Demonstration of the purity of a preparation of poliomyelitis virus

In a previous communication to this journal[1] a method was described for the purification of the virus of MEF_1 poliomyelitis. In a typical experiment the virus was recovered quantitatively in approximately 1 mg (as dry weight) of material from 500 infected suckling mouse brains. It has now been possible to examine the purity of several such preparations of virus by means of electron microscopy.

The virus concentrate was freed of NaCl by dialysis against approximately 150 vols. distilled water at 4° C. After diluting 1 + 3 in distilled water, samples were placed on collodion films and air-dried without any further treatment. Examination was carried out, after shadowing, in a Metropolitan-Vickers E.M.3. electron microscope at 75 kV.

Fig. 1 is a typical photograph of the preparation after 72 h dialysis, while Fig. 2 shows the agglutination of the virus after complete removal of electrolyte by 27 days dialysis.

The particles present in these preparations were found to be of uniform size and free from contaminating material of size greater than 50 Å. The average particle size of the virus was found to be 30.5 mμ and approximately spherical. This figure agrees fairly well with those determined similarly by BACHRACH AND SCHWERDT[2], SABIN, HENNESSEN AND WARREN[3], and with that found by POLSON AND SELZER[4] by ultracentrifugation.

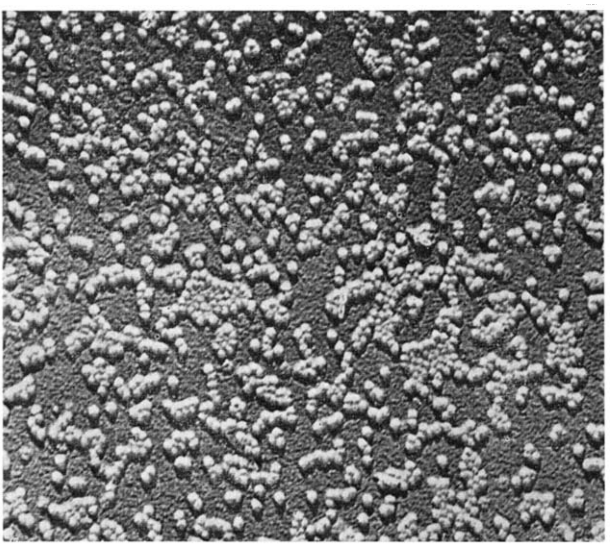

Fig. 1. 72 h dialysis. Shadowed with tungstic oxide, 43,300 ×.

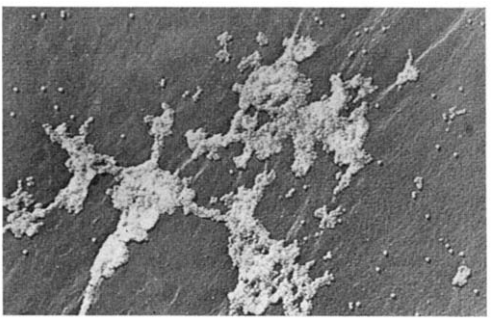

Fig. 2. 27 h dialysis. Shadowed with tungstic oxide, 18,100 ×.

We should like to thank Professor M. VAN DEN ENDE for his keen interest and discussions during the course of this work, and the Director and Board of Trustees of the Poliomyelitis Research Foundation for permission to publish these photographs.

J. W. F. HAMPTON
A. POLSON
G. SELZER

Laboratories of the Poliomyelitis Research Foundation, Johannesburg; and the South African Council for Scientific and Industrial Research Virus Research Unit, Department of Pathology, University of Cape Town (South Africa)

[1] A. POLSON AND G. SELZER, *Biochim. Biophys. Acta*, 14 (1954) 67.
[2] H. L. BACHRACH AND C. E. SCHWERDT, *J. Immunol.*, 72 (1954) 30.
[3] A. B. SABIN, W. A. HENNESSEN AND J. WARREN, *Proc. Soc. Exp. Biol. Med.*, 85 (1954) 359.
[4] A. POLSON AND G. SELZER, *Proc. Soc. Exp. Biol. Med.*, 81 (1952) 218.

Received May 17th, 1955