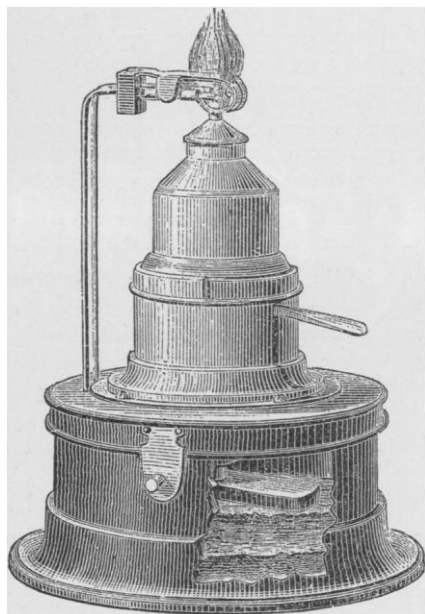


ELECTRIC LIGHTER OF M. DESRUELLES.

This is a small apparatus, simple and practical, which will certainly be very highly appreciated by smokers and, in general, by all persons who are often in need of fire or light. It is one of the most direct applications of the drying of piles of all the systems by the process of M. Desruelles. This process consists of introducing in the piles, in the place of liquid, a kind of amianthus sponge that is afterwards filled with acid or some suitable solution. We thus gain by having a pile *dry* to some degree, which can be removed, displaced, or reversed without the liquid pouring out; this has its advantage for movable machines, such as portable lamps, piles for bells on board of ships, railroads, etc. The introduction of this inert substance diminishes the volume of the liquid; without saying that the electromotive force of the pile is not at all affected, its interior resistance is increased. This is of no importance in the case which we are now considering. The lamp consists of a small round box of wood, in which the pile is placed; over this box is placed a small lamp with oil; a platinum spiral in juxtaposition to the wick serves to produce the light.



The pile is an element to the bichromate of potash, in which the liquid is replaced by a kind of amianthus saturated with a bichromatic solution similar to that of the pile jar.

The zinc is hung from a small lever which it is only necessary to touch lightly in order to bring the zinc in contact with the sponge; the circuit is then formed, the zinc is attacked, and the current produced traverses the spiral, which reddens and inflames the oil. The pile once charged will serve for several hundred lightings. When the spiral no longer becomes red hot, the sponge must be replaced—a very simple operation. When the small lever is not pressed upon, the zinc is raised and kept thus from the action of the liquid which the sponge of amianthus absorbs. M. Desruelles constructed on the same principle a lighter to gas burners, in which the pile is placed at the extremity of an arm which is long or short, according to the height of the burner. This small domestic apparatus can be seen at the Electrical Exposition, where its practical working is shown.

INTERNATIONAL CONGRESS OF ELECTRICIANS.—Professor G. F. Barker, in a letter to the *American Journal of Science* says:

The exhibition as a whole has been a decided success. It has brought together an immense mass of highly interesting material. There are in all something over 1500 exhibitors, of which one half are French, 155 Belgian, 115 English, 114 German, 81 Italian, 72 American, 39 Austrian, 32 Russian, 21 Swedish, 13 Swiss, 17 Spanish, 13 Norwegian, 11 Dutch, 5 Danish, and 2 Japanese. Of decided novelties, there are more in the United States section than in any other. Edison has made a wonderful exhibition of his inventions, and his rooms are thronged continually. The principle discovered by him that an electric current varies friction, the so-called motograph principle, together with the applications of it practically, are beautifully illustrated. The principle of the varying resistance of bodies which imperfectly conduct, when they are subjected to pressure, a principle which he was the first to investigate and to apply, is exhibited in a large series of instruments, one set of which traces the progress of development of the carbon telephone. The system of incandescent lighting which he has perfected is shown in all its details, from the unique dynamo machine of low resistance and high electromotive force, the street conductors with their connections, safety-catches, expansion-caps, etc., the ingenious meter and the house conductors with their incombustible covering, to the fixtures with double conductors and safety catches, and lastly to the incandescent lamp itself. Dolbear exhibits a new electro-static telephone which performs admirably and which consists simply of two thin metal plates, connected to the secondary wire by an induction coil. They are oppositely charged by the coil and so attract each other. Gray's harmonic multiple telegraph is in successful operation and Bell's original photophone is also exhibited. The most original thing exhibited in the French section is the secondary battery: Planté exhibits several forms of it, Faure shows the improvement which he made by covering the plates with minium, and lastly Meritens is working a still newer form, in which only lead plates are used, but a large number of them are put in a small space. In the historical line the collection in the exhibition is unrivaled. The pile of Volta, the electroscopes of Galvani, the thermopiles of Nobili and Melloni, the electro-magnetic induction ring of Faraday, the first magneto-machine of Pixii, the rheostats and telegraphs of Wheatstone, the telegraphs of Sæmmering, of Steinheil and of Gauss and Weber, the continuous current-machine of Pacinotti, the electro-thermic and electro-motor apparatus of Becquerel, the electro-capillary apparatus of Lippmann; all these and many more are here collected. And as for arc lights, the exhibition at night is like day. The Brush machine and light are in great favor. A large lamp of this sort just put up has carbons two inches in diameter, and is claimed to give a light of 80,000 candles.

BOOKS RECEIVED.

A TREATISE ON THE METHOD OF GOVERNMENT SURVEY, with complete Mathematical, Astronomical and Practical Instructions. By SHOBAL V. CLEVINGER. Second Edition, revised. D. Van Nostrand, 23 Murray street, New York.

This excellent treatise will be found of the greatest value to all engaged in government land surveying, and appears to surpass all its predecessors in its completeness and adaptability for practical work. Dr. Clevenger is one of our most esteemed contributors, and our readers are aware of the thorough nature of all literary productions which proceed from his pen. The present treatise on government land survey is exhaustive of the subject, and has been accepted by the highest authorities as an authoritative manual.