

A Note on the Early Stages of Nuclear Division of the Large Amœba from Liver-abscesses.

By

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With 7 Text-figures.

FROM some cultures which Major Liston was good enough to send me in the course of the summer, I have been able to obtain the early stages of the nuclear division of the large amœba from liver-abscesses.

From a pathological standpoint it may be interesting to note that Major Liston has since succeeded in cultivating the same amœba on plates exposed to the air in an Indian jail, and that it seems probable that the amœba cultivated from Bombay tap-water is also the same species.

It does not seem to me that these observations of necessity invalidate the possibility that this amœba is one of the agents in the production of liver-abscess, but they certainly point to the crying need for further experimental work on this subject.

The first indication of nuclear division is far more clearly seen on preparations stained with hæmalum than in those stained with iron-hæmatoxylin.

In these preparations a number of rounded amœbæ are met with in which the extra-karyosomic chromatin appears to have been absorbed by the karyosome, which is much swollen (Text-fig. 1) and in some cases vacuolar.

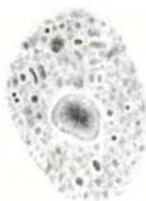
The nucleus at a slightly later stage loses its spherical form and at the same time the karyosome breaks up into a number of lightly staining irregular masses (Text-fig. 2).

The chromatin then becomes concentrated into a large number of deeply staining granules (Text-fig. 3), which are at

TEXT-FIG. 1.



TEXT-FIG. 2.



TEXT-FIG. 3.



1. First stage of nuclear division showing the breakdown of the karyosome.
2. Slightly later stage; the remains of the karyosome have lost to a large extent their affinity for chromatin stains.
3. The chromatin has commenced to condense into granules.

TEXT-FIG. 6.

TEXT-FIG. 5.



TEXT-FIG. 4.



4. The chromatin granules are irregularly scattered through the nucleus, which has assumed an oval shape.
5. A later stage.
6. The chromatin granules are becoming grouped in masses.

first scattered throughout the central portion, of the nucleus, which has by this time assumed an irregular oval shape (Text-figs. 4, 5).

The chromatin granules then become grouped into masses on the equatorial plate of the spindle, which now makes its appearance within the nuclear membrane (Text-figs. 6, 7).

The later stages of this division have already been described in the preceding paper, but it may be pointed out that the reconstructed nuclei of forms which have recently divided are at first very small, and only later attain their usual dimensions.

In conclusion, I should like to point out that at no stage in this division can I find any evidence for the existence of a centriol.

TEXT-FIG. 7.



The chromatin granules have become grouped in masses on the spindle-fibres which have begun to make their appearance.

In a recent paper by Nägler, "Studien über Protozoen aus einem Almtümpel," in the 'Archiv für Protistenkunde,' Bd. xxii, 1911, a dictum of Hartmann and Chagas is quoted with apparent approval (p. 65) "Wie bereits in der Arbeit von Hartmann und Chagas (1910), dargetan ist 'Kann das allgemeine Vorhandensein von Zentralorganen im Caryosom aller Protozoen jetzt als eine Wohl begründete wissenschaftliche Tatsache gelten.'"

Personally I cannot help feeling that this sweeping generalisation, in common with most of the numerous generalisations that have appeared upon the Protozoan nucleus during the last ten years is, to say the least of it, premature.