

alent to 15 mg. daily. Only 3 birds were used for this compound. When thyroxin was fed at 2 mg. daily doses, the decline in weight was very rapid, as though the stimulation of metabolism accentuated the vitamin deficiency.

In the curative tests, which were limited to only a few birds, temporary relief from acute polyneuritis was obtained with  $\beta$ -methylindolinone after ingestion of 100 mg. in two doses. This lasted for several days. Similar tests with the other compounds were inconclusive, due to the limited number of cases observed.

## 2907

**Control of magnitude and direction of the continuous bioelectric currents associated with organic polarity.**

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In previous work it has been shown that the apical ends of isolated stem of *Obelia* colonies are electropositive (galvanometer circuit) to middle or basal regions of the same stem.<sup>1</sup> These differences of electric potential are maintained and therefore a continuous output of electrical energy occurs under normal conditions of life in sea water. The processes upon which this output of energy depends can be inhibited in a perfectly reversible manner by cyanide, ether and chloroform.

Tissues of the stem, the electric potentials of which have been repeatedly and reversibly decreased, retain their normal capacity for growth and regeneration and also their normal sequence when removed to pure sea water.

The normal electrical polarity of the stem as a whole is a result of the inequality of the P.D.s across the ecto-endoderm of the apical (young) and basal (old) ends of the stem. The ecto-endoderm of the apical end is usually the seat of the highest P.D.

<sup>1</sup> Lund, E. J., *J. Exp. Zool.*, 1925, lxi, 155.

From this it follows that removal or reversal by means of cyanide, ether and chloroform, of the electrical polarity of the stem as a whole does not necessarily involve a reversal of the direction of the P.D. across the ecto-endoderm but merely an unequal decrease in its P.D. at apical and basal ends.

Alcock<sup>1</sup> and recently Csillag<sup>2</sup> have shown that the P.D. in the frog's skin can be reversibly decreased with suitable concentrations of ether and chloroform applied to both sides of the skin. Experiments by the writer show that cyanide also decreases reversibly this P.D. But in no case has a reversal in the direction of P.D. across the skin been obtained.

## 2908

### An improved portable calorimeter.

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The apparatus consists of a six liter spirometer with recording drum, showing liters on the ordinate and minutes on the abscissa. Below the spirometer is a six liter glass museum jar, which in operation contains one liter of 0.1 M  $\text{Ba}(\text{OH})_2$  solution, containing about 0.1 mol of  $\text{BaCl}_2$  and 0.1 gm. phenolphthalein, and a motor-driven centrifugal pump which sprays this solution through the air in the jar at a very rapid rate. A single motor drives the pump and the recording drum.

The apparatus is filled with oxygen at the start and a mask is attached over the patient's face, one tube from which leads down into the jar below the surface of the solution; a second tube leads from the spirometer through a valve and T-tube to the mask, and a third tube passes from the jar into the spirometer to complete the closed circuit. The motor is started, writing a base line on the drum. The mask is attached to the patient's face, leaving the

<sup>1</sup> Alcock, N. H., *Proc. Roy. Soc., Ser. B.*, 1906, lxxvii, 159.

<sup>2</sup> Csillag, E., *Arch. f. Exp. Path. Pharm.*, 1924, ci, 296.