

**Thermo-Dynamics of Liquid Surfaces.**—Van der Mensbrugghe is still continuing his study of the application of the second law of thermo-dynamics to the variations of potential energy in liquid surfaces. He is giving special study, by means of some of the most salient facts, to the great cycle of change which embraces the evaporation of the superficial layers of ocean waters, the elevation of vapors into the atmosphere, their condensation into mists and clouds, their fall in rain or snow, the consequent production of glaciers, torrents and rivers, the circulation of water courses, and their return to the bosom of the ocean. He hopes to attract the attention of meteorologists to his investigations in order to induce new and extensive researches in the direction of his inquiries.—*Bull. de l'Acad. Belg.* C.

**Intermittent Luminous Signals.**—In the ordinary use of lamps for light-house signals the intermittences are produced by a diaphragm which moves before the light, so that the fuel is wasted during the eclipses. At present the average waste of light is about sixty-five per cent., but if a signal was sent twice a minute, sufficient to indicate the first two letters of the light-house, there would be a waste of about ninety per cent. In order to remedy this extravagance Mercadier proposes to adopt a Dubosq lamp with a round wick and a tube in the centre of very small diameter, through which a jet of oxygen can be discharged upon the top of the wick. In spite of the high temperature of combustion, the lamp does not heat much; it consumes little petroleum, and the wick does not crust. Therefore it will operate for many days without being trimmed or filled anew. The intense flame is produced by the combustion of petroleum vapor at the centre of the jet, and the surrounding film of air being a bad conductor the lamp heats only at the top of the burner. The oxygen is enclosed in a reservoir, under suitable pressure, which in his apparatus does not exceed four millimetres (157 in.) of mercury; it first passes through a manipulator, which has a form similar to that of the key of a Morse instrument, traversing a caoutchouc tube, which is pressed together when the key is at rest. Upon depressing the key the pressure upon the tube ceases, and the oxygen reaches the flame; when the key is released the oxygen jet is stopped. In this manner the flow of oxygen is manipulated as simply as the electric current in the Morse system. The rapidity of manipulation is more than sufficient for all the requirements of optical telegraphy. A method somewhat similar has been contrived by Mercadier for the electric light.—*Compt. Rend.* C.