Association Affairs

Hotel Headquarters, Boston

General Headquarters: The Statler Hotel will serve as the general headquarters of the Association, housing the meetings of the Council and Executive Committee.

Headquarters of the sections of the Association and of the societies meeting with the Association follow:

Statler Hotel: Section on Medical Sciences (N), Subsections on Dentistry (Nd) and Pharmacy (Np); Academy Conference, American Microscopical Society, American Society of Naturalists, American Society of Parasitologists, American Society of Zoologists, Genetics Society of America, Ecological Society of America, Limnological Society of America, National Association of Science Writers, Sigma Delta Epsilon, Society for the Study of Evolution, Society of the Sigma Xi.

Bradford Hotel: Sections on Anthropology (H), Psychology (I), and Education (Q); American Nature Study Society, National Association of Biology Teachers, National Science Teachers Association, Pi Lambda Theta.

Commander Hotel: Sections on Astronomy (D) and Geology and Geography (E); American Astronomical Society, American Meteorological Society. Meetings of these sections and societies will be held at Harvard University.

Copley Plaza Hotel: Sections on Agriculture (O) and Botanical Sciences (G); American Fern Society, American Society for Horticultural Science, American Society of Plant Physiologists, American Society of Plant Taxonomists, Botanical Society of America, Mycological Society of America, Phi Sigma Biological Society, Potato Association of America, Sullivant Moss Society.

Kenmore Hotel: Sections on Physics (B), Chemistry (C), Social and Economic Sciences (K), History and Philosophy of Science (L), and Engineering (M).

Hotels adjacent to the Bradford are the Avery and Touraine; those adjacent to the Copley Plaza are the Charlesgate, Fensgate, Pioneer (for women), Copley Square, Lenox, and Vendome; those adjacent to the Kenmore are the Puritan, Braemore, Myles Standish, Sheraton, Buckminster, Gardner, and Minerva.

The Lincolnshire, Commonwealth, Bellevue, and Parker House hotels are grouped about the Boston Common and are within convenient walking distance of the Statler and Bradford hotels. The Commander and Continental hotels are adjacent to Harvard University.

Technical Papers

Effect of Dilution on Fertilizing Capacity of Rabbit Spermatozoa [1]

M. C. Chang

Worcester Foundation for Experimental Biology
Shrewsbury, Massachusetts

In the determination of the minimal number of spermatozoa required to fertilize rabbit ova, Walton (*5*) suspended spermatozoa in 0.9 per cent of NaCl and inseminated 3 ml. of suspension into the vagina. Rowlands (*4*) used Baker's solution but inseminated 2 ml. According to them, 1,000,000 or more spermatozoa are required for maximum fertility. However, the writer (*1*) observed maximum fertility in 11 does following insemination of 1 ml. of 0.9 per cent NaCl, containing 330,000–420,000 spermatozoa.

[1] The writer wishes to acknowledge his gratitude to Drs. G. Pincus and N. Werthessen for their encouragement. This work has been aided by a grant from the Foundation for Applied Research, San Antonio, Texas.

Considering the fact that the motility and respiration of spermatozoa are very low in a very dilute sperm suspension (*2*), it was thought that the discrepancy of results might be due to the effect of dilution.

Twenty doe rabbits were superovulated according to Pincus (*3*) and inseminated with a known number or a similar number of spermatozoa suspended in 1, 0.4, or 0.1 ml. of saline. The does were killed 38 to 42 hours after insemination. The ova were flushed out and the number of cleaved ova were counted. The results show that 17–42 per cent, 0–28 per cent, and 0–6 per cent of the ova were cleaved when a similar number of spermatozoa (30,000–44,000) was suspended in 0.1, 0.4, and 1 ml. of saline, respectively. The mean per cent of cleavage (2.75) with the 1-ml. insemination is significantly different from the mean per cent (27) with the 0.1-ml. insemination. A maxi-

mum of 19 per cent of the ova cleaved when the number of spermatozoa was doubled (80,000) but suspended in 1 ml. of saline.

