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REMOVAL.

On or about the 1st of February next, the Publication Office of the SCIENTIFIC AMERICAN, and the Patent Agency Department connected therewith, will be removed from 128 Fulton street to the spacious offices in the new building, Nos. 37 Park row and 145 Nassau street; the principal entrance being on the eastern side of the City Hall Park. This change we find necessary in order to meet the continual growth of both departments of our business; and we shall expect, at the time above specified, to show our friends, and such of the public as may feel disposed to call upon us, the most complete and thoroughly organized establishment of the kind in the world.

Are Patents Valuable?—Lobbying.

In our last issue we noticed the fact that McCormick considered his invention in reaping machines, for which he recently sought an extension of the patent, to be worth to the country over $45,000,000. Now if this estimate is a fair one, it is not extravagant to re-assert what was stated some months ago in the *New York Herald*, that the money value of the patent rights in this country could not fall below the enormous sum of $500,000,000.

Although these rights are constantly passing out of existence at the periods of limitation fixed by law, their places are supplied by others, which prevent them ever falling below that amount. This is one of the few branches of revenue, in fact, in which there is no fluctuation, the tendency being always to an increase. With such enormous interests at stake, of course every effect, every sacrifice that human ingenuity can suggest, is made to renew these rights for such further periods of extension as can be obtained. The spirit of the existing law is unfavorable to these extensions; and it is notorious that the applications for extensions are usually sought by those who have made fortunes out of their patents, and have a very natural desire to hold on to them as long as possible. Hence arises the necessity of a direct application to Congress in order to obtain these concessions, which the law could not allow.

Notwithstanding the enormous amounts spent in the large patent interests in lobbying, the impolicy of granting extensions has been rendered so manifest that venality has hitherto had but little weight in the decision of these questions. It is, therefore, only under the guise of ostensible reforms that the patent monopolists can hope to push their schemes forward with success, and we are prepared at any time to hear of attempts to dupe the patent committees into the endorsement of some new-fangled patent bill that will cover up these cases from public gaze until it is too late to stop them.

The SCIENTIFIC AMERICAN has ever been found the uncompromising foe of all such schemes, and our readers may expect to find it new, as heretofore, the true friend of the inventor and patentee, and against the tyranical monopolists who, Cæsar-like, would require tribute of the whole world. From our impartial and peculiar position we can watch these movements about the lobby, and shall sound out a note of warning whenever we notice anything going on likely to impair or infringe the rights of the honest mass of inventors and the public.

American Lumber Trade—Balancing Saws.

The city of Chicago is the great timber mart of our continent, and the quantity which enters that port is a good indication of the condition of the lumber trade of our country. Last year, the total amount was 273,020,000 feet of lumber, 44,559,000 lath, 127,565,000 shingles. This is stated to be a very great decrease over the receipts of 1857, amounting to no less than 186,618,000 feet of lumber, 35,570,000 lath and 4,267,000 shingles, or more than a half of lumber and more than two-thirds lath. The lumbering business of our country has therefore been in a very depressed condition during 1857; but great hopes are entertained of the present year as being one of much activity in this great branch of American industry. With the return of financial prosperity many mills, now silent on our creeks and rivers, will resound with the song of the humming saw, inspiring the heart of the woodsman with cheerfulness and hope.

In connection with this subject, we have received a letter from a correspondent—E. S. Wicklin, of Illinois—in relation to the trouble which he has experienced in balancing a "muley saw," and as it is an important question, some of our correspondents may give us their experience in the matter. This saw, pitman, jaws, &c., weigh 200 pounds, the stroke is 30 inches, the speed 300 feet per minute. The stroke wheel is 4 feet in diameter, weighs 1,200 pounds, and has a counterbalance of 40 pounds at a point opposite the wrist, at a distance of 20 feet from the center. The timbers upon which the journal boxes are secured are large and well fastened, but are insufficient to withstand the great vibrating action of this machinery.

