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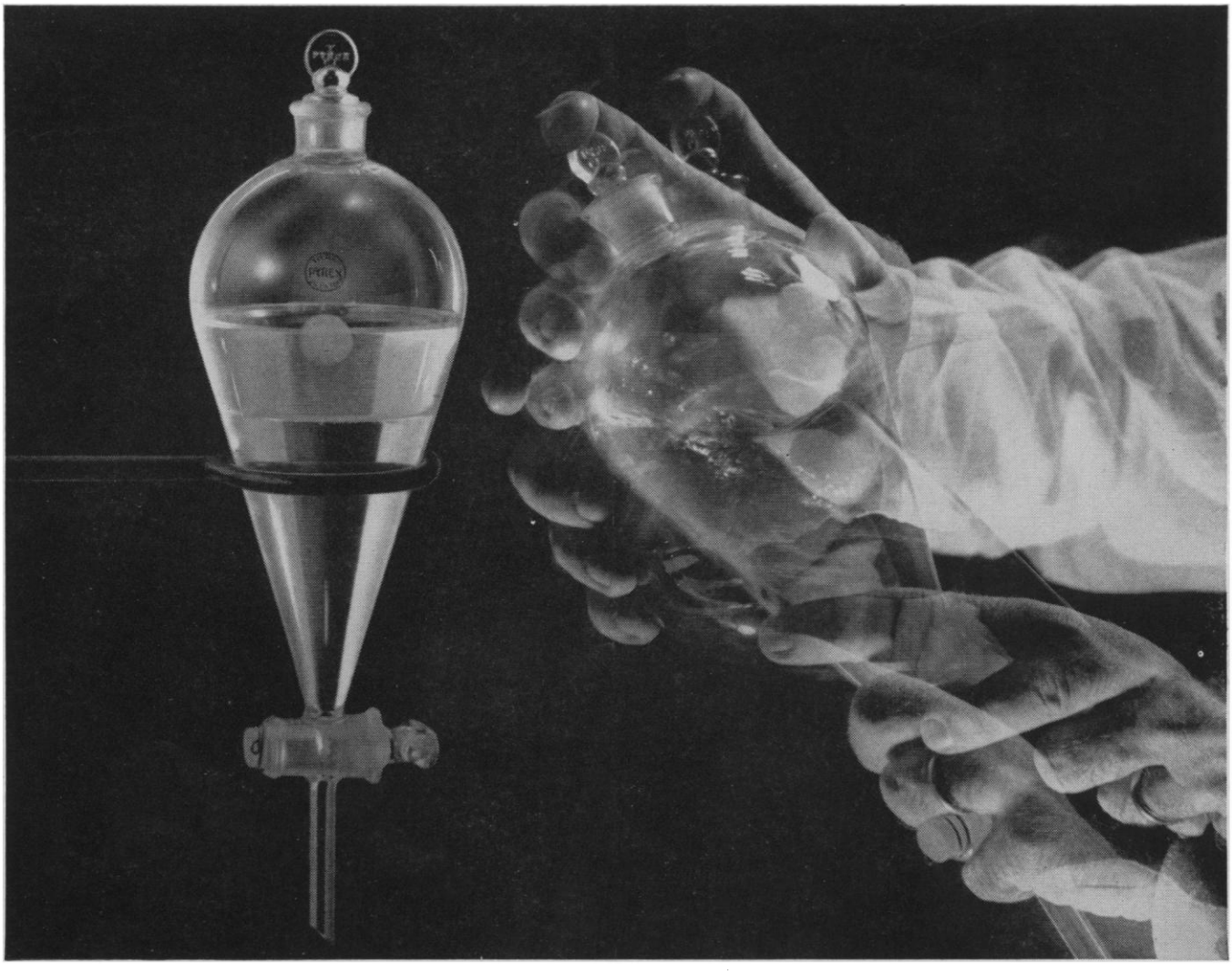

