specimen in water. Since the weight of the water displaced by the solid particle is the equivalent of the buoyant force on the solid body, and the known capacity of the specimen chamber is five grams of distilled water, the amount of water displaced, or the loss of weight of the specimen weighed in water, is readily determined and the specific gravity of the particle calculated. An example of the calculations is given below:

Weight of dry specimen in chamber	14.3 gm
Weight of full chamber of water	5.0
Total, specimen alone, and water alone	19.3 gm
Weight of specimen in water to the 5 gm marks on bulb	15.6 gm
Amount of water displaced	3.7 gm

$$\text{Specific gravity} = \frac{14.3}{3.7} = 3.86$$

The size of the hydrometer may be a hindrance to some workers. If such is the case, a model one half the length and volume may be used, but for the same range of specific gravity the results will be less accurate.

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REPAIR OF NON-CONDUCTIVE GALVANOMETER STRINGS[1]

THE gilded quartz fibers used in the string galvanometer sometimes lose conductivity without actually breaking. Such fibers may generally be repaired without removing them from the galvanometer. The break in the metallic coating may be located by the use of a single dry cell and a pair of high-resistance head phones. The negative pole of the battery is connected to a string terminal, and under a bright light the string is gently touched at increasing distances from this terminal with a light copper wire connected to the other pole of the battery through the head phones. When the point is reached where a click is no longer heard in the phones, the battery is connected to the opposite string terminal and the process is repeated from the other end to ascertain if the break is confined to one point.

The break in the metallic coating having been located, both string terminals are connected. The repair is then easily made by wetting the positive copper wire with copper sulphate solution and touching the string at the break. Electrolytic deposition of copper will usually restore the conductivity of the string.

Should the break occur exactly under the lenses of the galvanometer microscopes, the slightly roughened string surface where the repair was made may be displaced upward or downward by shifting the entire string by means of a string holder. Ordinarily the repaired strings are not appreciably changed from their original resistance.

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[1] Report from the Behavior Research Fund, Chicago: Series B, No. 170.

A SIPHON MOIST CHAMBER FOR MICROSCOPIC MOUNTS

FOR several years the writer has used a method for keeping a water mount continuously supplied with water. The arrangement is so simple that it seems probable that it has been previously used and described and, although the method is original with the writer, no claim of priority is made since it has not seemed worth while to make a canvass of literature. The present note is given to recommend its more general use.

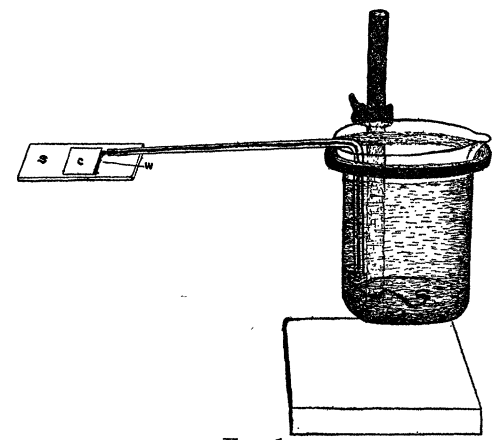

FIG. 1

A glass tube about 25 mm, or less, with a bore of about 4 mm, is bent at right angles about 8 mm from one end. With the aid of a wire, a cord having the texture of candle wick is pulled through the tube leaving about 1½ mm of the cord extending beyond the long arm and several millimeters beyond the short arm of the tube. The cord is thoroughly wet and the end of the short arm with projecting wick is immersed in a beaker of water. The beaker is suspended in a metal ring which is attached to a ring stand so that the beaker may be raised or lowered. The long arm of the tube is supported by the rim of the beaker and its end rests on the slide (s), close to the edge of the cover-glass (c), which is preferably square. The short end of the wick (w) is pressed against one side of the cover-glass. The beaker can be so adjusted that a perfect balance of the flow of water through the wick and evaporation of water from the mount can be maintained so that water is under the entire cover-glass and none extends beyond its edge. If the beaker is elevated too high the slide will become flooded, and if too low the mount will become

dry. A mount can be made in a nutritive solution and with this method the concentration will not be changed. The tube and beaker of water can be sterilized so that the mount will keep in good condition for several days though the length of time will depend on whether it has been made from pure culture or fresh material. If the tube is properly elevated there will be no water current so that this method is also favorable for photomicrographic work.

