Bei Anwendung eines anderen Fluorochroms, des Berberins bzw. seines Sulfates, lassen sich *in vivo* die metachromatischen Körperchen selektiv darstellen. Bei Benutzung des OG-5-Glases als Sperrfilter sind sie in leuchtendem Gelb neben der roten Fluoreszenz des Assimilationsapparates zu beobachten; bei Verwendung des Kombinations-Grünfilters (OG 4 + BG 23) erscheinen sie isoliert in grüner Fluoreszenzfarbe. Wenn man von geschädigten oder abgestorbenen Zellen absieht, färbt das Berberin das Kernäquivalent nicht an. Die selektive Speicherung dieses Atmungsgiftes spricht für Chondriosomenäquivalenz dieser Grana. Ähnliche Verhältnisse scheinen bei Bakterien zu herrschen (KRIEG[1]).

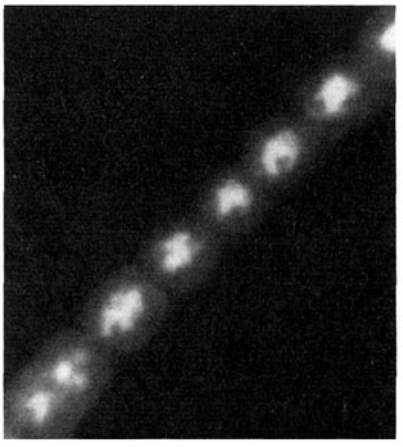

Abb. 3. Zyanophyzee, Typ Nostoc. 1600:1. Polyploide Kernäquivalente – Typ C.

Die von BRINGMANN[2] beschriebenen basophilen Grana, in denen der Autor besondere Kernäquivalente erblickt, sind wohl mit den fluoreszenz- wie auch phasenmikroskopisch darstellbaren Granula identisch, nicht aber mit den hier beschriebenen Kernäquivalenten. Für eine isotope Lokalisation von Volutingranula und Kernäquivalent in sogenannten Karyoiden (BRINGMANN) bei Zyanophyzeen spricht keine meiner Erhebungen.

Phasenoptisch sind den Kernäquivalenten zuzuordnende zentrale Aufhellungszonen in Analogie zu den Verhältnissen bei Bakterien zu erkennen. Im Periplasma sind die metachromatischen Granula als dunkle Körnchen zu erkennen.

A. KRIEG

Mikrolaboratorium Zeiss-Winkel, Göttingen, den 16. November 1953.

Summary

In Cyanophyceae (Oscillatoria, Nostoc), it is possible to show a nuclear equivalent system with the use of acridin orange as fluorochrome. The equivalents are rod-shaped and spiral structures respectively, showing a certain arrangement to each other and to the thread-axis (Oscillatoria), or not (Nostoc). Independently of this, equivalents of chondriosomes may be ascertained in the metachromatic granula on using "berberin" as fluorochrome. The granula contrast with the nuclear equivalent in periplasma. In contradiction to BRINGMANN, an isotopic localisation of nuclear equivalents and metachromatic granula could not be confirmed.

[1] A. KRIEG, Naturwissenschaften *41*, 19 (1954).
[2] G. BRINGMANN, Flora *40*, 398 (1952).

Observation by Means of Electron Microscope on the Blood of Subjects Affected with Scarlet Fever

A notable contribution on the problem always open concerning the etiology of scarlet fever has been brought to mind by observations by means of electron microscope.

Recent observations executed by means of electron microscope have put in evidence formations similar to elementary corpuscles on erythrocytes of circulating blood in subjects affected with scarlet fever in the acute stage of the malady (MULÈ[1]).

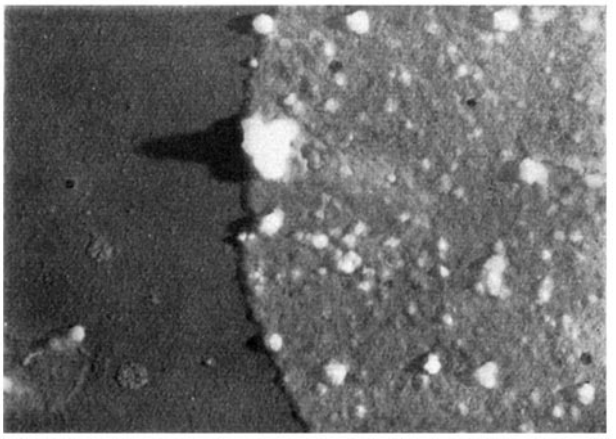

Fig. 1.—Surface of a red blood-corpuscule of a scarlet fever subject withdrawn on the second day of the malady; observation performed after 72 h of incubation. The surface of the red blood-corpuscule appears spread with numerous elementary corpuscles, single and massed (shadows with chromium vapours 18,000 × 1).

In this work it has been proposed to us to extend the previous researches.

The observation was performed directly on the surface of red cells, in cultivation of the blood in nutrient fluids (meat broth containing 10γ of follicular fluid, and relative anaerobiosis with superposition of olive oil).

The experiments were completed by observing the eventual changes visible in the capillaries of the corion-allantoic membrane of embryonated eggs inoculated with the blood culture.

Results. Microphotograph No. 1 represents the surface of a red cell of a subject affected with scarlet fever whose blood was withdrawn the 2nd day of the malady. The observations were performed after 72 h of incubation of the blood in the thermostat. The surface of red cells appears covered with numerous elementary corpuscles isolated and grouped together.

Elementary free corpuscles isolated or grouped, overhanging fluid in the sediment is noted. Such a finding is clearer in the observations on withdrawals performed after 30 days of incubation of blood in thermostat (Fig. 2 and 3).