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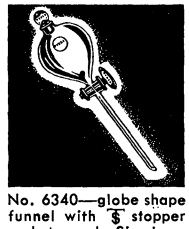

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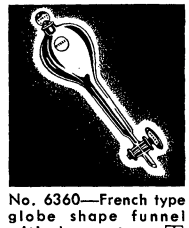

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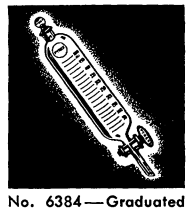

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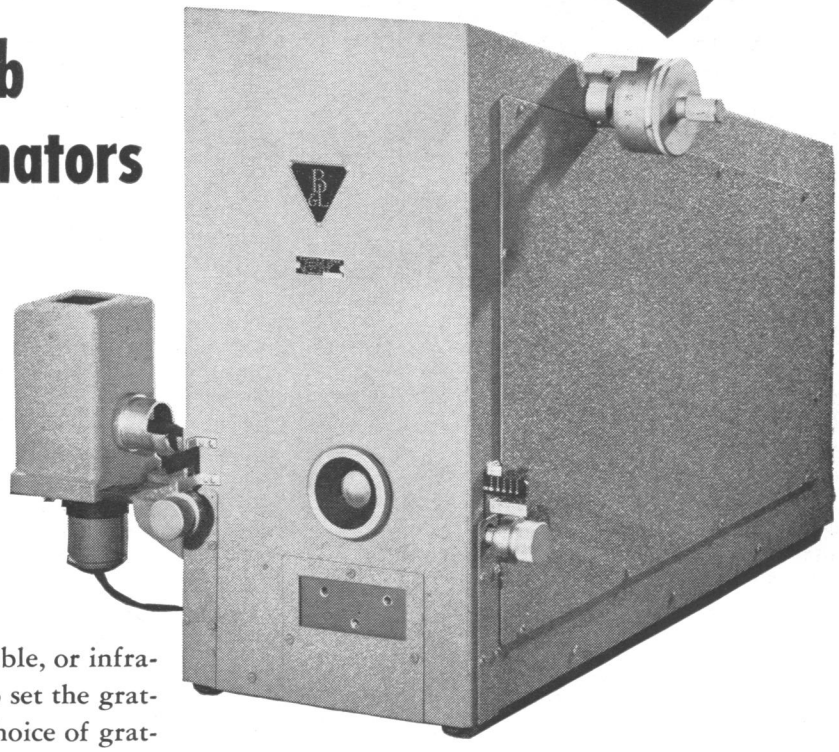

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logical relationships among influenza viruses." Following a description of the antigens that are demonstrable in influenza-infected tissue, there is an account of the complex immunologic relationships, including the sequence of changes in dominant antigens, found among the numerous strains of influenza virus isolated during the last 25 years. Implications of this situation with respect to a successful method of vaccination are reviewed.

"Bacteriophages as genetic and biochemical systems," by A. D. Hershey, is a scholarly discussion of a complex area of study and contains a wealth of information. It is especially valuable in pointing out gaps in our knowledge and suggesting approaches to further problems. As is indicated by the author, the bacteriophage-host cell system has become a formal, as well as a biochemical, branch of genetics, and he ventures the opinion that this is one of the directions in which virology as a whole will have to advance.

"Attachment and penetration of cells by viruses," by L. J. Tolmach, is based almost entirely on studies with bacteriophage and draws heavily on the valuable contributions made by the Colorado group of which the author is a member. Much is now known, and included here, concerning the chemical nature of the processes discussed, and the kinetics and thermodynamics involved. Because of the tendency of the uninitiated to generalize about viruses as if they were a *bona fide* taxonomic group (Andrewes has something to say on this), it is unfortunate that the title does not indicate the restricted scope of the article and does imply a generalization. The essay concludes with an account of selected experiments from our meager store of information on similar activities of animal viruses. It is clear from both Hershey's and Tolmach's articles that the bacteriophage-host cell system is a special case and that generalizations from it should be strictly limited. It is also clear that the bacteriophage work has been invaluable in pointing the way to study of the intimate relationships between other viruses and their host cells.

