

LETTERS TO THE EDITORS

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Effects of Daily Irradiation by Fast Neutrons on Male Fertility

SINCE January 1, 1951, the smaller pile at Harwell has been used for irradiating *CBA* mice daily with fast neutrons. These were fission neutrons obtained by allowing thermal neutrons escaping from the graphite reflector to interact with uranium on the floor of the compartments in which the animals were housed. It is believed that less than 5 per cent of the biological effects produced were due to contaminating radiations. Dose-rates were measured with homogeneous 'tissue' ($C_{0.15} H_{1.00} N_{0.04} O_{0.48}$) and hydrocarbon (CH) ionization chambers, an allowance being made for gamma-ray ionization by simultaneous readings with an argon chamber¹.

The purpose of this preliminary report is to record the unexpected sensitivity of the mouse testis. A dose of 70 rep. at the weekly dose-rate of 8.3 rep. reduced the fertility of *CBA* mice to half that of controls, using a standard mating test in which the test male is left for four nights with four *CBA* females aged 2-5 months. An accumulated dose of 100 rep. halved the average weight of the testis, and after the same dose there has been no recovery of fertility at any time right up to the age at which unirradiated controls become naturally sterile.

In contrast, the female *CBA* mouse was less sensitive to the sterilizing effects of fast neutrons. An accumulated dose of 140 rep. in seventeen weeks did not seem to affect the ability to conceive or produce young.

The difference in sex sensitivity is opposite to that usually accepted for X- and gamma-rays², and the low dose for absolute sterilization in males is also noteworthy³. The dose-rate which produced such striking testicular damage had no effect on growth-rate or body-weight for thirty-five weeks, produced no great haematological changes by the time the male mice were permanently sterile, and did not appear to produce cataracts until some time after considerable losses in weight occurred.

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¹ Neary, G. J., and Munson, R. J. (to be published).

² Deringer, M. K., Heston, W. B., and Lorenz, E., Manhattan District Declassified Document 1247 (1947).

³ Evans, T. C., *Radiology*, 50, 811 (1948).

Electron Microscope Studies of the Structure of the Influenza Virus

FROM studies of the growth-cycle of influenza virus, Hoyle^{1,2} formed the hypothesis that the virus elementary body consisted of an aggregate of smaller units, and Burnet and Lind³ arrived at a similar concept from studies of virus variation. Hoyle^{3,4} showed that the virus could be disintegrated by shaking with ether, with the production of separate red-cell agglutinating and complement-fixing particles of smaller size than that of the elementary body.

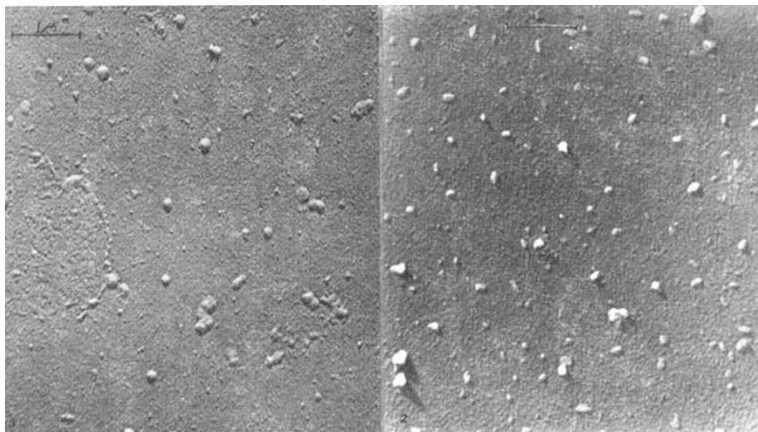


Fig. 1

Fig. 2

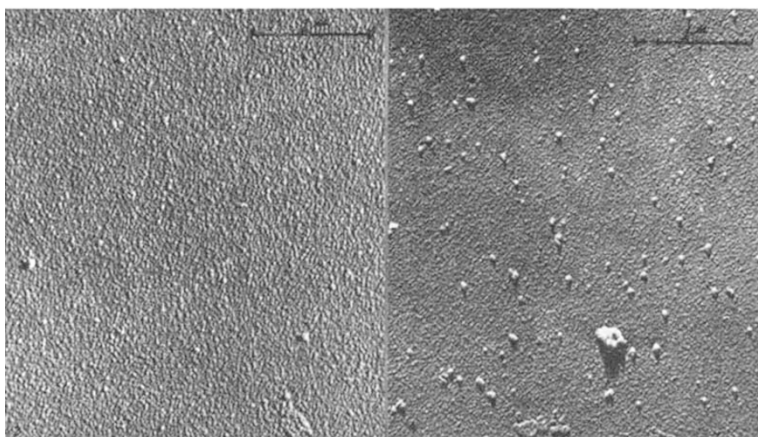


Fig. 3

Fig. 4

A concentrated suspension of *DSP* strain of virus *A* was prepared as described by Hoyle⁴ from infected allantoic fluid by adsorption on and elution from chick-embryo red cells. The preparation was fixed with osmic acid, and electron micrographs at an instrumental magnification of 7,500 were taken of drops on collodion-film grids, which were first drained, dried and washed with distilled water, then dried again and shadowed with chromium. Fig. 1 is an enlarged negative print showing elementary bodies of average size about 1250 Å., together with smaller particles ranging from about 100 Å. to 500 Å. Many of the elementary bodies have a roughly hexagonal outline.

The elementary bodies observed in infected allantoic fluid appear to be released from the cells of the chorio-allantoic membrane by a process of cytoplasmic disintegration; but a similar disintegration may occur