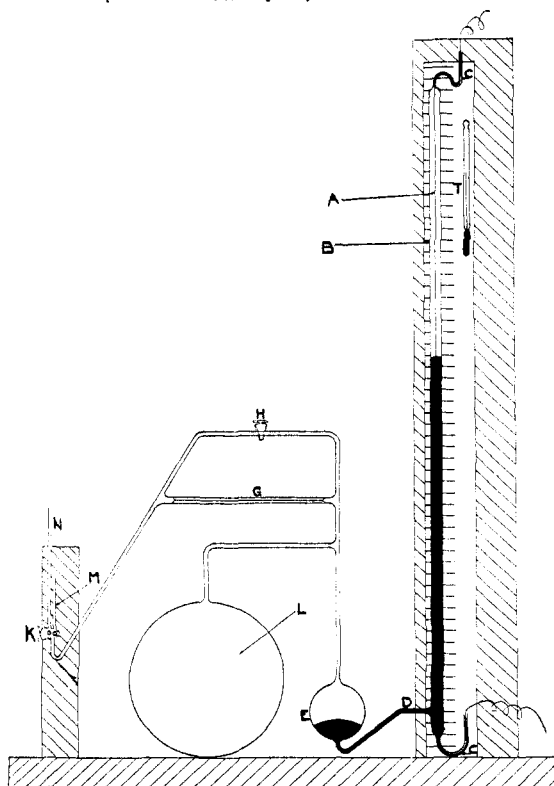


freedom from moisture can be assured, and it is delivered at a much lower pressure which can be varied at will by adjusting the temperature. It is well to recharge the generator before the thiocyanate crystallizes in too great amount. Otherwise, the inlet tube may become blocked by the salt.

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A Variable Resistance.—The following is a description of a variable resistance which has several advantages over the ordinary slide wire resistance. The accompanying diagram illustrates the instrument.

A platinum wire A (one ohm per 50 cm.) is held taut in the center of a Tube B (1 to 2 cm. in diameter) by de Khotinsky cement at C, C. The bulb E has a greater volume than Tube B. Pure mercury is distilled into E while the apparatus is evacuated. The rest of the apparatus is sealed to F and then the instrument is ready for use. One exit N of K leads to a suction pump, while the other exit M is open to the air. To facilitate the control of the mercury in B a volume L and a fine capillary G are introduced, as shown in the diagram.

In the instrument employed 50 cm. of wire corresponded to one ohm, so that by reading to 0.2 mm. the accuracy is of the order of 0.002 ohm. The resistance of the mercury—relatively very small—is taken into account by calibrating the resistance for various positions of the meniscus. A 1° temperature difference of the platinum changes the resistance 0.00008 ohm per cm. and by use of calibration curves for each degree between 17° and 23°—usual limits of room temperature, any error due to temperature coefficient is rendered negligible. The temperature of the wire is read from T.

All variations in contact resistances are clearly eliminated in this apparatus. The ease and speed of manipulation was found to be a pronounced advantage over that of the slide wire bridge. The fact that the exposed part of the wire is in a vacuum is another distinct advantage. After 8 months' use the resistance was recalibrated and the change during this period was shown to be less than 0.001 ohm.

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