

tion of *B. acidophilus* milk and lactose. This corroborates the work of Rettger and Cheplin.

The normal subjects as well as the psychotic patients receiving treatment, gained in weight; but while the latter were improved physically, there was no improvement in their psychoses.

The intestinal flora becomes transformed on treatment with *B. acidophilus* whole milk and lactose, but the relative percentage of gram-positive rods rarely exceeds 70 per cent.

Incubating *B. acidophilus* whole milk at room temperature is satisfactory for only a few days, after which the number of viable organisms decrease rather rapidly and the acidity increases to the point of unpalatability.

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Observations on the behavior of the nucleus and chromosomes in spermatocytes of *Lasiopogon* (Diptera).

By CHAS. W. METZ and JOSÉ F. NONIDEZ.

[From the Carnegie Institution of Washington, Cold Spring Harbor, N. Y., and Cornell University Medical College, New York City.]

In the primary spermatocytes of *Lasiopogon* (species not yet determined) the earliest growth stages resemble those in other asilids (e.g., *Asilus sericeus*);¹ but before growth has progressed very far, the nucleus, which previously has been approximately spherical, becomes irregularly invaginated and evaginated. The nuclear membrane appears to push in around the chromosome threads and the latter to push out into the cytoplasm; so that soon each thread (bivalent) lies in a lobe or pocket, isolated to a great extent from the others. The nucleus becomes converted almost entirely into lobes, which follow the contour of the chromosomes and ramify in various directions through the cytoplasm. There is no uniform configuration; the chromosome threads are long and slender, and often follow a tortuous path, apparently at random save for a slight polarization toward the nucleolus.

As growth progresses the chromosome threads condense and shorten, and coincidently the lobes become less ramifying. This

¹ Metz and Nonidez, *Jour. Exp. Zool.*, 1921, xxxii, 165.

process continues up to the metaphase of the first division, when the chromosomes are fully condensed. The nuclear outline is still persistent at this time and still exhibits an irregular contour, conforming to that of the five bivalent chromosomes.

Aside from the unusual nature of these processes, which, so far as we know, have not hitherto been found in maturation stages, two features appear to be of interest. First is the fact that as the nuclear membrane (or the cytoplasm) pushes in around the chromatin threads, it comes close to, but not in contact with, the threads. This is easily seen, for the nucleoplasm is transparent and the cytoplasm is dark, leaving the boundary, or nuclear membrane, clear cut in outline. If the lobe is cylindrical, as is frequently the case, the chromatin thread extends uniformly through the center (or near the center), like a slender core. This condition, in which the chromosome is separated from the nuclear membrane by a hyaline area of fairly constant thickness, is so uniform and persistent (obtaining throughout most of the growth period) that it can hardly be considered accidental. It suggests that around the bivalent chromatin thread there may be a cortical layer of dense or gelatinous material which holds off the nuclear membrane. This layer, whatever its nature may be, is usually from one to three times the thickness of the chromatin thread, and varies with the latter through the growth period, becoming thicker as the thread condenses.

That the nuclear membrane is held off through the instrumentality of the chromosome itself is indicated by the fact that the diameter of a lobe is usually greatest where the chromosome lies, and that where the lobe extends beyond the chromosome very far it becomes narrowed or closed.

The second point of interest has to do with the fact that the lobes of the nucleus, although often almost completely isolated from one another, apparently never become cut off as separate vesicles. Each seems to retain some connection, even if it is only a narrow channel, with one or more of the other lobes, so that the continuity of the nucleus is maintained.