

SCIENCE

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IDEALS OF SCIENCE¹

By Dr. ALBERT FRANCIS BLAKESLEE

CARNEGIE INSTITUTION OF WASHINGTON, DEPARTMENT OF GENETICS, COLD SPRING HARBOR, NEW YORK

WE are gathered to-day to dedicate not merely a building but to perpetuate an idea—the ideals of science. It seems fitting therefore to say a few words in appraisal of science: what science has done and what it may do.

Modern civilization is in large measure the product of science. Recently, however, some have challenged the value of science on account of the baneful effects of certain of its applications. They grant the increase in material comforts which the applications have brought about, but say the cost is greater than the gain. The weapons of modern warfare made possible by science are held responsible for the appalling loss of life, rather than the wayward mind of man. Even if we should take these criticisms at their face value it would be possible to show that science has greatly

lengthened rather than shortened the average span of life. Preventable disease has taken greater tolls than war. During the World War, Germany lost one and three quarter millions, killed or died during service. This is less than 3 per cent. or one out of 36 of the total population of about 65 million people in Germany at that time. During the plague of London in the seventeenth century, 15 per cent. of the population, or more than one in seven, died of the Black Death during a two-year period. This is ten times the German mortality rate during the World War. Later when the plague was introduced into Marseilles it killed almost half the population there. During the seventeenth century the plague carried off twenty-five million people in Europe, or a quarter of the population.

The plague has been a periodic scourge to mankind since long before the time of Christ, but thanks to the applications of science we no longer dread its ravages.

¹Address delivered at the dedication of the John H. Harrison Science Building at DePauw University, Greencastle, Indiana, October 19, 1940.

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.

A. R. TAYLOR
J. W. BEARD

DUKE UNIVERSITY SCHOOL OF MEDICINE

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.*

¹ Aided by a grant from the Rockefeller Foundation Fluid Research Fund of the School of Medicine, Johns Hopkins University.

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.

HERBERT A. POHL

CARNEGIE INSTITUTION OF WASHINGTON,
BALTIMORE, MD.

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.

ALBERT C. HALL

LAWRENCE J. HEIDT

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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.

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518. *Contributions to Embryology*, Nos. 170 to 178. Vol. XXVIII. Quarto, 451 pages, 34 plates, 51 text figures, 1 graph. Paper, \$4.00; cloth, \$5.00.

520. Clausen, Jens, David D. Keck, and William M. Hiesey. *Experimental Studies on the Nature of Species. I: Effect of Varied Environment on Western North American Plants*. Octavo, 452 pages, 155 text figures. Paper, \$3.50; cloth, \$4.50.

522. *Botany of the Maya Area: Miscellaneous Papers XIV-XXI*. Octavo, 474 pages, 7 plates, 29 text figures, 1 map. Paper, \$2.25; cloth, \$2.75.

523. *Contributions to American Anthropology and History*. Vol. VI, Nos. 30-34. Quarto, 299 pages, 1 frontispiece, 8 plates, 4 text figures, 1 map. Paper, \$2.50; cloth, \$3.00.

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THE HEART THAT FAILS. PROFESSOR CARL J. WIGGERS.

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UNIFYING SCIENCE IN A DISUNIFIED WORLD. M. B. SINGER AND A. KAPLAN.

BOOKS ON SCIENCE FOR LAYMEN:

Flowers of the Desert; The Mind Grows Up; Founders of Chemistry; Men and Stars.

THE PROGRESS OF SCIENCE:

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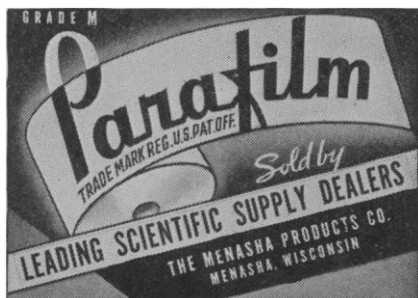
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