In a majority of cases studied that portion of the optic nerve extending from the enlargement to the brain seemed to be about normal in size, but tortuous and irregular. In no case after metamorphosis was the optic nerve lacking.

4355

Effect of Drying on Certain of the Virus Group.*

JAMES A. HAWKINS. (Introduced by James B. Murphy.)

From the Laboratories of the Rockefeller Institute for Medical Research.

It has long been known that certain of the virus group such as vaccine and rabies virus will withstand drying but as a rule there is considerable loss in virulence during the process. Murphy[1] showed that the chicken tumor agent was less damaged if the material was kept frozen during desiccation. Harris and Shackell[2] demonstrated that rabies virus frozen and dried lost little of its virulence and, furthermore, the deterioration was less rapid than when the tissues were dried by the usual methods.

The present study deals with the resistance of vaccine virus, virus III and *Herpes febrilis* virus to freezing and desiccation.†

The various tissues containing the viruses were mixed finely and spread in a thin layer in a sterile dish. This was placed in a vacuum jar over concentrated sulphuric acid and the pressure reduced to 5.0 mm. of mercury. The jar was immediately put in a freezing room at a temperature of −5.0° C. and left for 2 days. The tissues, thoroughly desiccated by this time, were removed, rubbed to a powder in a mortar and sifted through a fine meshed sieve to remove the larger particles. For the infectivity test the powder was taken up in Locke's solution and injected in the usual manner for the individual virus.

Vaccine virus, after the above treatment, when tested dermally and intradermally in normal rabbits, showed that the activity of the virus was practically unimpaired. The lesions produced arose as

* This investigation was carried out by means of funds from the Rutherford Donation.

1 Murphy, James B., *J. Exp. Med.*, 1911, xiii, 889.

2 Harris, D. L., and Shackell, L. F., *J. Am. Pub. Health Assn.*, 1911, i, 52.

† We wish to acknowledge the assistance of Dr. Thomas Rivers, who supplied the viruses used and tested their infectivity after desiccation.

promptly and were almost as extensive as those produced by the control injections of fresh vaccine virus.

Virus III after drying in the frozen state proved almost as potent as the fresh virus in the production of the typical testicular lesions in rabbits.

Herpes febrilis vaccine subjected to the freezing and drying produced the typical *Herpes febrilis* reaction in rabbits, killing the animals in 5 days. The brains showed very many typical eosin-staining nuclear inclusions.

Viruses dried by this method and kept in sealed tubes in the icebox lose their virulence very slowly. There was no appreciable loss after one year under these conditions. This offers a convenient and economical method of preserving strains of viruses.

4356

Resistance of Causative Agent of Chicken Tumor to Certain Organic Solvents Compared with Vaccine Virus and Herpes Febrilis Virus.*

JAMES A. HAWKINS. (Introduced by James B. Murphy.)

From the Laboratories of the Rockefeller Institute for Medical Research.

Because of the theoretical importance of the chicken tumors, it seems desirable to continue the study of the properties of their causative agent from a number of angles with the hope that this may lead to an understanding of their nature. The present study deals with the resistance of the agent of Chicken Tumor I to the action of certain solvents and a comparison of this resistance with that of some of the filterable virus group.†

Experimental Procedure. The various tissues containing the active agents were treated as described in the previous paper to obtain dried materials. One half gram portions were transferred to long glass tubes containing 50 cc. of various organic solvents. The tubes were sealed by fusing the open end in a flame and were shaken for 6 days by a mechanical shaker. They were then opened and the emulsion of solvent and tissue was filtered through filter paper. The

* This investigation was carried out by means of funds from the Rutherford Donation.

† We wish to acknowledge the assistance of Dr. Thomas Rivers, who supplied the viruses used and tested their infectivity after the treatment with the various solvents.