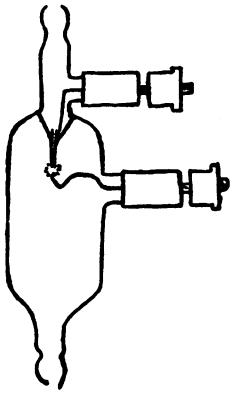
SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN IMPROVED DROP RECORDER

WITH reference to the drop recorder described by S. E. Owen in SCIENCE.[1] It will be noticed that the falling drop has to touch both electrodes in order to function. This causes difficulty in adjustment, especially for fast rates. If, however, the drop is allowed to run down one wire from the dropping tube it is all the time in contact with one electrode and thus it is relatively much easier to adjust the second electrode for contact. A full description of such an instrument was published elsewhere[2] and is also referred to in SCIENCE.[3] They are easily made and when once adjusted and used with a decent relay circuit give no trouble and will record over 1,000 drops per minute. Owing to the difficulty of drawing a dropping tube sufficiently fine, and at the same time not leaving an outside surface on which a larger drop collects, these instruments are difficult to make above 70 drops per cc, so at the request of Professor Babkin, of McGill University, I slightly redesigned the dropping tube for a higher accuracy (100 drops per cc). This was accomplished by using a short piece of platinum needle for the tip of the dropping tube, where it also serves as one electrode. The second electrode is bent up so that the tip touches the lower surface of the forming drop. This causes the film to tear and the drop falls off, at the same moment making contact (see sketch). By using bits



of the same needle instruments of similar accuracy are readily made, thus rendering the adjustable type previously described (2) more or less unnecessary.

For ordinary purposes, however, the original pattern has proved entirely satisfactory over a wide range of experiments in several laboratories. In the course of my travels I so frequently encounter inventors of "new types" of drop recorders none of which so far present any new characteristics, that, while I have no desire to inhibit research in any direction, I feel that much trouble and time would be saved both to the inventors, and also the users, of many of these instruments if reference were made to my paper in which a study of this quite important practical problem was made.

O. S. GIBBS

LONDON, ENGLAND

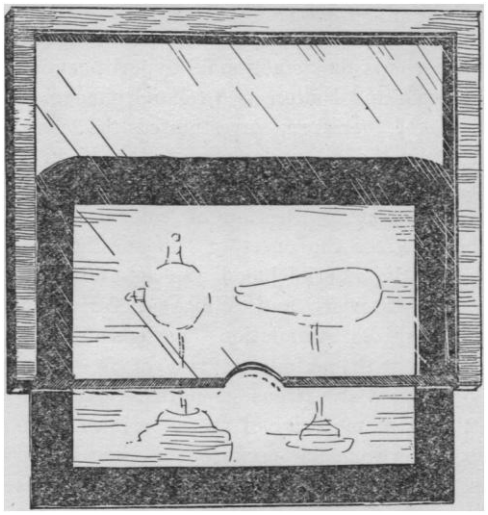
[1] S. E. Owen, SCIENCE: 74, p. 19, July 3, 1931.

[2] O. S. Gibbs, *Jour. of Lab. and Clin. Med.*, 1927, XII, p. 686.

[3] O. S. Gibbs, SCIENCE: 69, p. 649, June 21, 1929.

FILM LANTERN SLIDES

IN order to overcome the difficulties involved in carrying a large number of lantern slides for use in illustrated lectures, we recently made an attempt to replace the commonly used glass slide by a film slide.



Copies of the pictures desired were made on Eastman process film, which lends itself very well to the production of clear slide pictures. A specially constructed holder similar to a glass slide was built to hold these films in the projecting lantern. This holder consists essentially of two clear glass plates which are sealed together in such a manner as to leave a narrow space between them for the reception of the film. Undoubtedly certain refinements can be made in the construction of these holders if they are produced in larger quantities. The outside dimensions of the holder are exactly those of the ordinary lantern slide, so that it fits easily into the standard frame of a lantern. The technique of changing the film slides is the same as that of changing ordinary glass slides, except that the glass holder stays in place when the film slides are changed. A small, semicircular cut in the top of the holder makes this process easy.

