

the threaded joints in the cover are sealed with "Apiezon."³ Short lengths of $\frac{1}{4}$ inch pressure tubing (H) are used to connect the freezing and drying containers (I) to the manifold outlets. Construction and mounting of supports and of 2 sheet copper trays (J) for holding freezing mixture are evident. Castor oil may be used on the bevelled rubber gasket for sealing the retort.

The "Drierite" is held in 3 circular baskets (K) of hardware cloth, $3\frac{1}{2}$ inches high by 11 inches in diameter, constructed with a tubular central opening through which passes the pipe extension (F). The 3 baskets are stacked in the wire rack supplied with the retort and may be removed separately or as a unit for regeneration of the desiccant. Details of the regeneration procedure are given by Flosdorf and Mudd⁴ and for this a cheap gas oven is applicable.

The desiccant chamber holds 25 pounds of "Drierite," the total capacity of which is 400 cc without regeneration. The single run capacity is 125 to 150 cc and a Cenco Hyvac pump has proven adequate. Either preliminary freezing with a Dry-Ice-alcohol mixture or the degassing-self-freezing procedure⁵ may be used, though the former method is recommended. Standard freezing and drying containers and connections obtainable on the market are used.

The apparatus shown may be constructed for approximately \$35.00 or less and has been flexible and reliable in practice. It occupies only 4 square feet of table space.

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CONVENIENT HEAT FILTER FOR TISSUE ILLUMINATOR¹

IN the quartz rod tissue illuminator described by Knisely² and in use at our laboratories, a large amount of heat accompanies the passage of light through the tissues. This occurs because some 85 per cent. of the energy consumed by the usual electric light bulb used as the light source is emitted as heat. The heating of the tissues being examined is usually minimized by flowing a continuous stream of properly warmed Ringer's solution over the area under observation. This treatment is not very convenient experimentally, and, as Knisely points out,³ somewhat disrupts normal

³ Sealing Compound "Q," James G. Biddle Company, 1211-13 Arch St., Philadelphia, Pa.

⁴ E. W. Flosdorf and S. Mudd, *op. cit.*

⁵ *Ibid.*

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² M. H. Knisely, *Anat. Rec.*, 58 (Suppl.): 53; *Proc. Soc. Exp. Biol. and Med.*, 32: 212; *Anat. Rec.*, 64 (Suppl.): 499.

³ M. H. Knisely, *Anat. Rec.*, 64 (Suppl.): 499, 1935.

physiological processes. It was found in our laboratory that the insertion of a double thickness of inexpensive "heat-filter" glass (Cenco 87305) at the break in the quartz rod light conductor cuts down the heat transmitted to the tissue to at least one seventh of its previous value, yet reduces the intensity of light transmitted by only a small fraction. In general, this means that the heat transmitted is so small as to be safely absorbed by the tissue and thus the use of Ringer's solution as a cooling agent may be avoided.

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AN ELECTRONIC RELAY FOR HEAT CONTROL

SEVERAL letters have been sent us stating that the relay in the circuit we described¹ chatters when operated on 115 volts a-c. Our relay, equipped with a 50×-115 -volt 60 cps coil, does not chatter but we also have found that many of the same type do. This chattering can be avoided by connecting a 450-volt 4 microfarad condenser (the electrolytic tubular type can be used) between the point marked C in Fig. 1 of the previous article and the No. 3 prong of the socket for the 25L6G tube. The positive terminal of the condenser should be connected to C. Using this condenser and shorting the 1000 ohm resistor nearest C, we have also been able to use the Potter and Brumfield relay, type PRA-1 with a 110-volt 60 cps coil, whose contacts are rated to carry 20 amperes a-c. There are, of course, many other makes of relays that can be used.

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¹ SCIENCE, 92: 133.

BOOKS RECEIVED

- BEAUCHAMP, WILBUR L., JOHN C. MAYFIELD and JOE Y. WEST. *A Study-book for Everyday Problems in Science*. Third edition. Pp. vi + 346. Illustrated. Scott, Foresman. \$0.84.
- BROWN, H. P. and A. J. PANSHIN. *Commercial Timbers of the United States*. Pp. xxi + 554. 312 figures. McGraw-Hill. \$5.00.
- Cowles Commission for Research in Economics; *Report of Sixth Annual Research Conference on Economics and Statistics at Colorado Springs, July, 1940*. Pp. 99. The Commission, University of Chicago.
- HUNTINGTON, ELLSWORTH. *Principles of Economic Geography*. Pp. x + 715. Illustrated. Wiley. \$4.00.
- Johns Hopkins University Circular, November, 1940; *Report of the President of the University, 1939-1940*. Pp. 149. The University.
- SALTER, WILLIAM T. *The Endocrine Function of Iodine*. Pp. xviii + 351. 40 figures. Harvard University Press. \$3.50.
- SCHUMANN, CHARLES H. *Technical Drafting*. Pp. xiv + 793. 857 figures. Harper. \$3.50.
- STUTZER, OTTO. *Geology of Coal*. Translated and revised by ADOLPH C. NOE. Pp. xiii + 461. 198 figures. University of Chicago Press. \$5.00.