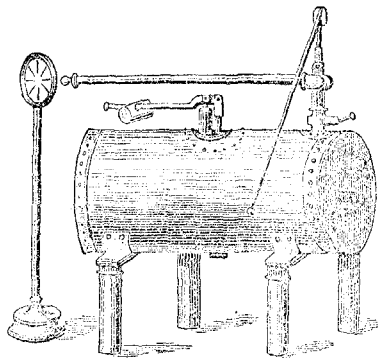


Portable Hydro-Electric Machines. By CHARLES V. WALKER, Esq.,
 Editor of the "*Electrical Magazine.*"

There are several forms which have been given to the portable hydro-electric machines. The first to which we may allude is one constructed by Watson & Lambert, for Mr. Addams, the action of which was exhibited last summer, before the members of the United Service Institution; and the power of which we have ourselves had the opportunity of testing with Mr. Addams. It consists of a cylindrical boiler 30 ins. by 16 ins. Five tubes, in a lower row of three, and an upper row of four, traverse the boiler longitudinally. The boiler rests on a frame supported by four glass pillars. Before being placed in the frame, the steam is "got up," by means of an open furnace of a suitable shape; the steam is then "kept up" by a succession of iron heaters, each 15 inches long, which are thrust into the tubes last alluded to; the heaters being prepared in the furnace, after it is vacated by the boiler. A convex cover, applied to each end of the boiler, after the heaters are in, gives the requisite rounded form. One end of the boiler is furnished with a gauge water-cock, and a steam-cock. The boiler also possesses a safety-valve, which is adjusted as high as 90 lbs. Above the boiler rises a short tube furnished with a stop-cock; it enters an inverted hemispherical metal vessel, in which the requisite condensation occurs; from this the hydrated steam escapes through a tube, furnished with the usual box-wood jet. Mr. Addams obtains the electricity of the steam itself, by allowing it to blow through an insulated hollow metal cylinder, furnished within with wire gauze, or metal, points. The spark from the boiler is 10, or 12, inches long.



Mr. Gassiot has a small machine, made under his direction, of a metal globe of the capacity of two gallons; a globe, which was a gas holder, in the days of portable gas, and which can, therefore, bear a high pressure. The steam-tube rises from the top, and curves off at right angles; the jets are fitted up in the usual way. The globe is placed on a small metal tripod, beneath which is a chafing-dish containing charcoal; the whole stands on a square tile, supported by four glass pillars. When in good action, and by careful management, an attenuated spark of an inch may be obtained. Mr. Gassiot exhibited this instrument, and Dr. Pereira exhibited another, constructed after the same model, at the *Soirée* of the London Institution, held on January 17th last.

The prefixed engraving represents an elegant machine by Messrs. Watkins & Hill, the general construction of which corresponds with

that of the one we first described. The rod, resting on the front of the machine, is a means for conveying the electricity to any piece of apparatus. The circle of converging points, for de-electrizing the steam, was adopted at our suggestion, in place of a mere fork. This machine will charge 70 feet of coated surface in a minute, with 20 grs. on the balance discharger.

We learn from Mr. Armstrong that very great improvements are continuing to be made in the construction of these machines. He speaks of one "capable of charging 110 square feet of coated surface in a minute, to 20 grs. of Culbertson's electrometer, and yet it only discharges as much steam as three of the jets belonging to the great machine of the Polytechnic." The great improvements appear to consist in having been able more duly to adjust the degree of condensation to the size of the jets. More suitable specimens of partridge-wood have also been obtained. Mr. Armstrong also mentions that the manufacturers are endeavoring to make some which shall be heated by naphtha lamps. One objection which may present itself against the use of these machines in a room, is the quantity of steam liberated; but this may easily be carried off by blowing the steam towards a fire, when it will ascend the flue. On the whole, it appears more than probable, that the power of these machines may be eventually so modified and exalted, as that they may hold an equal, perhaps a superior, rank, to the oft times troublesome instrument (for a lecturer especially,)—the frictional machine.

Mechanics' Mag.

Modes of Measuring the Depth of the Sea.

In a late article of the *Ann. de Chim. et de Phys.*, M. Aimé, describes an apparatus for sounding, in which a weight attached to the line, may, on reaching the bottom, be detached, so that the line is drawn up with very slight resistance. This apparatus is supplied also with a vessel for collecting water at different depths. M. Aimé has, with the assistance of this machine, made, at Algiers, a series of experiments at various depths from the surface, from about 350 to 2200 yards, from which he infers that the amount of gas absorbed by the water is nearly the same at varying depths, and that the same remark applies likewise to the saline constituents.

The annexed cut is a figure of the ordinary sea-gage employed when the fathom line cannot conveniently be used. A B, is a gage-bottle, into which is fixed the gage-tube E F, the upper end of which is hermetically sealed, and the lower immersed in mercury. This is inclosed for protection, in a tube G H, pierced with holes, which admit the water into the bottle; and the whole is crowned with a large empty ball, or a full blown bladder. To the bottom of A B, a large weight K, is connected by a spring.

