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PROGRESS OF ELECTRIC ILLUMINATION.

In describing the Jablochkoff electric candle, recently, we noted the fact that the inventor was engaged on further experiments, and that new discoveries would doubtless soon be forthcoming. M. Jablochkoff now announces that he has succeeded in dispensing with the carbons of his candle altogether, and derives the light from the insulating material alone—a proceeding somewhat analogous to throwing aside the candle and igniting the candlestick. In fact, we cannot see that the inventor has left anything of the original electric lamp at all. He began, a few months ago, by abolishing all the elaborate regulating mechanism, and produced simply a pair of carbon rods, placed parallel, separated by an insulating partition of clay and held in a metal casing. This was made the subject of experiments by a War Office Committee of Royal Engineers, at Chatham, England, where the apparatus was demonstrated to give 50 per cent greater power of light than had ever before been obtained from any electric light.

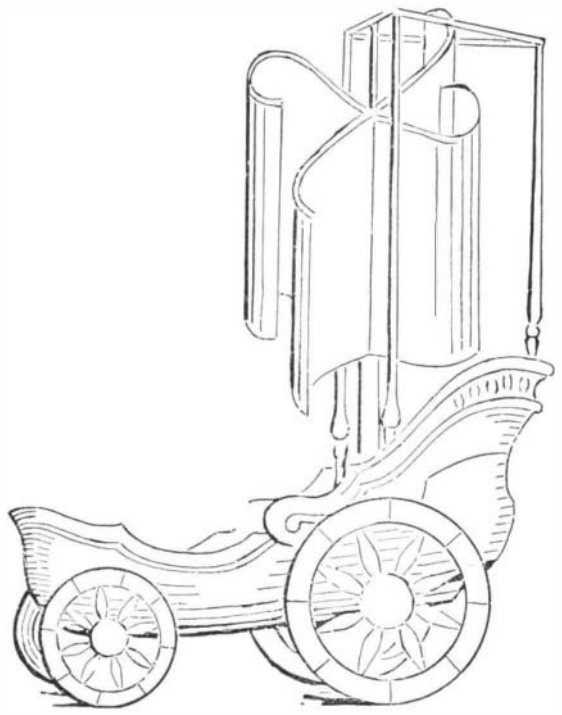
Not contented, however, with this showing, M. Jablochkoff proceeded to denude his candle of its outer casing, leaving merely a double carbon wick with a strip of the insulating compound between the carbon points, which terminated at the bottom in metallic tubes as before. It was this form which we recently illustrated; and with this, M. Jablochkoff succeeded in arranging means for dividing the current, so that, instead of one very powerful light, he had eight from one and the same circuit. Six of these lights illuminated Marengo Hall in the Louvre, Paris, with a brilliancy equal to that of 100 argand gas burners of the largest size. The East and West India Dock Company, of London, recognizing the value of the invention, began at once to make arrangements to use it for illuminating one of their docks; and hardly have these arrangements been completed, when M. Jablochkoff now discovers that he can dispense with the carbon points altogether, and obtain the required light by passing the electric current through the insulating material itself, which is simply kaolin clay. It seems that, while experimenting with sparks from a current of great tension, the inventor passed them through a plate of kaolin, placed between the two ends of the wires from a couple of coils in which the current was induced by a magneto-electric machine. He then found that, although the current was unable to fuse the kaolin, it did heat it to incandescence. By priming the kaolin plate with a better conductor, he then succeeded in obtaining a very brilliant light with a very small consumption of kaolin, so small, indeed, that a kaolin plate barely half an inch in length is sufficient for a small light burning ten hours. A band of kaolin may be made to give a magnificent light; and as, practically, any desired number of coils can be placed on the circuit of the magneto-electric machine, and each coil can be made to produce an electric light, the divisibility of the light appears to be all that can be desired. In fact, the inventors—for M. Denayrouze is associated with M. Jablochkoff—have produced a series of electric lights of intensities varying from the equivalent of two gas jets to as many as fifteen. What is more, any one of these lights may be turned out, or the whole illuminating power of the current diverted into one burner.

The inventors state that they have used bands of kaolin longer than the induction spark which the coil is capable of making, and that the intensity of the light, which is soft and uniform, depends on the number of spirals and diameter of the wires used in the coil. By using fifty coils, M. Jablochkoff says, it is easy to obtain as many lights of variable intensity. He has arranged coils so as to give a series of gradually increasing lights, ranging, as before noted, from two to fifteen gas burners in power. By using alternating currents the interrupter and condenser of the induction coils are dispensed with. The total system of distribution of currents is then reduced to a central artery represented by the series of interior wires of the coil, branching from which are as many distinct conductors as coils are placed in the circuit. It is proposed to employ the carbons arranged as previously described where an intense light is desired, and to adapt the kaolin light to the ordinary illumination of streets and buildings.