He says, "there appear to be principles involved in the matter which are not well understood by some of our millwrights; they attempt to balance the *weight* of the reciprocating parts, which must be an error, as the momentum communicated to and taken from these parts, must exert an influence much greater than their mere gravity. The saw running 300 feet per minute, with a stroke of 30 inches, has the reciprocating parts taken from a state of rest to acquire a velocity of 25 feet per second; this is done in the twentieth part of a second, and in the same space of time, this momentum is overcome and the parts brought to rest. If the velocity were given on the descending side, the mere weight of the parts, would only give them a speed of a few inches per second, which action could not overcome the momentum of the last half of the upward motion. Can a weight be placed on any part of the stroke wheel so as to neutralize these forces?"

The difference of momentum between this saw and parts, and the stroke wheel and all its parts, during one revolution is as 1500, to 15,500, pounds. A body falls 30 inches (the descent of the saw) in about 400 of a second. The velocity of this saw is five feet per second, the stroke wheel 12·56 feet at the circumference. The momentum which our correspondent seeks to neutralize is not the point alone to which we direct attention, as it seems that the concussions or vibrations of framing, are caused by the resistance presented to the saw by the log. There are two questions arising from our correspondent's letter to which the attention of operative millwrights is directed, namely, is the stroke wheel, and the saw in this mill, well proportioned in momentum, or is the difficulty in the feed of the log carriage?

Meteorology.—Our Climate.—No. 1.

Our country possesses a most variable climate; in some sections, the thermometer will range from twenty degrees above zero to twenty below it in the short space of twenty-four hours; and in summer the heat is exceedingly high, while in winter the temperature is severely cold. Such sudden and extreme changes are due to peculiar causes, such as the solar beams, the winds, and special conformations of the earth's surface on our continent. The phenomena of the atmosphere are interesting to every person; these embrace the rolling seasons, the winds, the rain, the summer's heat and winter's cold; and upon these we are dependent for the fruits of the earth, fields covered with luxuriant plenty, or extensive tracks lying desolate in barrenness. We intend to present a few articles on this subject, abstracted from the recent report of Professor J. Henry, Secretary of the Smithsonian Institution, on meteorology as connected with agriculture, which report contains such an amount of condensed useful information, science, and solid reasoning as make it a perfect model in its way. In it the ground is broadly taken that "nearly all the changes which now take place at the surface of the earth are due to the action of the sun. If the solar impulses were suspended, all motion on the surface of the planet would cease, the wind would gradually die away, the currents of the ocean would slacken their pace, and finally come to rest, and silence and death would hold universal reign." We find it stated that the *whole* earth receives the greatest amount of heat during any one day in the year on the 1st of January, and least on the 4th of July, and that in the interior of Australia during January the heat is most terrible in its effects. From astronomical data it is deduced, however, that the point of the earth's orbit which approaches nearest the sun is very slowly, but constantly changing its place in the heavens, and in the course of time the order will be reversed, and the greatest amount of heat received in one day will yet occur in July, and the least in January. In the northern portions of our continent there are fossils of animals and plants belonging to tropical regions, thus proving that at one period in the earths' history the heat of Africa was experienced where the snows of Greenland now cover the face of the ground. In reference to such phenomena Professor Henry says:—"If it be true, as some suppose, that the seasons have changed in different parts of earth within the memory of man, the effect must be due to other than astronomical causes."

As the earth is a sphere, the sun's rays strike it obliquely at all places except those over which it is vertical; therefore the sun's beams diminish in intensity from the equator to the poles. The average temperature of any given place on the globe, if uninfluenced by other conditions, can easily be calculated according to Sir David Brewster, by multiplying its equatorial temperature into the radius of its parallel of latitude. As the sun, however, advances twenty-three degrees north of the equator in summer, it is found that at Madison, Wis., these is more heat received during the three months of midsummer than at New Orleans; but as we advance towards the equator there are less extreme variations of the seasons. The great amount of heat received during summer so far to the north, accounts for the great variety of fruits and grain which can be cultivated in such latitudes.

