From a Mendelian point of view, two classes of broods are expected, if the absent type be the dominant and the present type (specks). The recessive offspring of a pair should be either all without (DD × DD or DD × DR), or 3 absent to 1 present (DR × DR). Two groups, in fact, appear; but when the specks occur, the number of individuals having them departs far from expectation in many cases.

When a fly with specks present is bred to one with specks absent the Mendelian expectation is either all with specks present (DD × RR) or half with and half without (DR × RR). The following cases show considerable departures from expectation.

Absent.	Present.
28	0
48	56
63	3
65	0

The second generation of the last combinations when 100 per cent. absent was obtained, should give the 3 to 1 proportion.

Several other mutants of these flies are under observation. A male in which the red pigment of the eye is totally absent has produced in the first generation, by his sisters, 162 red eyed to one white eyed fly. The results show that the character is germinal, but reappears at present in only a very small percentage of the first generation.

103 (513)

The chromosomes in the parthenogenetic and sexual eggs of phylloxerans and aphids.

By **T. H. MORGAN.**

[*From the Department of Zoölogy, Columbia University.*]

An examination of the ovarian parthenogenetic and sexual eggs of aphids and phylloxerans has shown that the synapsis stage is entirely omitted in the parthenogenetic eggs, both male- and female-producing; while on the other hand the sexual eggs pass through a synapsis period, *i. e.*, a period when the chromosomes contract to one side of the nucleus reappearing later in the reduced number. These observations show that the full number of

chromosomes in these parthenogenetic eggs is due to the omission of a synapsis period, and not due to a separation of the chromosomes subsequent to synapsis. Synapsis appears, therefore, to be a phenomenon associated with the union of the paired chromosomes and to have no other significance for development.

Two years ago I reported that two classes of spermatozoa are formed in phylloxerans, as in other insects, but that the male-producing class degenerates. Consequently all the fertilized eggs have the female number of chromosomes. I reported that, nevertheless, when males appear in the later life cycle, they have a smaller number of chromosomes (one or two less) than the parthenogenetic female or the sexual female. I suggested that one (or two) chromosomes must be lost in the polar body of the male egg. I can now state that this inference is correct, since I have found all stages in the separation of the daughter plates in the polar spindle of the male egg. In the telophase one double chromosome (its halves equal) is found lagging in the middle of the spindle. It passes always to the outer pole, which means that the lagging chromosome passes to a prescribed pole. The theoretical questions involved will be discussed elsewhere. The lagging chromosome lies outside of the nucleus of the polar body, sometimes in a vesicle of its own. In the female egg all of the chromosomes divide equally in the polar spindle and no lagging body is present.

104 (514)

The biological significance of the Sertoli cells.

By **F. M. HANES**. (By invitation.)

[*From the Department of Pathology, College of Physicians and Surgeons, Columbia University.*]

In the normal testicle there are three parenchymatous elements, namely, sperm-forming cells, Sertoli cells and interstitial cells. In the cryptorchid testicle only two types of cells are found, Sertoli cells and interstitial cells. The latter form the bulk of the cryptorchid testicle; the former line, in a synchtial manner, the small seminiferous tubules.

Since the genitalia of castrated animals are very atrophic and secondary sexual characters absent, while both are normally de-