Recent Advances in Viruses: Dr. Edwin H. Len-nette .................................................. 415

Obituary:
Feliz Aguilar: Dr. Otto Struve, Deaths and Memorials .................................................. 423

Scientific Notes and News .................................................. 427

Discussion:
A Possible Relationship between the Walnut Erinose Mite and Walnut Blight: Dr. B. A. Rudolph. Another Discovery of Chaos Chaos: Paul F. Brandwein, Patricia Penn and Clare Briel. Tymanon's Prediction of the Invention, Use and Misuse of the Aeroplane: Professor M. F. Ashley Montagu .................................................. 430

Scientific Books:
Heat Engines: Dr. Howard W. Emmons .................................................. 432

RECENT ADVANCES IN VIRUSES
A BRIEF SURVEY OF RECENT WORK ON VIRUSES AND VIRUS DISEASES

By Dr. Edwin H. LenNette
SERVIÇO DE ESTUDOS E PESQUISAS SÔBRE A FEBRE AMARELA (YELLOW FEVER RESEARCH SERVICE)

To formulate at the present time a concise, accurate and invariant definition of a virus is impossible due to the insufficiency of our knowledge concerning the nature of these disease incitants. Because the infectious agents classified as viruses possess the capacity to multiply or reproduce, because they showed marked specificity under natural conditions for certain hosts and tissues, are able to adapt themselves to new environmental-conditions and to undergo variation, it is customary to regard them as living organisms. In the past viruses were characterized, and thus differentiated from bacteria, by the possession of a size at or below the limits of resolution possible with the usual

1 Received for publication October 25, 1943.
2 Presented on July 6, 1943, before the Seminario de Biologia, held in Rio de Janeiro from July 2 to 6, 1943, under the auspices of the University of Brazil.
3 Maintained jointly by the Ministry of Education and Health of Brazil and the International Health Division of The Rockefeller Foundation.

microscopic methods, by their ability to pass through mineral or colloidion filters which hold back bacteria, and by their total inability to reproduce in lifeless bacteriologic media. We now know, however, that invisibility and filtrability do not constitute valid criteria—some infectious agents possessing all the attributes of a virus and classed as such are visible and approximate the smallest bacteria in size while others pass with difficulty, or not at all, through filters which permit passage of the smallest bacteria. From the biologic standpoint the outstanding difference between viruses and bacteria appears to lie in the inability of viruses to propagate unless living cells are present; yet on closer analysis even this difference approximates the relative rather than the absolute in degree. Certain pathogenic bacteria, such as Hemophilus influenzae and Pasteurella tularensis, have become so highly parasitic that their nutritional requirements are