# SCIENTIFIC PROCEEDINGS

ABSTRACTS OF COMMUNICATIONS.

**Seventy-seventh meeting.**

*Cornell University Medical College.*
*President Jacques Loeb in the chair.*

1 (1179)

## A note concerning strains of Treponema pallidum obtained from the brains of paretics at autopsy.

By **J. A. F. PFEIFFER** (by invitation).

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For the purpose of obtaining information which might assist in elucidating some of the problems regarding syphilis of the nervous system, and determining whether there is any possible foundation for the assumption that a neurotropic strain of the *Treponema pallidum* exists, an endeavor has been made in this laboratory to secure strains of the *Treponema* from the brains at autopsy of cases with parenchymatous syphilis (paresis), by inoculating rabbits with the cortical material; and we have been successful in producing typical lesions in the testicles of rabbits, in which treponemata could be demonstrated.

It would seem pertinent to review briefly the observations of Noguchi in his work on rabbit syphilis. He distinguishes a difference in the morphology of several strains of *Treponema pallidum*. Some of the strains appear notably thinner than others, and this variation in morphology seems to have some distinct relationship to the degree of motility, the infectiousness and facility of cultivation. Three different forms are described. A thick form having a width of 0.3 of a micromillimeter, a somewhat thinner one with a thickness of 0.25 of a micromillimeter, and a thin form 0.2 of a micromillimeter in breadth.

According to Noguchi hard, indurated and sharply defined

nodules are produced in the testicle by the thicker forms in five to six weeks. With the thinner types, however, the incubation period is briefer and in ten to fourteen days the testicle becomes swollen, gradually resulting in a large diffuse lesion.

In reference to the investigations which have been made with strains from the nervous system, it is interesting to note that recently Zinsser has obtained contradictory results to those of Nichols with the identical strain sent him by Nichols. Wile's work with cultures of his strain seem to support the results of Zinsser.

Rabbits were inoculated with material from the brains after death of seven cases of parenchymatous syphilis, and we have succeeded in obtaining strains in four cases.

Two of these strains were lost after the second generation, but of the two remaining, we have been able to continue one to the seventh and the other to the ninth generation. Although these strains have not passed through so many generations, lesions have occurred in a sufficient number of rabbits of each generation to afford some interesting deductions. In reference to the percentage of takes, there has been a slight variation in the two strains studied. While one of the strains has produced lesions in eighty to ninety per cent. of the rabbits inoculated, the other has shown a fluctuation between seventy and one hundred per cent. The incubation periods have likewise exhibited some irregularity. So far they have varied from sixteen to sixty-seven days, but have averaged from nineteen to thirty-one days. Neither of the strains have shown any distinctive features in regards to the incubation time. The character of the lesions has constituted a factor of considerable significance, in that both hard nodules and large diffuse processes have been obtained.

With one of the strains, a majority of the lesions which developed were of the large diffuse variety. It is apparent that in this instance most of the lesions have corresponded to those produced by the so-called thinner forms of treponemata.

The inference seems justifiable, from the work of our laboratory extending over a considerable period of time, that the strains of treponemata designated by Noguchi as the thinner types appear to play as important a rôle in parenchymatous syphilis of the nervous system as the thicker ones.

There would appear likewise no reason to assume that a so-called neurotropic strain exists, but that in syphilis of the nervous system the different forms of the *Treponema pallidum* may be encountered.

2 (1180)

## A sex-intergrade strain of Cladocera.

By ARTHUR M. BANTA.

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The above-mentioned strain appeared about a year ago. For four years the writer had been breeding a number of strains of *Simocephalus vetulus*. For 130 generations reproduction was entirely parthenogenetic. The young were all females, there being neither males nor sexual eggs. In the 131st generation of one of the eleven strains of the species reared under laboratory conditions for so long there suddenly appeared, in addition to normal females, males and *sex intergrades* of many sorts. This strain has continued to produce sex intergrades for a year—more than twenty generations—and the character of the intergrades produced does not seem different now from what it was when the sex intergrades first appeared.

In this species, in addition to the character of the gonads, eight morphological secondary sex characters are recognized. In the sex-intergrade strain the sex array may be roughly classified into normal females, female intergrades, hermaphrodites with various combinations of male and female secondary sex characters, male intergrades, and normal males.

The female intergrades range from females with a single, perhaps poorly developed, male secondary character to those with all the secondary sex characters male. The hermaphrodites have various combinations of male and female secondary characters. There are male intergrades with as many as five secondary sex characters, though ordinarily the male intergrades have only one or two female characters.

The male intergrades usually have incompletely developed reproductive organs. Sperm is produced in various amounts.