

SCIENCE

VOL. 100

FRIDAY, JULY 21, 1944

No. 2586

<i>Preventive Medicine: An Attempt at a Definition:</i> GEDDES SMITH and DR. LESTER J. EVANS	39	<i>Special Articles:</i> <i>The Correlation of the Insulin Content and the Histological Picture of the Pancreas at Intervals after the Administration of Alloxan:</i> DR. J. H. RIDOUT, PROFESSOR A. W. HAM and DR. G. A. WRENSHALL. <i>The Creatine and Creatinine Excre- tion of Normal Adult Males:</i> DR. ANTHONY A. ALBANESE and DOROTHY M. WANGERIN. <i>Corn Oil and Butterfat Essentially Equal in Growth-Pro- moting Value:</i> L. P. ZIALCITA, JR. and DR. H. H. MITCHELL	57
<i>Obituary:</i> <i>William Spencer Carter:</i> DR. CHAUNCEY D. LEAKE and OTHERS. <i>Losses in Personnel of Soviet Botany during the War:</i> VLADIMIR C. ASMOUS. <i>Recent Deaths</i>	42	<i>Scientific Apparatus and Laboratory Methods:</i> <i>A Technique for Mounting Free-Living Protozoa:</i> J. D. SMYTH. <i>On Quieting Paramecium with Methyl Cellulose:</i> DR. RELIS B. BROWN	62
<i>Scientific Events:</i> <i>Recent Contributions of the Preventive Medicine Service of the U. S. Army; The Budget of the University of Wisconsin; Report of the Director of the Chicago Natural History Museum; The Pacific Division of the American Phytopathological So- ciety; The Charles Mayer Fellowships; In Honor of Ralph E. Smith</i>	45	<i>Science News</i>	10
<i>Scientific Notes and News</i>	47		
<i>Discussion:</i> <i>New Volcanoes and a New Mountain Range:</i> COLONEL HENRY WELLES DURHAM. <i>Comparative Studies in Human Biology:</i> PROFESSOR MELVILLE J. HERSKOVITS. <i>Enzymatic Synthesis of Crystal- line Sucrose:</i> PROFESSOR H. A. BARKER, PROFESSOR W. Z. HASSID and DR. M. DOUDOROFF. <i>Penicillin Production:</i> DR. IRWIN A. PEARL and DR. JOHN W. APPLING	49		
<i>Scientific Books:</i> <i>Drosophila Mutants:</i> PROFESSOR TH. DOBZHANSKY. <i>Pain:</i> DR. G. H. BISHOP	52		
<i>Societies and Meetings:</i> <i>The British Society for Freedom in Science:</i> DR. P. W. BRIDGMAN	54		

SCIENCE: A Weekly Journal devoted to the Advance-
ment of Science. Editorial communications should be sent
to the editors of SCIENCE, Lancaster, Pa. Published every
Friday by

THE SCIENCE PRESS

Lancaster, Pennsylvania

Annual Subscription, \$6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Associa-
tion for the Advancement of Science. Information regard-
ing membership in the Association may be secured from
the office of the permanent secretary in the Smithsonian
Institution Building, Washington 25, D. C.

PREVENTIVE MEDICINE: AN ATTEMPT AT A DEFINITION¹

By GEDDES SMITH and LESTER J. EVANS, M.D.

THE COMMONWEALTH FUND

THE relief of pain is an important function of medicine. It is often the physician's first duty to "make the patient comfortable." As soon as clinical medicine gets beyond this palliative stage, however, it becomes preventive medicine. The major function of the physician is to hold disease in check lest disability or death result from it; in other words, to prevent the graver consequences of dysfunction. While it is possible to distinguish between preventive and palliative medicine, it is difficult and generally unprofitable to draw a line between preventive and curative medicine. To cure disease is to cut it short—to prevent its continuance—and so to prevent the consequences of its continuance. Preventive medicine might logically be defined as *all* medicine that seeks to alter the course of disease or to better the patient's physiological status.

¹ A memorandum prepared in connection with the activities of The Commonwealth Fund.

For practical purposes, however, the term has commonly been restricted to mean the intervention of the physician or his technical allies in a limited range of situations in which specific diseases can be warded off or specific deterioration of the patient's condition can be forestalled. Such service is possible (at the present stage of medical science) at three different levels which will be considered in turn.

The most conspicuous field for the operation of preventive medicine is communicable disease. All disease is the result of a chain of causes, but in infectious diseases a uniformly essential link in this chain is found outside the body and, in varying degree, is accessible to attack. The external cause can be neutralized by destroying the infective agent outside the body (*e.g.*, killing typhoid bacilli in water) or by specifically increasing the body's resistance to a particular invader (as by immunization against diphtheria). If more were known about the internal fac-

study, using a ration in which 6 per cent. liver extract (1:20 paste) was included, rats fed butterfat made better, but insignificantly better (Fisher's "t" test)⁶ gains over those fed corn oil. The average results of both these studies for the male rats are summarized in Table 2. The results on the females were quite similar in significance.

These studies indicate that, apart from differences in vitamin content, corn oil and butterfat are essentially equal in growth-promoting value for the rat.

L. P. ZIALCITA, JR.

H. H. MITCHELL

DIVISION OF ANIMAL NUTRITION,
UNIVERSITY OF ILLINOIS

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A TECHNIQUE FOR MOUNTING FREE-LIVING PROTOZOA

THE mounting of free-living protozoa on to microscope slides has always been a source of trouble to the protozoologist. The method of centrifuging after each stage in the processes of staining, dehydration, etc., suffers from several disadvantages. Firstly, the control of differentiation is difficult; for if over- or under-staining occurs, all the specimens in the tube are affected, and the whole must be re-treated. Secondly, since the organisms have to be centrifuged a considerable number of times in their passage through alcohols, stains, etc., it means that the cells are frequently distorted and true cytological pictures are not obtained. This is especially the case in dividing protozoa, where the protoplasm is less viscid than usual.¹

Several methods of fixing protozoa to slides have been suggested,² but are unsatisfactory for one reason or another. The following method, recently developed by the writer, fixes the protozoa very securely to the slide and is simple and effective to use in practice.