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SPECIAL ARTICLES

SOME PECULIARITIES IN THE THERMOELECTRIC PROPERTIES OF MONEL METAL

IT has been shown by Tait[1] and by Belloc[2] that there is a very close relationship between the magnetic and the thermoelectric properties of certain ferromagnetic substances. For iron and nickel there is a maximum in the $\frac{dE}{dT} - T$ curve at the same temperature as that at which the substance loses a large part of its ferromagnetic properties. Sometimes this maximum serves to locate the critical temperature with greater accuracy than is possible from measurements on permeability or magnetostriction.

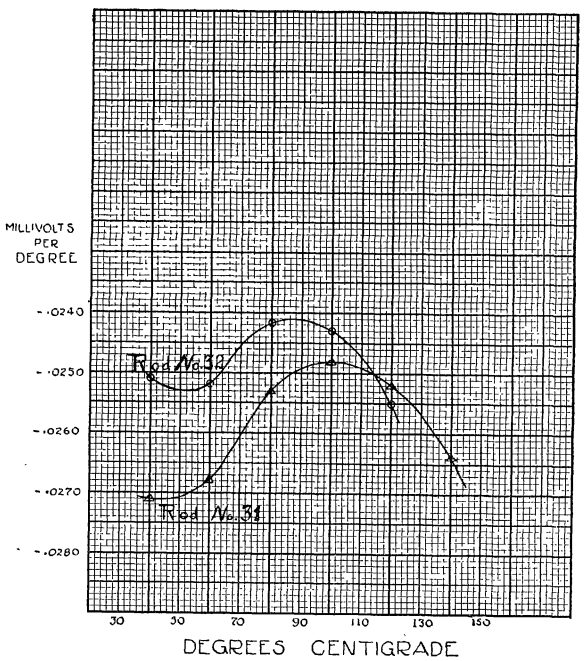
The specimens studied in the present investigation were two rods of monel metal about 60 cm long. The one designated as Rod No. 31 was approximately 0.65 cm in diameter, while Rod No. 32 was approximately 0.48 cm in diameter. The permeability and magnetostriction in both these rods had been investigated by others[3] and the thermoelectric method was tried in the hope that it might afford a more accurate determination of the critical point.

Each rod was joined at one end to a suitable length of lead wire to form a lead-monel metal thermocouple. The couple under test, together with a chromel-alumel couple, was mounted so that the "hot junctions" could be heated in an electrically heated oil bath while the "cold junctions" were maintained at 0° C. in a suitable ice bath. The leads from the cold junctions were connected to a potentiometer through a double-pole, double-throw switch so that readings of the e. m. f. for the two couples could be taken alternately at short intervals. The temperature of the oil bath was raised at the rate of about 2 to 2.5° C. per minute and the e. m. f. of each thermocouple was read every minute. With this rate of heating, the temperature can be considered as a linear function of the time for short periods and, hence, the temperature of the lead-monel metal couple at the time that its e. m. f. was observed was obtained by interpolation from the readings on the chromel-alumel couple.

In the following table the average values $\frac{dE}{dT}$ are given as computed from these data for intervals of $dT = 20°$ C. The use of smaller intervals for dT, although desirable, did not seem to be warranted by the accuracy of the data and method.

Interval	Mean temperature, T° C.	$\frac{dE}{dT}$ in millivolts per degree	
		Rod No. 31	Rod No. 32
30– 50°	40°	– 0.0271	– 0.0251
50– 70°	60°	– 0.0267	– 0.0252
70– 90°	80°	– 0.0253	– 0.0242
90–110°	100°	– 0.0248	– 0.0243
110–130°	120°	– 0.0252	– 0.0255
130–150°	140°	– 0.0264	

When these results are plotted, as in the accompanying figure, the maxima are quite definite, at



100° C. for Rod No. 31 and at 87° C. for Rod No. 32. The number of observations made does not justify claiming an accuracy of better than 2 or 3 degrees

[1] P. G. Tait, *Proc. Roy. Soc. Edin.* 7, 597, 1871.
[2] G. Belloc, *Ann. de chim. et de phys.* 30, 42, 1903.
[3] D. R. Inglis, *Instruments,* 2, 129–132, 1929.