TABLE 1

LATENT PERIODS OF SPAWNING REACTIONS OF FEMALE OYSTERS

Female	Male	Temp. °C.	Lat. per. mins.
O. virginica × *O. virginica*		23	9
"	"	23	20
"	"	23	21
"	"	23	24
O. virginica × *O. gigas*		22	15
"	"	22.5	17
"	"	23	26
O. gigas × *O. gigas*		27.5	15
O. gigas × *O. virginica*		27	9.5
"	"	27	8.0

for stimulation. This may indicate that the sexual products of both species possess similar active principles which induce the spawning reactions.

Eggs of both species were easily fertilized by either sperm, the ensuing development resulting in apparently normal straight hinge larvae. Comparison with controls showed no increased mortality among the hybrids.

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THE STRUCTURE OF CHROMOSOMES OF ZEA MAYS AS REVEALED BY THE FEULGEN REACTION

DURING the progress of a series of studies on the microchemistry of the nucleolus, the Feulgen reaction for thymonucleic acid[1] was applied to root-tips of *Zea mays* fixed according to Zirkle[2] in a solution of sulfuric acid 2 cc, formalin 10 cc, distilled water 90 cc, with a pH of < 1.0.

Staining with haemotoxylin after the above fixative, Zirkle found the chromatin reticulum and periphery of the later spireme and of the chromosomes stained blue, while the nucleoli and "core" of the spireme and of the chromosomes remained colorless. He also describes a physical connection between the nucleolus and the spireme.

Feulgen staining bears out the haematoxylin demonstrated morphology to a startling degree. In the resting cell and early prophase, chromatin granules, chromatin reticulum and spireme are stained a solid, intense reddish-violet; as mitosis progresses and the diameter of the spireme increases, a minute canal appears within the spireme and extends its full length. The appearance of this canal or "core" is accompanied by a decrease in the size of the nucleolus; as the spireme increases in cross-section, there is a corresponding increase in the size of its "core" and a decrease in the amount of nucleolar material visible.

The late prophasic chromosomes have the appearance of tubules of almost uniform bore; the nucleolus may disappear entirely or vestiges may remain to follow the chromosomes to the equatorial plate and again to the poles.

Using monochromatic and polarized light at the highest magnifications available, the writer was unable to observe a physical connection between the nucleolus and the spireme, or to ascertain definitely the existence of nucleolar or other material within the latter. Neither was he able to find mitotic stages which revealed the behavior of the chromosomal "core" during the splitting of the chromosomes at the equatorial plate and during reconstruction, although at the equatorial plate the chromosomes show distinctly their "tubular" structure.

The external diameters of the spiremes and chromosomes, after this fixation, are, taking measured averages, no greater than the external diameters of the spiremes and chromosomes of similarly situated cells, in the same phases, following other fixations. The outlines of the cells are smooth, the surfaces of the spiremes and chromosomes show no undue irregularity; in short, there is no evidence of an artifact greater than that resulting from the fixing of the cells by other methods.

While "tubulated" chromosomes have been described many times previously, they were almost invariably demonstrated by the cruder stains whose action is dependent upon mordanting, length of time of staining and destaining, and various other purely physical factors. Their description after a method which stains chromatin with chemical selectivity may aid in an interpretation of their true structure.

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[1] R. Feulgen, "Die Nuclealfärbung." Handbuch der biologischen Arbeitsmethoden, 213: 1055–1073. 1926.

[2] C. Zirkle, "Nucleolus in Root Tip Mitosis in Zea Mays." Botanical Gazette, 86: 402–418. 1928.

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