Methods are described in considerable detail in "Particle counts and infectivity titrations for animal viruses," by Alick Isaacs. His discussion goes beyond an account of methods, however, and includes questions such as whether infections are initiated by single particles and what the significance of incomplete virus and virus filaments is. Parallel, in part, to Isaac's article is "Mechanical transmission of plant viruses," by C. E. Yarwood. It contains detailed information on the various factors of environment, donor and host plant, adjuvants, and so forth, that affect experimental transmission of plant viruses and thereby influence quantitative experiments.

Further information in one area of this field is given in "Effects of changing temperature on plant virus diseases," by B. Kassanis. It includes effects on susceptibility, incubation period, symptoms, and virus multiplication. The last is analyzed at some length, and a number of intriguing questions are raised concerning the dynamics of plant virus production and degradation. Examples of the value of heat for ridding plants of virus infection are described, and a tabulation of reports on this subject is included.

In "The anatomy of tobacco mosaic virus," N. W. Pirie is critical of the generally held concept, derived from physicochemical studies, that the virus particle possesses constant dimensions and composition. He discusses isolation of the virus substance and brings information in this field up to date. He stresses, as he has in previous writing, the differences found in the product that result from the use of different host plants, conditions of growth, and methods of preparation. This meaty essay is seasoned with an occasional salty comment.

In "Effects of non-ionizing radiations on viruses," A. Kleczkowski first briefly describes the physical aspects of non-ionizing radiations. His discussion of their effects on plant, animal, and bacterial viruses provides a valuable source of information in this field of study.

Each article begins with an outline of its contents and ends with its own list of references, arranged alphabetically. Three of the articles are accompanied by glossaries. Indexes of authors and subjects increase the value of these volumes as reference works. In addition to its usefulness to virologists, this book will be of value to other biologists, especially those whose interest is at the cellular level.

FRANCIS B. GORDON
*Naval Medical Research Institute*

## New Books

*Principles of Microbiology.* Charles F. Carter and Alice L. Smith. Mosby, St. Louis, ed. 3, 1957. 665 pp. $5.

*The Infectious Diseases of Domestic Animals.* With special reference to etiology, diagnosis, and biologic therapy. William A. Hagan and Dorsey W. Bruner. Comstock Div., Cornell University Press, Ithaca, N.Y., ed. 3, 1957. 988 pp. $10.50.

*Magnetic Removal of Foreign Bodies.* The use of the alnico magnet in the recovery of foreign bodies from the air passages, the esophagus, stomach and duodenum. Murdock Equen. Thomas, Springfield, Ill., 1957. 101 pp. $4.50.

*Plant Classification.* Lyman Benson. Heath, Boston, 1957. 702 pp. $9.

*Organic Chemistry.* H. Harry Szmant. Prentice-Hall, Englewood Cliffs, N.J., 1957. 815 pp. $7.95.

*Concepts of Force.* A study in the foundations of dynamics. Max Jammer. Harvard University Press, Cambridge, Mass., 1957. 277 pp. $5.50.

*Mathematics and Statistics for Use in Pharmacy, Biology and Chemistry.* L. Saunders and R. Fleming. Published under the direction of the Council of The Pharmaceutical Society of Great Britain. Pharmaceutical Press, London, 1957. 267 pp. 27s. 6d.

*College Chemistry.* William H. Nebergall and Frederic C. Schmidt. Heath, Boston, 1957. 796 pp. $6.75.

*Techniques of Guidance.* Arthur E. Traxler. Harper, New York, rev. ed., 1957. 387 pp.

## Miscellaneous Publications

*(Inquiries concerning these publications should be addressed, not to* Science, *but to the publisher or agency sponsoring the publication.)*

*Irvington House Conference on the Rheumatic Child and His World.* 13 November 1956. Irvington House, New York, 1957. 68 pp.

