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.

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The biological significance of the Sertoli cells.

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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 developed in cryptorchids, one can conclude, firstly, that the testicle does furnish an internal secretion to the organism, and, secondly, the secretion is elaborated either by the Sertoli cells or interstitial cells. It is the purpose of this note to bring forward evidence which has come to light in a study of normal and cryptorchid testicles of the pig, showing that the Sertoli cells have the very definite function of furnishing nutriment, especially fat, to the developing sperm-cells. Benda, Peter, Grobben, v. Ehner and others have concluded on morphological grounds that the Sertoli cells are nutritive cells; evidence from the physiological side has been lacking.

Fat is a constant physiological constituent of Sertoli cells. In the cryptorchid testicle this fat is seen to be greatly increased in amount, and ether-alcohol extractions show that whereas 18.3 per cent. of the dried weight of the normal testicle is fatty matter, 30 per cent. of the dried weight of the cryptorchid testicle is composed of fat. The sperm-forming cells are absent from the cryptorchid testicle, hence the fat accumulates in the Sertoli cells. Miescher has found that 58 per cent. of the cytoplasm of the salmon sperm is extractable by alcohol-ether.

In the normal testicle large droplets of fat are found in the base of the Sertoli cells, and as one proceeds centralward the fat in these cells is found more and more finely divided, lying in close contact with the spermatids, which also contain fat droplets.

Applying Marchi's stain to the testicle, it is found that only the large peripheral droplets reduce osmic acid; the smaller centrally disposed droplets remain uncolored. The explanation is that phosphorized-fat when treated with potassium bichromate loses its power of reducing osmic acid; neutral fats are not thus changed. This reaction is not seen in the fat of the cryptorchid testicle.