Conclusion. Poliomyelitis virus was isolated from the nasopharyngeal secretions of a bulbar case on the 9th day of illness.

The authors wish to acknowledge their appreciation to Dr. Morris Schaeffer of the Bureau of Laboratories, New York City Department of Health, for his valuable suggestions during this work.

9581 P

The Culture and Division Rate of *Dileptus gigas.*

S. RUDIN. (Introduced by J. A. Dawson.)

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Although pedigree isolation cultures of protozoa have been carried on during the last 50 years, relatively few investigators have experimented with carnivorous forms. Woodruff and Spencer[1] and Woodruff and Moore[2] kept *Spathidium spathula* alive for long periods without degeneration, conjugation or endomixis on a diet of *Colpidium colpoda.* Beers,[3] feeding *Didinium nasutum* on *Paramecium caudatum* succeeded in attaining 1384 generations in about a year's time, without any degeneration or internal reorganization of any kind. With these results in mind it was decided to attempt to find a suitable diet for the carnivorous ciliate, *Dileptus gigas,* and to ascertain its division rate on such diet in isolation pedigree cultures.

In 1936 a number of individuals of *Dileptus gigas* were isolated from some of the writer's stock cultures. These cultures were originally collected from Van Cortlandt Park Pond, New York. By preliminary feeding experiments it was soon ascertained that the large, blue *Stentor coeruleus* made an excellent food basis for *Dileptus* and this readily cultured organism[4] was therefore selected as the standard food supply for the experiment. Visscher[5] has described the interesting and unusual manner in which *Dileptus* manages to attack, paralyze, and cytolyze by means of the powerful trichocysts (toxicysts), stentors much larger than itself and feast upon its prey. It is interesting to add that *Stentor,* itself predominantly car-

1 Woodruff, L. L., and Spencer, H., *J. Exp. Zool.*, 1924, **39**, 133.

2 Woodruff, L. L., and Moore, E. C., *Proc. Nat. Acad. Sci.*, 1924, **10**, 183.

3 Beers, C. D., *Am. Nat.*, 1929, **43**, 125.

4 Gerstein, J., PROC. SOC. EXP. BIOL. AND MED., 1937, **37**, 210.

5 Visscher, J. P., *Biol. Bull.*, 1923, **45**.

nivorous, was grown on *Blepharisma undulans,*[4] the latter being supplied with a mixed diet.

On Nov. 21, 1936, two series, consisting of 4 pure lines each, were established. All of these 8 lines were the progeny of a single *Dileptus* isolated from stock culture on Nov. 18. The organisms were kept in Maximow culture dishes in a moist chamber and were isolated daily (occasionally every other day) by capillary pipette under a binocular dissecting microscope. Fresh medium (spring water) and a sufficient number of healthy, washed stentors to insure an excess of food (approximately 25) were supplied at each isolation. The total amount of culture medium used in each dish was 1.5 cc.

Control cultures were set up at the beginning of the experiment. The medium used in these was that from which the stentors were taken and contained only such bacteria as were present there. Survival periods for *Dilepti* placed in the stentor-free medium varied from one to 20 days. Occasionally a *Dileptus,* if well-fed before being placed in this medium, would divide once but never more. It is thus clear that the continued growth and division of *Dileptus* in these experiments are dependent solely upon the presence of *Stentor* in the culture medium.

An attempt was made to keep environmental conditions as constant as possible. The greatest variable encountered was the temperature, which ranged from less than 15°C. to almost 30°C. throughout the course of the experiment. This factor is responsible for most of the deviations shown in the division rate graph for *Dileptus.*

The organisms have been successfully cultivated in isolation culture for a period of 220 days (Nov. 21, 1936, to June 24, 1937), during which time 213 generations have been attained. Conjugation was prevented by the daily isolations. Encystment occurred in one case when the temperature was approximately 13°C. but the encysted *Dileptus* was discarded and replaced with a reserve pedigree individual of the same generation. Occasionally an individual died, but every case of death was accounted for by some accident or imperfect technique.

The graph (Fig. 1) which represents an average of all lines of both series, shows the daily division rate, averaged for 5-day periods. No evidence of decline in division rate is shown. Explanations of high and low points in division rate are given in the explanation of the figure.

Within the present limits of the experiment there is no evidence

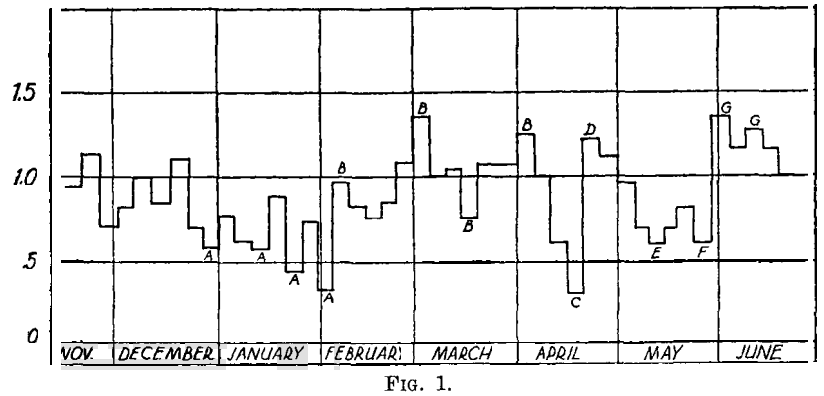

FIG. 1.

The Culture and Division Rate of *Dilcptus gigas.*

A—Low division rate due to low temperature, average 15° C during periods indicated.
B—Variations due to fluctuations in temperature of artificial heating device.
C—Low division rate due to accidental exposure of culture dishes to direct sunlight.
D—High division rate due to removal of organisms to warm shaded place. Temperature average, 25° C.
D-E—Gradual drop of average temperature from 25° to 21° C.
F—Low division rate due to change of technicians during illness of author.
G—Temperature average, 28.5° C.

to indicate any "life cycle" or morphological or physiological degeneration of the experimental animals. This work thus corroborates that of earlier investigators[1-4] who used similar culture methods. More extensive work is now in progress.

The author wishes to acknowledge his great indebtedness to Dr. J. A. Dawson, without whose constant supervision, suggestions, and criticisms, this work would have been impossible.

9582 P

Assay of Thyrotropic Hormone on Day-Old Chicks.

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Of the several methods employed in assays of thyrotropic hormone that utilizing the structure and weight responses of the thyroids of guinea pigs is the most commonly used.[1, 2] Day-old white leghorn chicks have been found not only to respond more sensitively than guinea pigs but also to give a relatively greater weight increase and to exhibit a more uniform thyroid structure.

1 Aron, M., *C. R. Soc. de Biol.*, 1929, **102**, 682.

2 Rowlands, I. W., and Parkes, A. S., *Biochem. J.*, 1934, **28**, 1829.