The advantage of a small volume of concentrated sperm suspension is clearly shown. It may be due to: (1) the detrimental effect of chemicals, ions, oxygen tension, etc. on spermatozoa when the proportion of chemical constituents in the medium to living tissue is excessive; (2) the fact that there might be beneficial chemical substances in the semen or in the spermatozoa which would be diluted too much in a large volume of solution with a consequent loss of fertilizing capacity; (3) the fact that the cervix can take up only a small amount of fluid and hence more sperms are taken up in a small volume of fluid. In any event, it is quite conclusive that the chance of fertilization is better when spermatozoa are suspended in a small volume of fluid.

Two implications arise from these findings: (1) In the diagnosis of male infertility, we have to take into consideration the volume of semen in relation to number of spermatozoa; that is, considering only the total number of spermatozoa in an ejaculate is not adequate for ascertaining the fertility of a male animal. It is the concentration of spermatozoa in semen that is more important. (2) In the practice of artificial insemination it is better to instill a small volume of fluid with a high concentration of sperms rather than a large volume of fluid with a low concentration of spermatozoa.

References

1. CHANG, M. C. *J. exp. Biol.*, 1946, **22**, 95.
2. CHANG, M. C. Ph.D. Thesis on "Physiology of ram spermatozoa," Cambridge University.
3. PINCUS, G. *Anat. Rec.*, 1940, **77**, 1.
4. ROWLANDS, I. W. *Nature, Lond.*, 1944, **154**, 232.
5. WALTON, A. *Proc. roy. Soc.*, 1927, **101B**, 303.

Rapid Production of Acute Disseminated Encephalomyelitis in Rhesus Monkeys by Injection of Brain Tissue With Adjuvants[1]

ELVIN A. KABAT, ABNER WOLF, and ADA E. BEZER
Departments of Neurology and Pathology, College of Physicians and Surgeons, Columbia University and the Neurological Institute, New York City

The production of multiple lesions of the central nervous system in monkeys by the repeated intramuscular injection of emulsions and extracts of rabbit brain has been reported by several investigators (*2, 11, 12*). The abnormal changes were marked by their wide dissemination, perivascular position, inflammation, proliferation of histiocytes, giant cell formation, and the associated demyelination. In all instances, large numbers of injections (30–100) and time intervals of from 3 to 13 months were required to induce the appearance of symptoms. Since this phenomenon may involve an immunological response to the injected brain material and the combination of the antibrain antibodies with the brain tissue of the animal to produce these pathological changes, it was thought that a more rapid effect might be obtained by the administration of brain tissue together with adjuvants. This procedure has been shown to result in an enhanced immune response with a variety of other substances (*1, 3–10*).

Two groups of four monkeys each were used. One group received an emulsion of 18 grams of rabbit brain in 20 ml. of saline, 20 ml. of "aquaphor," and 40 ml. of paraffin oil containing 95 mg. of dried, heat-killed tubercle bacilli (cf. *4*). The second group was given an emulsion of 27 grams of rabbit lung prepared in a similar manner. Both brain and lung materials contained phenol in a final concentration of 0.25 per cent and were heated to 60° C. for 45 minutes to destroy autolytic enzymes. Each monkey received three intramuscular injections of 1 ml. of material into the arm or leg at weekly intervals.

Three of the four monkeys that had received inoculations of brain tissue became ill from 25 to 33 days after the first inoculation or 9 to 19 days after the last injection. At first the animals were quieter than they had been before, sat hunched over, and were inadequately responsive to all stimuli. Shortly thereafter, focal signs of damage to the central nervous system appeared and grew rapidly worse. The localization, sequence of appearance, and speed of development of the signs varied in all three animals. Two showed marked trunk ataxia, and all showed some degree of weakness in one or more limbs. Rotation and retraction of the head and ptosis of the upper eyelids were noted in two animals, and a left internal strabismus and left facial weakness in one. Coarse muscular twitches were seen in all the limbs in one instance, and in another there was evidence of considerable reduction of vision.

The three affected monkeys became ill and were sacrificed by exsanguination on the day of the appearance of symptoms, and 2 and 8 days thereafter, respectively. In each instance it seemed that the animal might not survive for a longer period. Blood cultures proved sterile. Culture of cerebral tissue from one of the monkeys and intracerebral and intraperitoneal inoculation of a brain suspension into three mice and a rabbit were negative.

Post-mortem examination revealed lesions limited almost exclusively to the central nervous system. These resembled in all essential respects the changes

[1] Aided by grants from the William J. Matheson Commission.