

Correspondence.

The Edison Lamp Tests.

To the Editor of the Scientific American:

I have read to-day with much interest the results of Messrs. Morton, Mayer, and Thomas's experiments with an Edison electric lamp, published in the SCIENTIFIC AMERICAN of April 17. The results obtained, so far as they relate to the resistances of the loop while giving lights of different intensities, and the current required for a light of fifteen candles, are valuable, but those given relative to the cost of one hundred and twenty candles are of no value, because it is (evidently) premised that the twelve lamps are to be in series in a single circuit, whereas, in Mr. Edison's proposed system, each one of the twelve lamps would be placed in a branch circuit by itself, or in other words, in multiple arc; and the cost then would be much less than the Stevens Institute experimenters' report. The resistance of the armature of Mr. Edison's generator is so small that it may be neglected entirely, without seriously affecting the value of calculations, and the resistances of the leading wires may also be made so small that their neglect will not make any appreciable difference. This being the case, let us see what would be the actual amount of coal required to maintain twelve electric lights in multiple arc, having a total intensity of one hundred and twenty candles.

Before entering upon this calculation, however, let us determine the electro-motive force required to supply a current of 0.905 weber, in a circuit of 76 ohms resistance. Multiplying the current by the resistance gives $0.905 \times 76 = 68.78$, which would be the required electro-motive force in volts. Now, then, place the twelve lamps of 76 ohms resistance each in multiple arc, and their joint resistance will be one twelfth part of that of a single lamp, or 6.33 ohms. As the current generated by the machine is to be divided among twelve branch circuits, so that each circuit will receive a current of 0.905 weber, it is obvious that the total current generated by the machine must be twelve times that required for a single circuit, or 10.860 webers. Multiplying the current by the resistance (as we did for the single lamp) gives $10.860 \times 6.33 = 68.78$, which is the required electro-motive force, in volts, and is exactly the same as that required for a single lamp. Hence, even with a Brush or Siemens machine, where forty per cent of the original energy is lost, the amount of coal required to operate twelve lamps giving an intensity of one hundred and twenty candles, is only five twelfths of one pound, instead of five pounds, as calculated by the aforesaid experimenters.

This shows a pretty large margin below the cost of producing a somewhat less light by coal gas, and in practice the margin would be still greater, for Mr. Edison's generator is said to transform considerably more than sixty per cent of the original energy into effective current.

Respectfully yours, WM. C. RAMSDELL.

Norwich, Conn., April 9, 1880.

AGRICULTURAL INVENTIONS.

A revolving hay rake, so constructed that the rake head may be raised to pass obstructions and miss hay without discharging the collected hay, may be conveniently adjusted with the teeth at any desired inclination, and may be readily tripped to discharge collected hay, has been patented by Mr. Jacob S. Oberholtzer, of Wadsworth, Ohio.

A spring harrow tooth, made in two parts, whose point is vertically adjustable in such a manner that it may be raised or lowered without altering its pitch or draught, and the tooth be thereby stiffened or made more flexible for deep or shallow work, has been patented by Mr. Perry A. Peer, of Comstock, Mich.

An improved sugar cane cutter, patented by Mr. Philip Seitz, of Baton Rouge, La., is an improvement on the machine for which letters patent No. 196,598 were granted to the same inventor, October 30, 1877.

An improved machine for removing bugs from potato vines, has been patented by Goodrich E. Risley, of Waterville, N. Y. The object of this invention is to furnish a new machine for removing bugs from potato vines and catching them, so that they may be readily destroyed.

Mr. John Hill, of Columbus, Ga., has invented a feed indicator for cotton openers. This invention relates to a convenient and certain means for determining the quantity of cotton to be fed to cotton openers. The latter machines are devices which serve to tear up and loosen the tussocks of cotton as they come from the bale and distribute the fiber in the form of a fleece. In using these openers two are sometimes employed together to act successively upon the cotton; or one opener may be employed in connection with a lapping machine, the function of which latter is to press together and compact into a fleece. In either case a hollow trunk has been employed as a conduit, in connection with a blast of air passing through the same, to act as a vehicle to carry the fleece from one opener to the other, or from the opener to the lapping machine, which second machine is generally located upon a different floor, or at a point more or less remote from the first. This invention has more special reference to what is known as "Kitson's Trunk System of Opening Cotton;" but it can be used in any similar system where the opener is located at some distance from the second opener or lapper, and cotton is supplied from the first to the second through a trunk or flue. The invention consists in making the boxes of the upper feed roll of the second opener or lapper vertically adjustable and connecting them with an index hand within sight of the operator at the

first machine, so that the operator, at a point remote from the second machine, can tell the amount of cotton fed to the second machine by the rise or fall of the movable roller due to the passage of a greater or less quantity of cotton to the second machine.

