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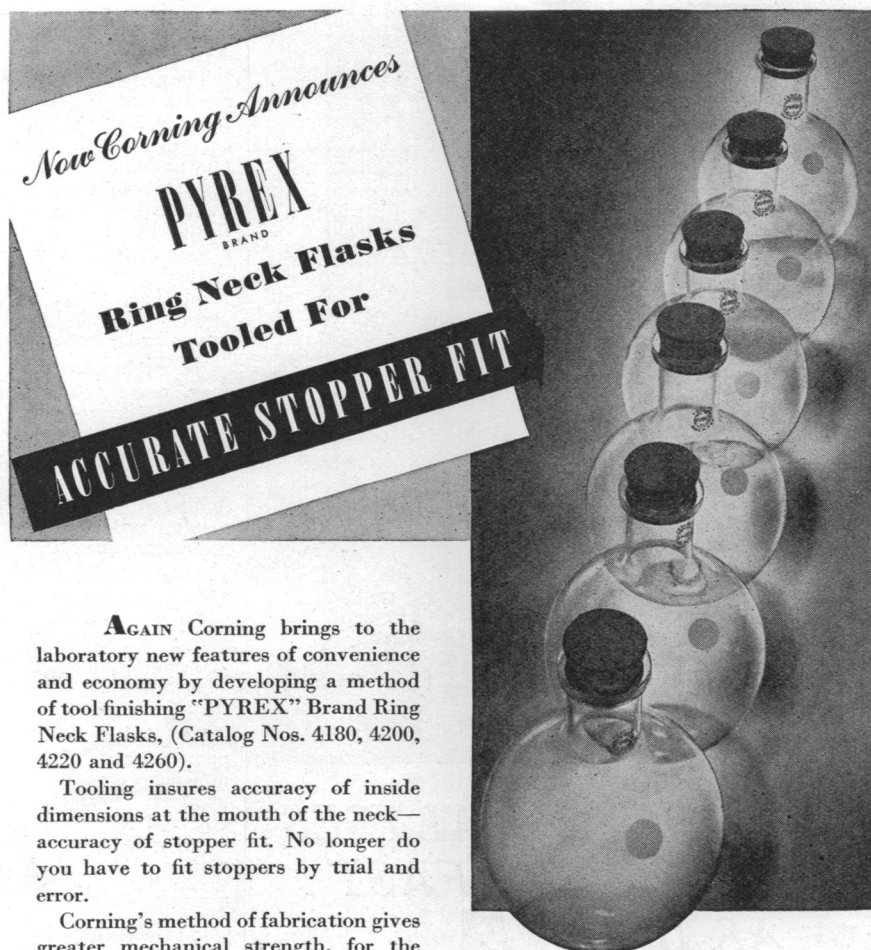
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THE DIVISION OF MEDICAL SCIENCES OF THE NATIONAL RESEARCH COUNCIL AND NATIONAL DEFENSE

By Dr. SANFORD V. LARKEY

BALTIMORE, MD.

SINCE last May there has been very active cooperation between the armed services of this country and the Division of Medical Sciences of the National Research Council on problems of military medicine. Because of the general concern with national defense it was felt that some report of these activities might be of interest to the readers of SCIENCE. For, in addition to the concrete results already achieved, the fact and degree of collaboration between civilian scientists and the Army and Navy Medical Corps and the Public Health Service are of great significance for the future.

In line with the original function of the National Research Council as an agency for scientific assistance to the government, the chairman of the Division of

Medical Sciences in April of last year offered the services of the division to the Army and Navy. Shortly after this the Surgeon General of the Army, James C. Magee, requested the division to establish committees which would act in an advisory capacity to the medical corps. The Surgeons General of the Navy and of the Public Health Service concurred in the suggestion of civilian advisory committees, and immediate steps were taken to organize these groups. While at first the questions were confined to two specific problems—the treatment of traumatic shock and the chemotherapy of war injuries and infectious diseases—it was soon realized both by the members of these original committees and by the service representatives that in

wrapped with a single thickness of friction tape (H). This helps to hold the base of the needle firmly.