These corpuscles that we find inside and outside the red cells of blood of scarlet fever patients, are not found in the culture of blood of normal subjects.

With the withdrawals from cultures of thirty days, some chick embryos were inoculated at the 9th day of incubation.

[1] F. MULÈ, La Pediatria *61*, 1 (1953).

In the observation of the corion-allantoic membranes of the injected eggs, after 72 h of incubation, the capillary vessels appear oedematous, swollen, the intercellular spaces are augmented so as to render possible the exit of the red cells from the vessels.

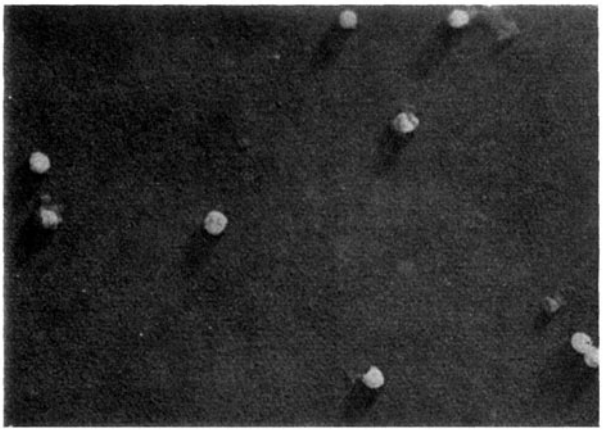

Fig. 2.

The findings to which the most essential data refer are reproducible in sets: on the surface of the red cells of blood of scarlet fever subjects in the acute stage of the malady, we obtained findings somewhat more variable than those in microphotograph No. 1. Nevertheless in the observation performed on the blood cultures, essentially similar findings were obtained in numerous cases.

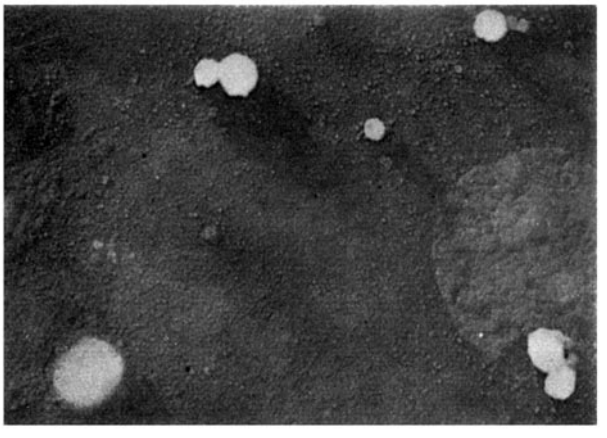

Fig. 3.

Fig. 2/3.—From the culture of blood of scarlet fever subject withdrawn the second day of the malady, observation performed after thirty days of incubation in thermostat. Numerous elementary single corpuscles of the same (Fig. 3) and different size (Fig. 4), are noted (shadows with chromium vapours 18,000 × 1).

The changes of the capillaries of the corion-allantoic membranes of chick embryos infected with cultures of blood of scarlet fever subjects can be reproduced by inoculating the allantoic fluid of these embryos in the allantoic cavity of other embrionated eggs.

Considerations. The morphological aspects of a pathogenic agent barely visible to the optical microscope can be studied only by means of the electron microscope.

From the analysis of results obtained in the performed experiments, it follows that the elementary corpuscles observed for the first time by DI CRISTINA, CARONIA, and SINDONI[1] in culture of blood from scarlet fever subjects can clearly be demonstrated in the electron microscope.

If there be any relations between the adult element visible to the optical microscope and the streptococcus, they do not appear from our observations.

I wish to express my thanks to the Superior Institute of Health in Rome for the hospitality accorded to me for the execution of the researches reported here.

F. MULÈ

Institute of 1st Pediatric Clinic and of Infectious Diseases, University of Rome, February 16, 1954.

Riassunto

È stato eseguito uno studio al microscopio elettronico su culture di sangue di ammalati affetti da scarlattina. Sono stati osservati dei corpuscoli elementari sulla superficie dei globuli rossi ed al di fuori di essi.

Nelle membrane corion allantoidee delle uova inoculate con le culture di sangue di scarlattinosi, i capillari appaiono adematosi, rigonfi, gli spazii intercellulari sono aumentati così da rendere possibile la fuoriuscita dei globuli rossi.

I risultati di questi esperimenti sono riproducibili in serie.

[1] G. DI CRISTINA, La Pediatria *31*, 1 (1923). – G. CARONIA and M. B. SINDONI, La Pediatria *31*, 745 (1924).

Darkfield Microscopy of Living Neurosecretory Cells

During a study of the transport of secretory material in the axons of the neurosecretory cells of the blow-fly, *Calliphora erythrocephala*, it was found that the neurosecretory material could be seen in the living axons when using darkfield illumination (E. THOMSEN[1]). This observation prompted us to examine whether neurosecretory material could also be observed in the pericaryon of the neurosecretory brain cells.

The two medial groups of neurosecretory cells, situated in the pars intercerebralis of the protocerebrum, are recognizable in the living adult fly by their bluish white colour (E. THOMSEN[2]). These cell groups were exised, together with as small and thin a sheet of the surrounding brain tissue as possible, and were then examined in RINGER's solution in the darkfield using ZEISS' darkfield equipment.

Figure 1 shows a photograph of the two groups taken with a Zeiss "Phoku" camera. The neurosecretory cells

[1] E. THOMSEN, Pubbl. Staz. Zool. Napoli *24*, suppl., 48 (1954); J. Exp. Biol. 1954 (in press).

[2] E. THOMSEN, Nature *161*, 439 (1948); J. Exp. Biol. *29*, 137 (1952).