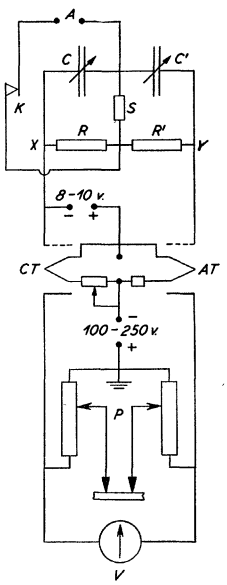

FIG. 1

portional to, changes in the plate current of AT; its shape, therefore, is that of the potential wave between x and y.

For double condenser discharges the most convenient ratio between C and C^1 has been found to be 2 to 1 (see[3]). The resulting peak potential between x and y reaches then 25 per cent. of the applied voltage A, whereas for single condenser discharges the full potential appears between these two points. Therefore, from a dry cell battery used in A, 36 volts were picked out for double condenser discharges and 9 volts for single condenser discharges. The condensers C and C^1 are variable from .001 to 1, or very slow current waves, 10 microfarads.[4] With two pairs of identical resistances for R and R^1, of 10,000 ohms and 100,000 ohms, respectively, a range of time constants as wide as 1 to 10^5 can be covered. The resistance S has to be kept as low as possible; a few hundred ohms are negligible, even with 10,000 ohms in R and R^1.

The duration of the single current pulse is determined (a) for single condenser discharges by the time constant: resistance $R \times$ capacity C, and (b) for double condenser discharges by the duration of the rising phase which is equal to $0.7 \times R \times C$, C being the greater capacity ($C = 2\ C^1$). The time values are obtained in seconds if R and C are expressed in ohms and farads, respectively. If, therefore, for R and R^1 two pairs of resistances of either 14,500 or 145,000 ohms are used, the duration of the rising phase of the double condenser discharge is directly given by the number of microfarads of the greater capacity, one microfarad corresponding to 10 or 100 milliseconds, respectively. The full wave duration is approximately five times the rising phase, which has to be considered if repetitive stimulation is used. In the latter case the ordinary contact key K has to be replaced by an automatic commutator.

[4] Decade condensers of General Ralio Company, Cambridge, Mass.

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A METHOD FOR OBSERVING THE LOWER SURFACE OF SMALL OBJECTS

WHERE a simple device for examining the lower surface of small objects under the dissecting microscope is needed, a mirror may be used as a supplementary stage. The upper surface of the object can then be viewed by reflected light in the usual way, or by racking the microscope down twice the thickness of the mirror, the image of the lower surface of the object may be brought into focus. The object itself rarely causes any trouble while viewing the image; as, if the mirror is of adequate thickness, the object will be out of the line of vision and out of focus, often being entirely invisible. For the lower magnifications, where the objectives have a great depth of focus, the thickness of the mirror may need to be increased either by adding a supplementary glass plate or by raising the slide above the mirror on plasticene legs. This device, which no doubt has been repeatedly used, has several advantages, namely, the cheapness and availability of the material; the excellence of the illumination; and the speed and ease of changing views without the necessity of touching the slide or removing the hand from the focusing adjustment.

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BOOKS RECEIVED

American Mathematical Society Colloquium Publications, Vol. XXI. *Differential Systems* by JOSEPH M. THOMAS. Pp. ix + 119. The Society.

BLAIR, THOMAS A. *Weather Elements; A Text in Elementary Meteorology.* Pp. xv + 401. 107 figures. Prentice-Hall. $5.00.

EMERSON, ALFRED E. and ELEANOR FISH. *Termite City.* Pp. 127. Illustrated. Rand, McNally. $1.50.

Göteborgs Högskolas Årsskrift, XLII, 1936: 3. *Determinismus und Indeterminismus in der Modernen Physik; Historische und Systematische Studien zum Kausalproblem.* ERNST CASSIRER. Pp. xi + 265. Wettergren & Kerbers Förlag, Göteborg.

HICKMAN, CLEVELAND P. *Physiological Hygiene.* Pp. xxvi + 493. 89 figures. Prentice-Hall. $3.25.

National Resources Committee, December, 1936. *Drainage Basin Problems and Programs.* Pp. viii + 540. U. S. Government Printing Office. $1.50.

Olöstra Gåtor Aktuella Problem. Pp. 302. Illustrated. Wahlström & Widstrand, Stockholm.

Travaux et Memoires de l'Institut d'Ethnologie, XXIV. *Traité de langue amharique (Abyssinie).* Marcel Cohen. Pp. xv + 444. Institut d'Ethnologie, Paris.