now arrived, it becomes necessary for all who still purpose to subscribe to do so forthwith. The Treasurer it will be remembered, is S. T. Shugert, Esq., Acting Commissioner of Patents, Washington, D. C. We presume that remittances arriving there within a week or ten days of this date will be in time.

This testimonial will serve to acknowledge, in a public manner, the deep gratitude which inventors and others entertain towards the late Commissioner of Patents for his noble exertions in their behalf. It will also, we trust, have some influence in restraining the unworthy zeal exhibited by the Secretary of the Interior in undoing good, and inflicting severe injury. It ought to remind him that the inventors of this country, while they are ever ready to appreciate as a special benefaction to themselves the labors of any man who seeks to advance and stimulate the progress of new discovery, they reserve, on the other hand, indignation and contempt for those who voluntarily become instruments to smother and retard such progress.

We hope that the credit side of the Mason Testimonial account will close with a liberal addition of funds.

Increase of the Metals.

There can be no doubt but any increase in the use of the workable metals—such as iron, copper, tin, lead, zinc, silver, gold, and platinum—tends to advance the useful arts. The cheaper these metals become, in the same proportion will man be benefitted. Were iron to be obtained at one-half its present price, the building of machinery, houses, railroads, &c., would be greatly stimulated, and all classes would be gainers by the improvement. In its own place copper is just as valuable, and were it as cheap as iron, it would be used for many purposes for which the latter is now employed. We never expect to see it become as cheap, still, we hope it will be much cheaper and plentiful than it now is. The great copper deposits of the Lake Superior regions should, in the course of time, influence the price of copper, and render it more abundant. It is estimated that the yield of pure copper from these regions this year, will not be less than 5000 tons. In a few years these mines will be yielding more annually than is now produced by all the other mines in existence. When sheet copper becomes as cheap as tinned sheet iron, it will be exclusively employed for the roofs and conductors of buildings.

Side Screw Steamers.

The steamer *Baltic*, of Lake Erie, once a paddle wheel boat, was divested of her paddles and engines last year, and has been propelled during the present season with Capt. Whittaker's side screws—one at each side—and two short stroke high pressure engines connected by direct application to the cranks. It has been running—in connection with the New York Central Railroad and Lake Erie Railroad—between Buffalo and Sandusky cities, and with astonishing success. She now carries 300 tons

more freight, and uses only one-half the fuel that she required with her paddle wheels and old engines. Her cylinders are of three feet stroke and 26 inches bore, and her steam pressure is 45 lbs. on the square inch.

Felting Cylinders of Engines.

The cylinders of all steam engines should be well felted in order to prevent the condensation of steam by surface exposure to the atmosphere. When it is considered that steam at the atmosphere is 212° at 20 lbs., 228° at 30 lbs., 251° at 40 lbs., 269° at 50 lbs., 283° and at 64 lbs., 300° in temperature, while that of the atmosphere may be set down at 52°, we can easily perceive that the condensing of steam in unfelted cylinders—the iron of which is such a good conductor—must be far greater than most persons who employ steam engines appear to think of. The felting of steam boilers has been found to effect a great saving in fuel, and why not the felting of cylinders and valve boxes. It is our opinion that the cylinder and boiler of any engine well covered with good felting will economise one-third of the fuel, as compared with one of a like capacity having its boiler and engine exposed to the atmosphere. We notice that many of the large cylinders and steam pipes on our steamboats and in our factories do not show a patch of felt; they are left freely exposed to the air as if inviting a reduction of the steam to water before it had accomplished its work. This does not say much for the wisdom of the engineers or the proprietors.

Encroachments Upon the Patent Office.

We have further advices from Washington confirming our previous remarks, that it is the decided intention of the Secretary of the Interior to appropriate a portion of the Patent Office building, which belongs to our inventors, to the Indian Bureau.

If we cannot stay these base proceedings entirely, let every inventor send his Representative, to influence the Honorable Secretary to be as modest as he is capable of, in the number of rooms he appropriates.—If he is not satisfied with the encroachments he has already made, let him be as lenient as possible in his further demands.

This subject will be further discussed in our next issue, and in the meantime inventors must act; remonstrate in every manner in which their actions are likely to influence the official who threatens the usurpation of their territory.

Atkin's Self-Raker in France.

It has been stated in some papers, giving notices of the trials of reapers in France, that the "Self-Raker" is Hussey's invention. This is a mistake, no part of the self-raker was invented or claimed by Mr. Hussey. The ingenious inventor is Mr. Atkins, of Illinois, and they are manufactured extensively in Chicago, by J. S. Wright, in connection with his improved reaper. The automatic self-raker of Atkins was highly admired for its excellent qualities and the ingenuity displayed in devising it.

The London *Artisan* states that there is a vast naval armament now in the course of construction in England, and only one paddle wheel vessel in the number—a royal yacht.

SPLENDID CASH PRIZES!

The proprietors of the SCIENTIFIC AMERICAN will pay in cash the following splendid prizes for the fourteen largest list of subscribers sent in between the present time and the 1st of January, 1856; to wit:

For the largest List	\$100
For the 2d largest List	75
For the 3d largest List	65
For the 4th largest List	55
For the 5th largest List	50
For the 6th largest List	45
For the 7th largest List	40
For the 8th largest List	35
For the 9th largest List	30
For the 10th largest List	25
For the 11th largest List	20
For the 12th largest List	15
For the 13th largest List	10
For the 14th largest List	5

Names can be sent in at different times, and from different Post Offices. The cash will be paid to the order of the successful competitor immediately after the 1st of January, 1856.—Southern, Western, and Canada money taken for subscriptions. Post-pay all letters, and direct to

MUNN & CO., 128 Fulton st., New York.

See prospectus on the last page.