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view. At this instant, measurement of the current flowing in the winding 19 gives the density of the liquid to be investigated to a high degree of accuracy. Preliminary calibration is required, and it may be noted in this connection that the scale of densities is substantially linear.

Accuracy of measurement is limited only by fluctuations in temperature.

The above described densimeter may be used for measuring the light-water content in heavy water to the nearest 40 p.p.m. (parts per million), between zero and a few tens of thousands of p.p.m.

The densimeter may be made entirely automatic by recording the current flowing in the winding 19, and controlling the filling and emptying of the tube 2, for example by means of electromagnetic valves, which would then replace the taps 1 and 4.

We claim:

In a magnetic densimeter, a first tube, a second tube within and spaced from said first tube, a chamber in said second tube containing a liquid to be studied, a float within said second tube, a weight suspended from said float, said weight comprising two ferromagnetic elements and a magnetised element between said ferromagnetic elements, a differential transformer surrounding said first tube, movement of said float from its equilibrium position producing a potential difference across said differ-

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ential transformer, an amplifier electrically connected to said transformer, a rectifier electrically connected to said amplifier and a solenoid electrically connected to said rectifier, said solenoid being disposed axially beneath said tubes and exerting force on said ferromagnetic elements to return said float to its equilibrium position, a primary winding for said differential transformer comprising two identical half windings, separate means for supplying electromotive force to each of said half windings and two secondary windings for said differential transformer connected in series opposition whereby no electromotive force is generated across said secondary windings when said weight is in a symmetrical position with respect to the plane of symmetry of said primary windings.

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