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SHORT COMMUNICATIONS

SOME PECULIARITIES OF THE FINE STRUCTURE OF MEROZOITES OF EIMERIA STIEDAI

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Abstract. During studies of the asexual stages of the rabbit coccidian *Eimeria stiedai* we observed some peculiarities in the fine structure of the merozoites of this species. On the 13th day postinfection we found an occasional schizont with merozoites containing two and more nuclei. One of the merozoites with already developed organelles was connected with the cytoplasm of the schizont in the unclosed apical part of the conoid area. This finding is exceptional in the schizogony of coccidians of the genus *Eimeria*.

In our earlier studies (Sénaud and Černá 1968, 1969) attention has been given to the fine structure of the asexual stages of coccidians of the species *Eimeria pragensis*, *E. magna* and *E. tenella*. Merozoites of these species are formed after repeated multiplication of the nuclei and their shifting to the periphery of the schizont. The new merozoites appear as an evagination of the shizont's membrane. This shifting of the nuclei to the periphery was not observed by Scholtyseck (1965) in the schizont of *E. stiedai* from the liver of a rabbit; according to his observations the merozoites formed after the multiplication of the nuclei were evenly distributed throughout the cytoplasm of the schizont.

Our studies revealed some peculiarities in the fine structure of the merozoites of the rabbit coccidian *E. stiedai*, which have been described in this paper.

MATERIAL AND METHODS

Four 2 to 3-month-old rabbits were each inoculated orally with 400,000 oocysts of *E. stiedai*. The rabbits were killed on the 13th day postinfection and the material from the liver was prepared for electron microscopic examination (see Sénaud and Černá 1968, 1969). The sections were cut on the ultramicrotome Sorvall-Porter-Blum MT_1 or MT_2 and on the ultramicrotome Reichert OMU_2. The material was examined in the Siemens-Elmiskop microscope.

OBSERVATIONS

1. Multinucleate merozoites

Multinucleate merozoites were first observed in the electron microscope in studies of the schizogony of the intestinal rabbit coccidian *E. magna* (Sénaud and Černá 1969).

Kheissin (1940) found in the same species in light microscopy these multinucleate merozoites and these were also observed by Pellérdy (1953) in the rabbit coccidian *E. piriformis*.

In our material, multinucleate merozoites appeared during schizogony of *E. stiedai* on the 13th day postinfection (Plate I).

2. Anomaly during the formation of the merozoite

In earlier studies on the fine structure of the species *E. magna*, *E. tenella* and *E. pragensis* we found an occasional merozoite in its final phase of development which communicated with its posterior portion with the residual cytoplasm of the schizont. Also in *E. stiedai* we observed similar merozoites with an unclosed membrane in their posterior portion in spite of the fact that the nuclei of this species were not shifted to the periphery of the schizont. In one section, however, we found a merozoite complete with organelles which was connected with the schizont in its apical portion in the area of the conoid (Plate II). This anomaly was emphasized by the fact that another merozoite of the same schizont was also unclosed in its posterior portion but in "normal" fashion.

DISCUSSION AND CONCLUSIONS

It is difficult to obtain a consentient reply to the problem of multinucleate merozoites in rabbit coccidians. Multinucleate merozoites of both *E. magna* (Sénaud and Černá 1969) and *E. stiedai* were observed during the period of intense asexual reproduction of the parasite; this, however, does not exclude the possibility that the first stages of sexual gamonts were being formed. It will be difficult to decide whether the multinucleate merozoites of rabbit coccidians are already the future microgametes or whether a new schizont originates again from the multinucleate merozoite.

The abnormal communication of the merozoite of *E. stiedai* with the cytoplasm of the schizont in its apical portion suggests perhaps only an accidental anomaly since such merozoite has been found only once in a schizont of this rabbit liver coccidian and has not been encountered in any other species of the genus *Eimeria*.

