Paleozoic Pteridosperms and the recent Angiosperms, and thus they suggest a possible solution for one of the great outstanding problems of evolution.

F. H. KNOWLTON

U. S. GEOLOGICAL SURVEY

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A MODEL OF MUSCULAR CONTRACTION[1]

IT is rather difficult to imagine the muscle-fiber shortening as a result of swelling and increase of internal tension. The following model, constructed on

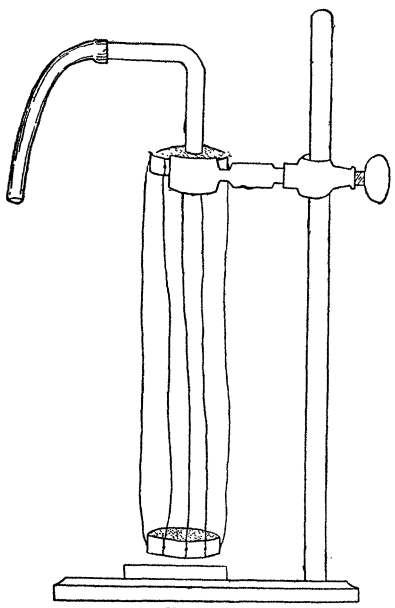

FIG. 1

a suggestion of L. Wacker,[2] 1917, is useful to illustrate the possibility of such shortening to students. The muscle fiber is represented by a thin rubber condom. A cork disk, 3 cm in diameter and 1 cm high, is placed in the bottom of the condom, and a similar but perforated cork in the opening. This bears a glass tube for blowing into the condom. Outside the condom and over the corks are two rings of brass, between which threads are stretched, 1 cm apart. On blowing into the tube, the condom swells; but as the strings prevent it from lengthening, the sides bulge and so shorten the condom. The two positions are shown in the figures.

The same phenomenon may be shown with dead small intestine from a rabbit or dog. A segment of

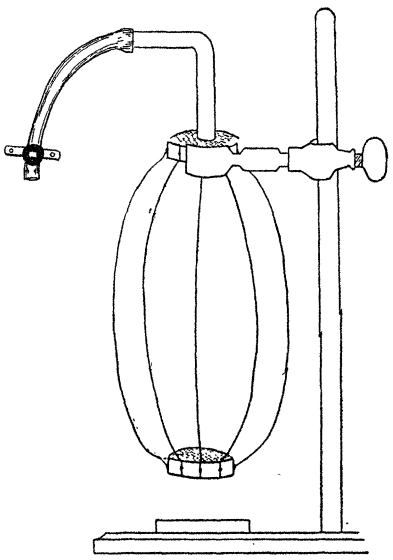

FIG. 2

intestine, about 10 cm. long, should be kept in normal saline solution for a day or two, at room temperature, to insure absence of vital tone changes. It is then arranged as in the Trendelenburg[3] peristalsis method. When the reservoir is raised, a centimeter at a time, the tracing lever shows progressive shortening, which disappears progressively when the reservoir is gradually lowered.

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[1] From the Department of Pharmacology of the Medical School of Western Reserve University, Cleveland, Ohio.

[2] Wacker, L.: Arch. ges. Physiol., 1917, clxviii, 158.

[3] Trendelenburg, Paul: Arch. f. exp. Path. Pharm., 1917, lxxxi, 55.

SPECIAL ARTICLES

THE PRESENCE OF TREHALOSE IN YEAST

IN connection with studies on "Bios," an alcohol extract of Fleischmann's yeast was permitted to stand undisturbed for several months when a cluster of well-formed crystals was found clinging to the sides of the flask.

Preliminary tests indicated that it was a non-reducing, hexose containing di- or poly-saccharide. It was found to be exceedingly soluble in water and glacial acetic acid, either hot or cold, and somewhat less soluble in pyridine. It was insoluble in acetone. Unusual resistance to hydrolysis was shown by the fact that, after treatment with boiling glacial acetic acid, a Fehling's test was negative. Only when a solution of the crystals in N/2 HCl had been heated in a boiling water bath for one half hour was a positive Fehling's test obtained.

For more detailed investigation additional material was necessary. Securing these crystals a second