The Comet as Seen in Australia.

The Melbourne *Argus* says: "The tail of a large comet was discovered in the southwestern heavens, near the horizon, on February 2, soon after sunset. The nucleus could not be seen either on the 2d or 3d, but about 25° length of tail were visible. The extremity of the tail on the 2d reached to β Gruis, and next night it had shifted considerably to the northward so as to pass close by θ Gruis. On the first night it made an angle of 50° with the horizon, and on the second 80°. Owing to the misty state of the air and the closeness of the comet to the sun, no favorable observations could be made in Melbourne on the first or second night."

The *Argus* of the 5th of February says: "Owing to the presence of clouds and a hazy sky no continuous observation of the comet could be made at the observatory last night. The best view of the visitor was obtained at 8:35 P.M., when it extended 32° above the horizon. Occasionally the sky cleared, so that a view could be obtained nearly down to the horizon, but the nucleus of the comet was not visible. The tail had slightly diminished in brightness from the previous evening, and was rather less curved. It appeared to be almost perpendicular to the horizon, and had moved slightly to the northward. Its length had considerably increased since Tuesday evening. Until the nucleus has been observed no knowledge can be obtained as to the direction in which the comet is traveling or its actual position in the heavens. It will probably be two or three weeks before any definite information on these points can be obtained. We have received the following telegram: 'Perth, February 4. A long stream of lustrous light, resembling the tail of an immense comet, is visible a little above the horizon in the western heavens. It appears to be making an easterly course.'"

Canadian Weather.

Mr. H. G. Vennor, of Montreal, whose boldness in weather predictions has brought him into such prominence, says that the extreme cold of Canada is almost always produced by a wind blowing from a point to the north of west. Such a wind is both cold and dry. Being dry, in passing along it imbibes moisture rapidly, causing cold. Being also cold, it quickly absorbs heat from the surface of the earth; and when this continues for several hours of any day, and toward sunset it becomes calm, we then usually have the lowest state of the thermometer. In Canada, these extremes of cold usually last about three days; the nor'wester beginning about noon of one day, blowing fiercely for that afternoon, becoming almost calm in the evening—then a cold night. Next day the wind is not so high, but still from a northwesterly point. Again, toward sunset, there is a calm, with the thermometer more or less below zero. In the morning, it may be observed that the force of the cold is breaking. If the wind veers round to a point south of west, there will be a few flurries of snow, very threatening in appearance, but amounting to very little in reality, no snow storms of consequence coming from the west. If, on the other hand, the wind passes to the east, several hours of bitter cold may be expected, followed by a general snow storm lasting from twenty to thirty hours.

Paper Clay.

In view of the rapid rise in the price of paper, and the complaints of the paper makers with regard to the scarcity and increasing costliness of all sorts of paper stock, it is gratifying to see that one source of such raw material is not likely soon to fail us. Whatever may happen to rags, wood pulp, and the thousand other sorts of fibrous material supposed to enter into the composition of paper, the clay bank promises to be inexhaustible. True, the majority of people who pay a high price for paper may have a prejudice against that material, but evidently the owners of the clay banks have not; for in a prominent journal devoted to the paper trade, they boldly print a large cut of their "clay works," showing a long stretch of snowy bluff out of which a huge section has been cut, presumably to supply the needs of "all first-class mills, east and west," to whose owners they refer for evidence of the excellence of their clay.

The American Society of Mechanical Engineers.

The organization of the American Society of Mechanical Engineers was completed April 7, at a numerously attended meeting in the hall of Stevens Institute, Hoboken. The society will embrace members, honorary members, associates, and juniors, and is open to mechanical, civil, military, naval, mining, and metallurgical engineers, and architects of practical attainments as designers, constructors, or teachers, if they apply for full membership. A junior must have been in practice for two years, or must be a graduate of an engineering school. The first regular annual meeting will be held in this city in November next. The election of officers resulted as follows: President, R. H. Thurston; Vice-Presidents: H. R. Worthington, Coleman Sellers, Eckley B. Coxe, General Q. A. Gillmore, U. S. A.; Wm. H. Shock, U. S. N.; Alex. L. Holley; Managers: W. P. Trowbridge, Theo. N. Ely, J. C. Hoadley, Washington Jones, Wm. B. Cogswell, F. A. Pratt, Chas. B. Richards, Wm. B. Bement, S. B. Whiting; Treasurer, Lycurgus B. Moore.