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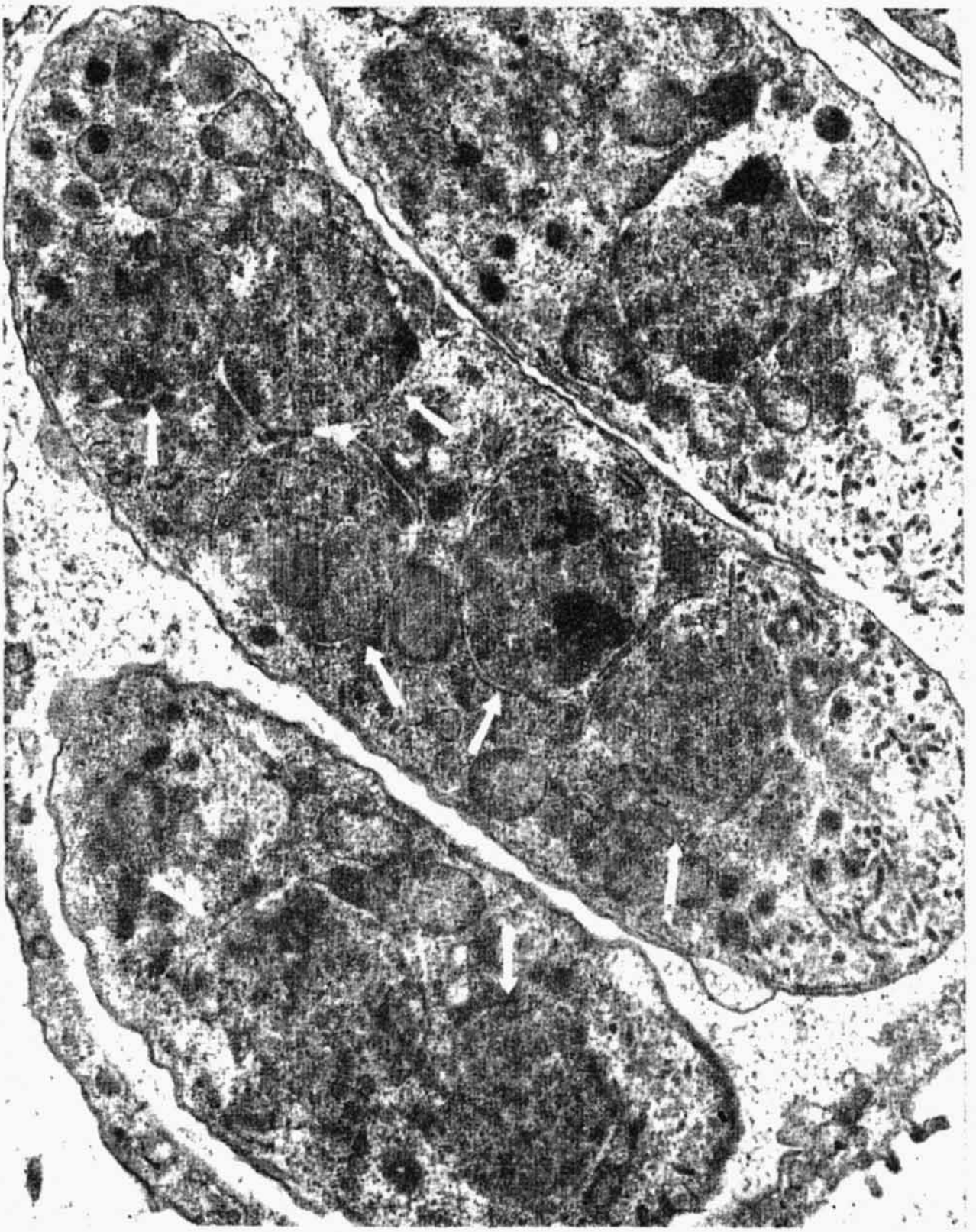
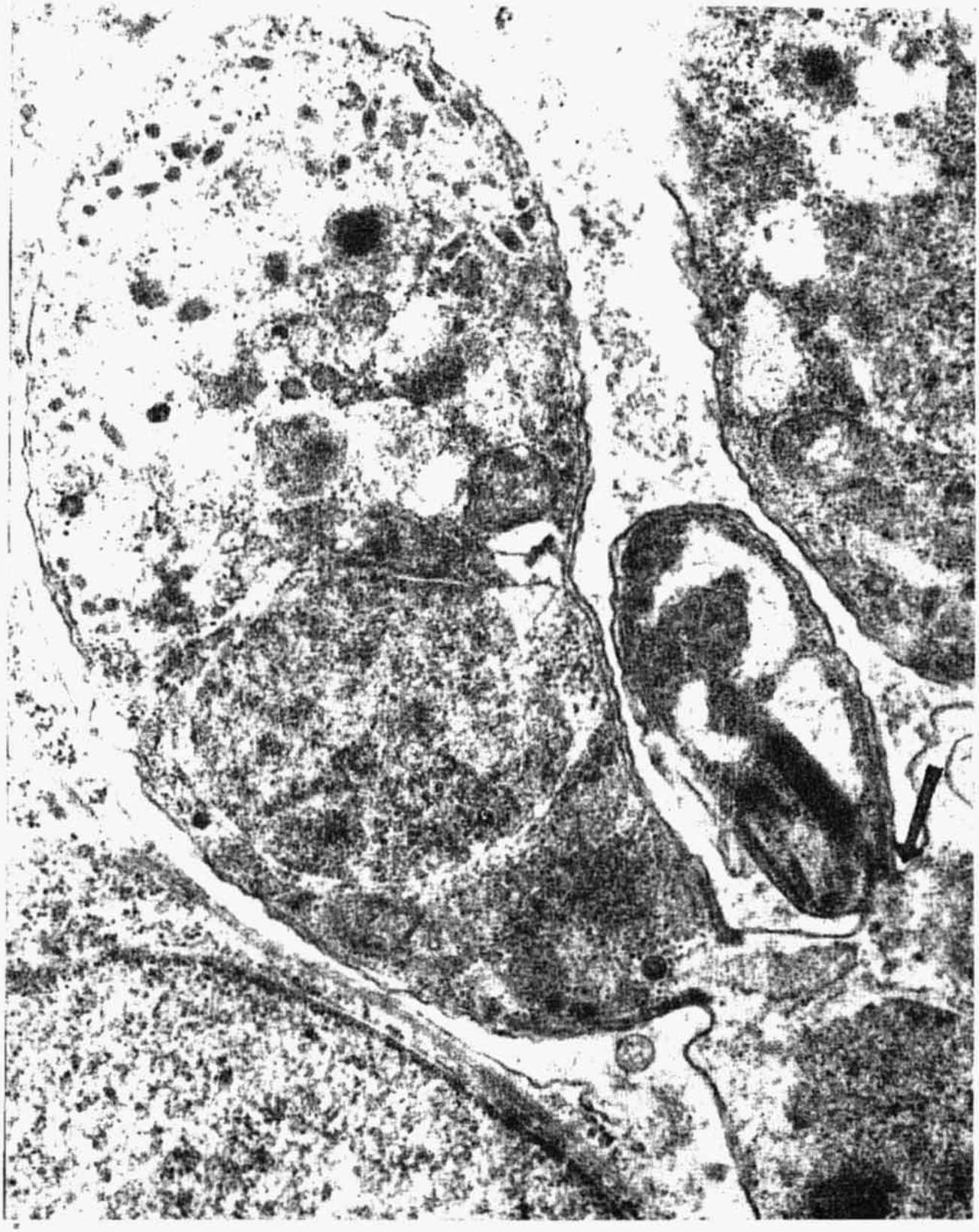


Multinucleate merozoites of *E. stiedai* in the schizont. Arrows pointing to the nuclei in the merozoites (× 19,000).



Two merozoites still communicating with the cytoplasm of the schizont, one of them with the apical portion in the area of the conoid (see arrow). (×32.000).