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8121 C

An Attempt to Infect Vitamin-Deficient Animals with Poliomyelitis Virus.

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The great need for further experimental work in poliomyelitis and the fact that the monkey has been the only responsive experimental animal have evoked numerous attempts[1] to adapt the virus to smaller laboratory animals. The most recent of these was made by Brodie and associates,[2] who claimed that mice were successfully infected following reduction of their natural resistance to the virus by means of X-ray radiation.

We have approached the problem by using rats, mice and guinea pigs which were kept on a diet deficient in vitamins B and C. The diet consisted of casein (Harris Vitamin-B free) 20 parts, starch (Harris Vitamin-B free) 60 parts, purified butter fat 10 parts, agar-agar (Merck) 4 parts, and Osborne-Mendel Salt Mixture 4 parts. Young recently weaned animals were kept on this diet for a period of 10 to 25 days before inoculation and were maintained on the diet during the experimental period. They manifested marked symptoms of vitamin deficiency, such as weakness, shaggy fur, failure to gain weight or loss of weight, and sometimes cutaneous and mucous membrane lesions. Occasionally it was necessary to revert to a more complete diet for short periods (addition of yeast) to maintain life. Rats tolerated the management fairly well, mice not quite so well, and guinea pigs poorly.

Two preparations of virus were used: a chemically purified product, and a suspension of monkey cord which had been pre-

1 Poliomyelitis, International Committee, Williams and Wilkins, Baltimore, 1932.

2 Brodie, M., Goldberg, S. A., and Stanley, Phyllis, *Science*, **81**, March 29, 1935.

served in glycerin. Both were infectious for monkeys in the amounts used experimentally. The animals were inoculated under anesthesia, the rats and guinea pigs with 0.1 to 0.2 cc. intracerebrally and 1.0 cc. intraperitoneally, the mice with 0.05 cc. intracerebrally and 0.5 cc. intraperitoneally. Subinoculations were made in the same manner, brain and cord serving as the source of the subinoculation material.

The purified virus was carried through 6 transfers in rats and 4 in mice, the crude virus preparation through 6 rat and 3 mouse passages. The crude virus was also inoculated into several adult guinea pigs and passed through 3 transfers in young guinea pigs. All of the transfers were made at 3-day intervals. Two or 3 animals were used at each stage, one being sacrificed for subinoculation material; the others were allowed to live for continued observation. The latter animals were killed and examined several weeks after inoculation or whenever intercurrent disease necessitated termination of the experiment.

In none of the animals were there symptoms suggestive of poliomyelitis as it is seen in man or monkey, and histological examination of the cord and brain tissue failed to show any changes referable to the disease. An acute inflammatory reaction was noted both grossly and microscopically in the meninges of one mouse. This was shown to be due to *Bacterium enteritidis*.

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Fibrinolytic Activity of Hemolytic Streptococci from Scarlet Fever.

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Tillett and Garner[1] have demonstrated an extracellular substance freely excreted by growing cells of beta hemolytic streptococci which has the property of dissolving solid human fibrin. They[2] have shown also that patients convalescing from acute hemolytic streptococcus infections develop a relative resistance to this fibrinolytic action. Their studies included 60 normal individuals and 11 patients with hemolytic streptococcus infections, 3 of whom had scarlet fever.

[1] Tillett, W. S., and Garner, R. L., *J. Exp. Med.*, 1933, **58**, 485.

[2] Tillett, W. S., Edwards, L. B., and Garner, R. L., *J. Clin. Invest.*, 1934, **13**, 47.