Blacksmith's Hammer Signals.

When the blacksmith gives the anvil quick light blows it is a signal to the helper to use the sledge, or to strike quicker.

The force of the blows given by the blacksmith's hammer indicates the force of the blow it is required to give the sledge.

The blacksmith's helper is supposed to strike the work in the middle of the width of the anvil, and when this requires to be varied the blacksmith indicates where the sledge blows are to fall by touching the required spot with his hand hammer.

If the sledge is required to have a lateral motion while descending, the blacksmith indicates the same to the helper by delivering hand hammer blows in which the hand hammer moves in the direction required for the sledge to move.

If the blacksmith delivers a heavy blow upon the work and an intermediate light blow upon the anvil, it denotes that heavy sledge blows are required.

If there are two or more helpers the blacksmith strikes a blow between each helper's sledge hammer blow, the object being to merely denote where the sledge blows are to fall.

When the blacksmith desires the sledge blows to cease, he lets the hand hammer head fall upon the anvil and continues its rebound upon the same until it ceases.

Thus the movements of the hand hammer constitute signals to the helper, and what appear desultory blows to the common observer, constitute the method of communication between the blacksmith and his helper.

Strawberries in South Carolina.

A Charleston newspaper notes a steady decline in the price of strawberries in South Carolina since they were first cultivated for northern markets. In 1872, they brought an average price of 57 cents a quart; in 1873, 33 cents; in 1874, 38 cents; in 1875, 29½ cents; in 1876, 21 cents; in 1877, 20 cents; in 1878, 11½ cents; in 1879, 14 cents; and this year the average is estimated at about 12½ cents. The decline in price is, of course, easily traceable to the increase of the crop raised, and to the nominally lower price of all products due to the return of the currency to a specie basis. Taking the acreage this year at 225, and the average yield at 4,000 quarts to the acre, the yield will be 900,000 quarts, which at an average of 12½ cents a quart, will return an income of \$112,500.

The Fish Hawk Finished.

The new steamer Fish Hawk, especially designed for the propagating work of the U. S. Fish Commission, is at last ready for work. She is a double screw steamer of about 600 tons, fitted up so as to be able to take the spawn of any variety of fish, and complete the hatching of the young fry in their native waters. This obviates the necessity of the long and expensive journeys with young fish which have entered so largely into the labors of the commission heretofore. Besides in the propagation of many species of fish, the floating hatchery is found to be much more successful and satisfactory than any establishment can be on shore.

The Brooklyn Bridge.

A new impetus has been given to the work on the Brooklyn bridge by the passage and signing of an appropriation bill at Albany, ordering the City of New York to pay \$750,000, and the City of Brooklyn \$1,500,000—total, \$2,250,000, to enable the trustees to finish the work. The president of the Board of Trustees of the bridge reports that the speedy execution of the various contracts in connection with the superstructure will be insisted on, and that there is no reason to suppose that there will be any further delays. The removal of the remaining buildings in the way of the approaches to the bridge is going on, and the rapid execution of the rest of the great work is confidently promised.

The Vesuvius Railway.

Tourists are now able to visit the crater of Vesuvius without the labor of climbing, the railway being complete. The depot is situated at a height of 810 meters, or 210 meters above the Observatory. A restaurant and café capable of accommodating 100 people is attached to the depot. The angle of inclination of this railroad attains at various points 40°, 50°, and 63°. There are two passenger cars, the Vesuvius and Etna, accommodating 12 persons each. The system adopted in the construction of the railway is of American invention, and is known as "the prismatic system."

Pioneer Paper-Makers.

Two veteran paper makers, Stephen Thacher and Joseph Reed, have lately passed away. Mr. Thacher was within a week of reaching his hundredth year. He built the first paper mill at Lee, Mass., thus laying the foundation of what has become the great industry of that town. Of late years he has resided at Saratoga Springs, N. Y. Mr. Reed was ninety years of age when he was killed on a railway near Springfield Station, Pa. He was poor as well as old, and apparently without near relatives. Personally, he was probably known to more paper-makers than any other man of the craft.

If an invention is worthless and it fails of public support, no one suffers but the inventor. If it is good and succeeds, the whole world reaps the benefit. The public, which pays nothing in the one instance and gains enormously in the other, is thus vitally interested in the encouragement of inventions and the upholding of our patent system.