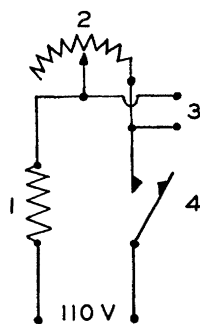


FIG. 2. Circuit diagram.

A simple circuit (Fig. 2) for use with 110-volt alternating current consists of a 60-watt lamp (1) in series with a 100 ohm rheostat (2) and a foot switch (4). The coil of the magnet is connected across the rheostat (at 3).

The cutting needle itself is a No. 12 "sharp" sewing needle (J). Since this type of needle is very short and is too fine to be handled with ease, it has been

found advisable to cement two needles together with a drop of De Khotinsky's cement. The basal needle is first bent into the shape of an "L" with the shorter arm about $\frac{1}{4}$ " long. This shorter arm then forms a convenient handle (K) by means of which the cutting edge may be oriented with reference to the plane of vibration. The handle also makes it possible to hold the needle firmly during the grinding process.

The grinding should be done under a medium power objective of the dissecting microscope on a very hard oil stone of the same fineness of grain as those used to sharpen razors. Carborundum stones are too soft for this purpose. The compound needle should be held firmly in the hand with the thumb or the middle finger on the tip of the handle (which should be held in a horizontal position most of the time) and the tip of the index finger very close to the tip of the cutting needle. An attempt should be made to produce a fine, tapering point, elliptical in cross-section. Following this, the point should be converted into a very fine, two-edged blade with the cutting edges in approximately the same plane as the handle of the needle. A properly ground point should be much sharper and stronger than the finest usable glass needle. The oil used in grinding may be removed by rinsing the needle in xylol followed by absolute alcohol. The point should never be brought into contact with any object such as cloth, the fingers, glass dishes or operating platforms. Properly cared for, it should last for from 25 to 50 operations before needing resharpening. After use, it should be rinsed in pure water and dried in absolute alcohol.

The needle is loosely clamped to the side of the glass tube over the friction tape by a circular band of thin metal (L) which may be constricted by means of a small screw (not shown). After carefully orienting the needle so that the cutting edges lie in the plane of vibration, the clamp is tightened and the set screw of the magnet adjusted. When in operation, the needle should just strike the set screw so that a faint buzzing is heard.

It will be found that the amplitude of vibration is dependent both upon the adjustment of the set screw and upon the setting of the rheostat. In order to prevent overheating of the magnet, the set screw should be adjusted so that the minimum current is employed. It will then be possible to increase the amplitude of vibration considerably by changing the setting of the rheostat. Since both the rheostat and the magnet heat up with continued use, the foot switch should be opened whenever the instrument is not actually in use.

Incisions are made by touching the tip of the vibrating needle to the surface of the tissue, the instrument being held at a 45° angle. Layers of tissue may be separated by turning the instrument so that the plane of vibration corresponds to the plane in which the layers are joined. Excavations are carried out by increasing the amplitude of vibration so that the loose cells are literally washed out by the resulting water currents.

The water currents produced by the vibration of the needle are not strong enough to interfere with the manipulation of objects of the size and density of amphibian eggs or embryos. It is possible, however, that they may be strong enough to be objectionable in the case of very small objects or very light objects such as young chick embryos.

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- DYER, WALTER S. *A Practical Survey of Chemistry.* Pp. vi + 480. 107 figures. Holt. \$2.80.
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- Studies on Tuberculosis. Symposium from the American Journal of Hygiene, Monographic Series No. 16.* Pp. 198. Illustrated. Johns Hopkins Press. \$1.10.
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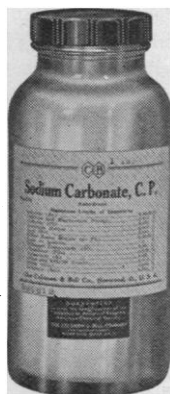
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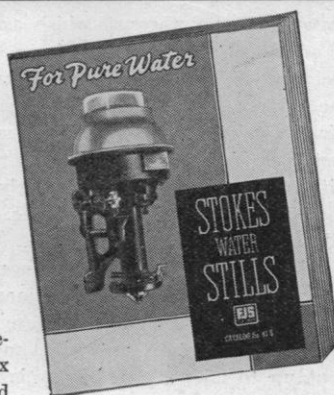
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