*A Revision of the East African Nasutitermitinae (Isoptera).* Bulletin of The British Museum (Natural History), Entomology, vol. 5, No. 1. W. A. Sands. 29 pp. 10s. *On Spelaeogriphus, a New Cabernicolous Crustacean from South Africa.* Bulletin, Zoology, vol. 5, No. 2. Isabella Gordon. 19 pp. 6s. *Expedition to South West Arabia 1937–8.* vol. 1, Nos. 27–33. 79 pp. £1. *Fossil Mammals of Africa.* No. 12. *A New Miocene Rodent from East Africa.* D. G. MacInnes. 36 pp. £1. *Fossil Mammals of Africa.* No. 13. *Insectivora and Chiroptera from the Miocene Rocks of Kenya Colony.* P. M. Butler and A. Tindell Hopwood. 35 pp. 15s. *The Cracherode Shell Collection.* Bulletin, Historical Series, vol. 1, No. 4. Guy L. Wilkins. 64 pp. 21s. The British Museum (Natural History), London, 1957.

*Second Tissue Homotransplantation Conference.* Annals of the New York Academy of Sciences, vol. 64, art 5. 339 pp. $4.50. *Mercury and Its Compounds.* vol. 65, art 5. 295 pp. $3.50. *The Pharmacology of Psychotomimetic and Psychotherapeutic Drugs.* vol. 66, art 3. 424 pp. $5. *Anesthesiology and Related Problems.* vol. 66, art. 4. 182 pp. $4. Otto v. St. Whitelock, Ed. New York Academy of Sciences, New York, 1957.

*California Wasps of the Genus Oxybelus (Hymenoptera: Sphecidae, Crabroninae).* Bulletin of the California Insect Survey, vol. 4, No. 4. Richard M. Bohart and Evert I. Schlinger. University of California Press, Berkeley, 1957. 40 pp. $0.75.

*Multichannel Pulse Height Analyzers.* Proceedings of and informal conference at Gatlinburg, Tennessee, 26–28 September 1956. Nuclear Science Ser. Rept. No. 20. Publ. No. 467. H. W. Koch and R. W. Johnson, Eds. National Academy of Sciences–National Research Council, Washington 25, 1957. 205 pp. $2.

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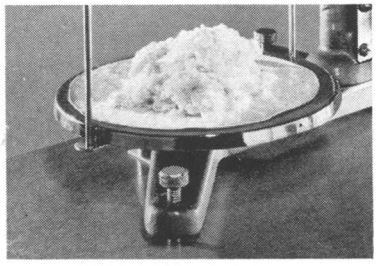

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A gentleman in Philadelphia named Earl Usdin has been so grateful at being spared the mess of preparing his own DEAE-cellulose that he has shared with us his experience here and in Sweden with a further elaboration of the idea, N,N,N-triethylaminoethylcellulose. This is a quaternary compound, with a charged nitrogen ready to attract anions as soon as the coating of hydroxyls that preserve its electrical neutrality has been removed. With that kind of attractive force in play, the casual bystander would expect to find TEAE-cellulose much more anion-avid than DEAE-cellulose, which depends on the mere general basicity of amine nitrogen. Doctor Usdin, no casual bystander in this area, reports that actually the effective difference between the two is small.

Certain folic acid derivatives that interest him come off the TEAE-cellulose with phosphate developers at pH 6.1, as compared with the rather destructive pH 1 to 2 levels which the older-fashioned, ante-cellulosic ion-exchange resins need to make them let go. He claims that once you have the DEAE-cellulose it's a breeze to convert to TEAE-cellulose. Just reflux with *Bromoethane* (Eastman 114).

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Yet we find Miss Garvin compiling a *Bibliography on High-Speed Photography* that runs to 35 pages of rather small type and provides easy entrée to a vast mass of knowledge accumulated over the decades about both equipment and techniques for every kind of high speed photography and about its findings in many, many branches of science and engineering—knowledge the duplication of which would consume incalculable miles of nice, fresh Kodak Film.

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