4641

Fox Encephalitis and Canine Distemper.

R. G. GREEN AND E. T. DEWEY.

From the Department of Bacteriology and Immunology, University of Minnesota, Minneapolis, and the U. S. Bureau of Biological Survey.

A virus disease of dogs has been clearly defined by Laidlaw and Dunkin[1] as "canine distemper". A virus disease of foxes has also been defined by Green and co-workers,[2, 3] which, previously described as fox distemper, has been called "epizootic fox encephalitis". Through the kindness of Laidlaw and Dunkin, the viruses identified in the 2 investigations have been exchanged for comparative study.

While various methods of comparison have shown the 2 viruses to be distinct, the susceptibility of the ferret to the one and not to the other proves conclusively that epizootic fox encephalitis and the canine distemper described by Laidlaw and Dunkin are distinct entities. For the experiments here reported, young foxes and ferrets raised in careful quarantine were available. The fox encephalitis virus was a brain and spinal cord emulsion prepared from the pooled brains of 20 foxes dying of the experimental infection. The dosage used for both foxes and ferrets was 1 cc. of a 5% emulsion. This dosage was, then, enormously greater, in proportion to body weight, for the ferrets than for the foxes. Five fox pups 5 months old and 5 ferrets 2½ months old were injected subcutaneously with the same preparation of virus. The foxes showed a typical experimental infection of encephalitis, one dying on the fourth day, one on the fifth day, and 2 on the sixth. One fox showed grave symptoms on the fourth and fifth days but recovered. The 5 ferrets, during the same period, showed no signs of infection. Their condition was carefully noted from the eighth to the fifteenth day after injection, this being the period during which ferrets die from the virus of Laidlaw and Dunkin. At no time were any symptoms of disease noted.

The virus obtained from Laidlaw and Dunkin was established in our laboratories in both ferrets and foxes. Our observations on the great susceptibility of the ferret to this virus agree with those of Laidlaw and Dunkin. For the injection of the ferrets previously

[1] Laidlaw, P. P., and Dunkin, G. W., *J. Comp. Path. and Therap.*, 1928, xli, 209.

[2] Green, R. G., PROC. SOC. EXP. BIOL. AND MED., 1926, xxiii, 677.

[3] Green, R. G., Ziegler, N. R., Dewey, E. T., and Shillinger, J. E., *Comp. rend. des seances de la Soc. de biol.*, 1929, c, 327.

inoculated with fox encephalitis virus, we used a 5% ferret spleen suspension. Thirty-six days following the injection of our encephalitis virus, 3 of the 5 ferrets were inoculated with the canine distemper virus of Laidlaw and Dunkin. Two of these ferrets died on the eleventh day and one died on the twelfth. The remaining 2 ferrets were given the inoculation of canine distemper virus on the forty-eighth day after the injection of the encephalitis virus, and both succumbed to the disease 11 days after the inoculation.

It is concluded that epizootic fox encephalitis and canine distemper may be distinguished by a test of the susceptibility of ferrets. This animal is not susceptible to fox encephalitis but, as a rule, succumbs when inoculated with the canine distemper virus of Laidlaw and Dunkin. The injection of fox encephalitis virus into ferrets gives no immunity against subsequent injection of the canine distemper virus.

4642

The Irritability and Chronaxie of the Small Bowel.

H. H. DUKES. (Introduced by Walter C. Alvarez.)

From the Department of Veterinary Investigations, Iowa State College, Ames, Iowa, and the Division of Medicine, The Mayo Clinic, Rochester, Minnesota.

In view of Lapicque's claim that the chronaxie is one of the best measures of the excitability of a muscle we were curious to see what this "threshold of duration" is for the mammalian small intestine, and if it is graded from duodenum to ileum. Unfortunately, in the time that I could give to the problem no conclusion could be reached except that with both galvanic and faradic tetanic stimuli the time required in order to get a response varied between 0.1 and 0.6 second. In 3 animals the chronaxie appeared to be graded downward with short intervals in the duodenum and long ones in the ileum, and in one there was no gradation. The problem will have to be studied further probably with a different type of apparatus. I used the electrodes and technic described by Alvarez and Hosoi.[1] The duration of current flow was determined by 2 keys which were opened either by a Lucas pendulum[2] or by a gravity operated arm, the descent of which was regulated by a dash-pot. The Lucas pendulum with the keys separated as widely as possible delimited an interval which usually was too short for effective stimulation.

[1] Alvarez, W. C., and Hosoi, Kiyoshi, *Am. J. Physiol.*, 1929, lxxxix, 182.

[2] Lucas, Keith, *J. Physiol.*, 1907, xxxv, 310.