This is electric illumination *minus* voltaic arc, regulators and carbons, in fact, *minus* everything except the electrical generator, wires, and kaolin. M. Jablochkoff is still at work, and promises even further improvements.

SAILING AGAINST THE WIND.

Wendell Phillips, in his famous lecture on the "Lost Arts," used to delight in trying to convince his hearers that the ancients were more ingenious than the inventors of the present day; and it is well known that rude copies of some of our most noted devices have been discovered among the relics of past ages. Hence, without denying the possibility of there being anything new under the sun, we may naturally hesitate to believe that every so-called new invention had no counterpart in former times. An instance of a singular coincidence in the views of two inventors, at an interval of nearly two centuries, may be of interest. John Wilkins, Lord Bishop of Chester, and Member of the Royal Society, was equally celebrated as a philosopher and as a divine; and his writings on scientific subjects contain much interesting and valuable information. His treatise on "Mathematical Magick," first published in 1648, has a chapter entitled: "*Of a Sailing Chariot, that may without Horses be driven on the Land by the Wind, as ships are on the Sea.*" In this, the writer speaks of the sailing chariots which were used by the ancients, and after describing their construction, goes on to say: "I have often thought that it would be worth the experiment to enquire whether or no such a Sailing Chariot might not be more conveniently framed with movable Sails, whose Force may be imprest from their Motion, equivalent to those in a Wind-mill. Their foremost Wheels (as in other Chariots) for the greater Facility, being somewhat lower than the other, answerable to this Figure, in which the Sails are so Contrived, that the



Wind from any Coast will have a Force upon them to turn them about; and the Motion of these Sails must needs turn the Wheels, and consequently carry on the Chariot itself to any Place (though fully against the Wind) whither it shall be directed. The chief doubt will be, whether in such a Contrivance, every little Ruggedness or Unevenness of the Ground, will not cause such a jolting of the Chariot, as to hinder the Motion of its Sails. But this perhaps (if it should prove so) is capable of several Remedies. I have often wondered, why none of our Gentry who live near great Plains, and smooth Champions, have attempted anything to this Purpose. The Experiments of this kind being very pleasant, and not costly: What could be more delightful, or better Husbandry, than to make use of the Wind (which costs nothing, and eats nothing,) instead of Horses? This being very easie to be effected by those, the Convenience of whose Habitations doth accommodate them for such Experiments."

Now comes the proprietor of the "Universal Wind Power," with a patent granted last year, for a carriage propelled by a windmill, which, he says, "runs readily against the wind as well as in any other direction." He has gone further than Bishop Wilkins, for he has built a machine which has satisfactorily demonstrated its ability to do what is claimed for it; and now the inventor offers it for use in localities where there is plenty of surplus wind. On prairies and the sea coast, it is not improbable that this machine would prove very useful. Doubtless the proprietor of the "Universal Wind Power" believes that he is the original inventor of the device; but it may well be doubted whether he can hold the patent right to the use of the invention as a whole—that is, to the application of a windmill to a vehicle.

PASSAGE OF THE NEW GERMAN PATENT LAW.

We announce with much pleasure the promulgation of the new patent law for the German Empire, to take effect on and after July 1 next. This new law, although it is not quite up to the progressive ideas of our countrymen, is nevertheless a great improvement on the previous system, and opens to American inventors an additional market, of large extent, for their new ideas.

Heretofore it has been necessary in order to patent an invention in Germany to take separate patents in each separate State, of which there are twenty-one. Thus twenty-one sets of drawings and specifications were necessary, for each of which an agent must be employed and special fees paid. The total expense was so great that few patents were ever taken; the applications being confined to the larger States, foremost among which was Prussia. But here, unfortunately, was in vogue a stringent and narrow-minded system of official preliminary examination, resembling that which prevailed in this country twenty or thirty years ago. Under this Prussian system, patents for the most valuable improvements were rejected. Thus a patent for the Howe sewing machine could not be allowed in Prussia because it was not considered by the Prussian patent office examiners to be an original invention, but merely an improvement on some former attempt to sew by mechanism. A patent for the celebrated American invention of Broadwell, for gas-check rings for breechloading cannons, was refused in Prussia on similar grounds; but the Prussian Government copied Broadwell's plan and introduced the invention into its army and naval service, without allowing him any compensation. The celebrated German guns of Krupp are provided with Broadwell's invention, without payment to the inventor; although, with-