The advantages of the film slide over the glass slide are many. By the use of film the weight and bulk of a number of slides are reduced to a minimum; breakage is practically nil, since the only breakable part is the holder which can be safely stored in a small box together with the films; notations may be

easily made directly on the films. Film slides may be stored and filed away in a small space and are therefore more accessible for reference. They are easier to make than glass slides and the cost is much less. Larger lantern slides, such as are used in Europe, can be conveniently cut to the size which is used in this country, if films are used.

It is probable that the idea of using films for lantern slides is not new, and yet the advantages are so many that it is difficult to understand why the principle is not in general use to-day.

OTTO GLASSER

CLEVELAND CLINIC,
CLEVELAND, OHIO

SPECIAL ARTICLES

ON REFLEX-HYPERLIPAEMIA

PRELIMINARY PAPER[1]

THAT stimulation of an afferent nerve results in a rise of the sugar content of the blood is a well-known fact; nothing, so far as we are aware, is known concerning changes in blood fat under this condition, although perhaps the "emotional" hyperlipaemia, found by Himwich and Fulton, is a related phenomenon.

We have, therefore, investigated the changes in blood fat in the cat under stimulation of an afferent nerve. The animals in this series were anesthetized by intraperitoneal injection of chloralose. At least two hours after the onset of the anesthesia the fat content of the arterial blood was determined (by the method of Stewart and White) before and after periodic faradic stimulation (periods of 5 seconds alternating with periods of rest of 5 seconds) for 2 to 5 minutes at various strengths.

In the great majority of the experiments a marked "reflex-hyperlipaemia" occurred; the increase in blood fat is very abrupt, as it was found to be present in the blood drawn immediately after cessation of afferent stimulation.

In several instances the rise in fat was greater with stronger stimulation.

The following protocol is typical for the experiments of this series:

Oct. 7, 1931.
Cat, female, 3.00 kg., starved for 16 hours.
11:00 p. m. 27 cc 1% (warm) chloralose intraperitoneally.
11:10. Animal in side position. Rectal temperature 39.0°.
Oct. 8.
8:00 a. m. Respiration regular. Temperature 40.3°. Heating off.
8:30. Temperature 40.0°.
9:00. Animal on board. Temperature 39.8°. Both femoral arteries and left sciatic exposed.
9:02. First blood drawn (about 9 cc). Respiration 15–16 per minute. Hyperreflexia on tapping on board.
9:08–9:10. Periodic faradic stimulation of left sciatic (5″–5″) for 2 minutes; coil distance 10 cm. Peripheral end of nerve not ligated. Moderate general responses during stimulation periods. Dilation of pupils. Rectal temperature 39.2°. Respiration 15 per minute.
9:10. Second blood drawn, about 9 cc.
11:30. Temperature 38.6°. Hyperreflexia.
11:50. Temperature 40.0°.
1:20. Temperature 39.5°.
2:04. Third blood drawn (about 9 cc).
2:11–2:13. Stimulation of left sciatic as per 9:08–9:10 (5″–5″, 2 min. 10 cm).
2:14. Fourth blood drawn.
Animal sacrificed.

FIGURES

	Hematocrit Per cent.	Sugar mg Per cent.	Fat mg Per cent.	Rise in fat Per cent.
1st blood	30	85	396	
2nd blood	34	98	538	35.9
3d blood	34	109	412	
4th blood	32	119	543	31.8

Investigations are in progress to determine whether or not a "center" exists for this reflex-hyperlipaemia, as well as the nature of the fats mobilized.

Y. D. KOSKOFF
J. G. DUSSER DE BARENNE

LABORATORY OF NEUROPHYSIOLOGY,
YALE UNIVERSITY

[1] The experiments were started by one of us (Y. D. K.) during this summer. His thanks are due to Mr. H. Henstell, candidate in medicine of Yale University, for his cooperation during this part of the work.

VARIATIONS IN HOLOPEDIUM SPECIES

Holopedium gibberum is a cladoceran species well known to biologists as one of the very few members of the fresh-water plankton which possess a special adaptation to the floating habit in the form of a spherical "test" of a jelly-like substance which encloses the whole body of this small Entomostracan—a feature which is also found in the planktonic Rotifer *Mastigocerca setifera*. To ecologists and to students of animal geography, *H. gibberum* has a still stronger claim to interest in virtue of its characteristic habitat, namely, the slightly acid waters of stenothermous lakes and pools in North America and in northern Europe, and many authorities regard it as a glacial relict. The genus *Holopedium* is no less