The atmosphere is a great equalizer of heat during day and night at the earth's surface. Were it not for the atmosphere, all parts of the earth's surface would probably become as cold at night by radiation of heat into space as the polar regions are during the six months absence of the sun. The mode in which our atmosphere retains its heat and increases the temperature at the earth's surface was illustrated by the physicist Saussure. He lined a box with blackened cork, placed a thermometer in it, and covered it closely with a top of two panes of glass, separated from one another by a thin stratum of air. When this box was exposed to the perpendicular rays of the sun, the thermometer in it indicated a temperature above that of boiling water. Sir John Herschel repeated this experiment at the Cape of Good Hope, and was able thus to cook a festive dinner. This phenomenon is due to the rays of different quality which are given off by a body heated to different degrees of intensity. Thus, if an iron ball be suspended in free space and heated to the temperature of boiling water, it emits rays of dark heat which have very little penetrating power, and are intercepted by glass. But as the body is heated still higher, the penetrating power of the rays increases, and finally, when the ball becomes of a glowing white heat, the rays readily penetrate through glass and all other transparent substances. The heat which comes from the sun consists principally of rays of high intensity and great penetrating power. They very readily pass through glass, are absorbed by the blackened surface of the cork, and as it is a bad conductor, its temperature is soon elevated, but the rays which it gives off are of a different character from those which it receives. They are non-luminous, are of feeble penetrating power, cannot pass through the glass, and they therefore soon elevate the temperature of the air in the box. The atmosphere which surrounds the earth produces a similar effect. It transmits rays from the sun and heats the earth beneath, which in its turn—like the blackened cork—emits rays which do not readily penetrate the air, but give rise to an accumulation of heat at the earth's surface. The radiation of heat from the earth differs much on different nights. If the atmosphere is dry it radiates rapidly at night, but in moist situations it radiates slowly, hence during warm damp days the heat is always oppressive; and the sensation of heat is felt to be as intense in moist countries, such as England at a temperature of 76°, as in New York at a temperature of 86°. Col. Emory, in his report of the Mexican boundary survey, states that on the arid plains there was a difference of 60° between the heat of the day and the night.

Composition for Black Lead Pencils.

R. Hicks, of Chatham Place, London, has patented a new composition for pencils, consisting of two parts of black schist, two of carburet of iron and eight parts of the plumbago of commerce. They are first reduced to fine powder, mixed with a very small quantity of water, then placed in a strong metal mold, and submitted to severe pressure in a hydraulic press. They are thus rendered like a block of solid metal, and are fit to be sawn out into minute slabs for pencils. This composition also makes excellent crucibles for melting metals.

To Inventors and Patentees.—Removal.

In a few days we expect to remove our offices to the spacious building erected on the site of the old Brick Church, opposite the City Hall Park. It is not our intention to remove all the effects which have been accumulating in the offices we now occupy, since 1846, and we would thank inventors and patentees, if we have any models or Letters Patent which they wish to preserve, to order them away immediately. In sending for models, please to state what invention they represent and when they were left at our office, and how they are to be returned, and we will see that they are boxed and sent to the express office, free of charge. We have over 90 patents in our possession, which belong to parties located in every part of the country, and many hundreds of models which are, no doubt, of some value to their owners, but are of no value to us, and they occupy the space which we need for new models which are daily coming in.

QUEEN VICTORIA'S SKATES.—In lieu of straps across the instep, each skate is provided with a patent leather boot. These boots are firmly attached by a strip of plated silver to the clogs, which are of satin wood, highly polished. The skate-irons terminate in front in the appropriate and graceful form of a swan, and both sides are elegantly chased. The cup that forms the receptacle for the heels is silver-plated, and chased with the design of a rose, shamrock and thistle. The same design is embroidered in white silk upon the black patent leather, to which it forms pleasing contrast. The skate here described is similar in make to what has been shown to us two or three times this winter, and upon which parties have been anxious to get patents.