The organisms are fixed in Schaudinn, and brought through 70 per cent. and 90 per cent. into absolute alcohol by gentle centrifuging. A small drop of albumen is placed on a clean slide, and a very thin film produced by smearing it with the edge of another slide—exactly as in the preparation of a blood film. A drop of the concentrated organisms is allowed to fall on to the film of albumen from a fine pipette held about an inch above the slide. The combined action of the dropping force and the rapid coagulation of the albumen by the alcohol, immediately causes the organisms to be fixed securely to the slide. These slides are then placed in absolute alcohol, and treated as ordinary sections.

This method avoids the difficulties mentioned above; the small amount of centrifuging necessary in the preliminary concentrating never being sufficient to damage the cells. The film of albumen, too, is so thin that it causes no interference with the staining reactions of the protozoa.

J. D. SMYTH

⁶ F. E. Croxton and D. J. Cowden, "Applied General Statistics." New York: Prentice-Hall, Inc. 1941.

¹ J. B. Gatenby and J. D. Smyth, *Quart. Jour. Micr. Sci.*, 81, 1940.

ON QUIETING PARAMECIUM WITH METHYL CELLULOSE

MARSLAND¹ has suggested an excellent method of quieting *Paramecia* for study by the elementary student, using Dow "Methocel," or methyl cellulose in 10 per cent. aqueous solution.

We have found in our laboratory a slight modification of Marsland's method to be even more satisfactory for our purposes. Since 10 per cent. was a little too viscous, we tried 5 per cent., and we suggest this procedure: Make a small ring of 5 per cent. Methocel, slightly smaller than the cover glass to be used. Into the center of the ring place a small drop of medium containing *Paramecia*. Add a cover glass. Practice teaches one how much of each to use, but less than a full drop of each is often satisfactory with small cover glasses.

This enables the student to observe normal movement for a few minutes before diffusion of the methyl cellulose has slowed him down, and then progressively increasing viscosity gradually slows him to a completely stationary position. At this point he may be placed under an oil immersion objective, and ciliary motion studied in detail. Eventually even this slows down until the cilia appear to beat with great effort.

The Dow Company was very generous in furnishing us with the methyl cellulose.

RELIS B. BROWN

WESLEYAN COLLEGE,
MACON, GA.

² J. B. Gatenby and T. S. Painter, "Microtometist's Vade Mecum," London, 1937.

¹ Douglas A. Marsland, *SCIENCE*, 98: 2549, 414, November 5, 1943.

BOOKS RECEIVED

LILLIE, FRANK R. *The Woods Hole Marine Biological Laboratory*. Pp. ix + 284. University of Chicago Press. \$4.00.

OSBORNE, STAFFORD L. and HOLMQUEST, HAROLD J. *Technic of Electrotherapy*. Pp. xix + 780. Charles C Thomas, Publisher. \$7.50.

RIEGLER, EMIL RAYMOND. *Chemical Machinery*. Pp. ix + 583. Reinhold Publishing Corporation. \$5.00.

WEIMER, BERNAL R. and CORE, EARL L. *A New Manual for the Biology Laboratory*. Pp. vii + 213. John Wiley and Sons, Inc. \$2.00.

REFERENCE BOOKS

Chemistry

REFERENCE BOOKS

HACKH-GRANT

● **Chemical Dictionary—3rd Edition**

217 Illus.
925 Pages
\$12.00
(1944)

This new edition provides over 57,000 clear, intelligible definitions of chemical terms covering all of modern chemistry and related sciences. Of timely interest is the restatement and redefinition of each term taking into account the latest concepts of the phenomena of science and connecting these phenomena with each other. Many tables, formulas and portraits are included. Revised by JULIUS GRANT, M.Sc., Ph.D., F.R.I.C.

MELLAN

● **Organic Reagents in Inorganic Analysis**

682 Pages
\$9.00
(1941)

In this book all organic reagents are described and their reactive groups and resulting compounds are demonstrated graphically. 230 qualitative, 240 quantitative tests (colorimetric, gravimetric and volumetric) are included. By I. MELLAN, Ph.G., M.Sc., F.A.I.C.

SUCKLING

● **Examination of Waters and Water Supplies—5th Edition**

63 Illus.
849 Pages
\$12.00
(1943)

This is a complete guide to the solution of all modern problems concerning the examination, estimation and purification of waters and water supplies, including physical, biological, chemical and bacteriological methods. By E. SUCKLING, M.R.C.S., D.P.H. (Lond.)

CLAYTON

● **Theory of Emulsions and Their Technical Treatment—4th Edition**

103 Illus.
492 Pages
\$10.00
(1943)

Thoroughly revised, this book presents a study of emulsions with emphasis on their technical and industrial applications. New material on the bulk production of emulsions, greatly extended bibliographies, and many new illustrations and useful tables are included. By W. CLAYTON, D.Sc., F.I.C. (Lond.)

FOWLES

● **Lecture Experiments in Chemistry—2nd Edition**

150 Illus.
564 Pages
\$5.00
(1939)

This book describes 547 experiments in chemistry and gives detailed instructions for classroom demonstrations. It will render especial help to teachers because of its notes on reagents, historical data, bibliographies, simplicity of apparatus recommended and constructive suggestions to teachers. By G. FOWLES, F.C.S. (Eng.)

THE BLAKISTON COMPANY Philadelphia 5, Pa.
