

It will be seen from Tables I to III and Fig. 1 that the anæmia runs a well-defined and reproducible course in all the animals manifesting itself in a lowered erythrocyte and hæmoglobin content within 24 hours after injection. The decrease in hæmoglobin and R.B.C. follow a parallel course, both reaching their minimal values (about 60 and 50 per cent. of normal respectively) between the third and the fourth day after injection and both being restored to normal on the thirteenth or fourteenth day. With the fall in erythrocytes, there is an increase in the number of reticulocytes which reaches its maximum value of about 50 per cent. on the sixth day. After this there is a gradual fall in their number until the normal value of about 1.1 per cent. is reached at the end of 18 days. During the experimental period the animals maintained their normal health and increase in weight. Nor were any ill-effects discernible if animals after recovery from the anæmia were subjected to a second treatment with phenylhydrazine.

These experiments make it clear that injection of phenylhydrazine provides a simple and convenient method of making experimental animals anæmic for the study of the action of hæmopoietic substances.

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¹ Underhill and Karelitz, *J.B.C.*, 1923, 58, 147-51.

² Bodansky, *J. of Pharmacology*, 1924, 23, 127-33.

³ Long, *J. of Clin. Invest.*, 1925-26, 2, 329.

⁴ Wong, *J.B.C.*, 1928, 77, 409.

⁵ Peters and Van Slyke, *Quantitative Clinical Chemistry*, 1932, 2, 668.

**OLPIDIUM UREDINIS PARASITIC
WITHIN THE UREDIOSPORES OF
HEMILEIA CANTHII BERK. AND
BROOME**

THE genus *Olpidium* founded by Schröter includes many species which are parasitic within the tissues of plants. *Olpidium Brassicæ*

(Woro.) Dang. and *O. Viciæ* Kusano cause diseases of cabbage and *Vicia* respectively, particularly the former causes the damping off disease of the cabbage seedlings. *O. pendulum* Zopf is found parasitic within the pollen of aquatic plants. Other species of *Olpidium* are found parasitic within the mycelium of *Saprolegnia*, algal filaments and others.

Olpidium uredinis (Lagerh.) Fischer is known to be hyperparasitic within the urediospores of many rusts, such as *Uredo airæ*, *Puccinia violæ*, *Puccinia rhamnii*¹ and those of *Puccinia coronata* and *P. levis*.² In the course of the studies on some of the uredinicolous fungi, the writer observed that many of the urediospores of *Hemileia canthii* Berk. and Broome being hyperparasitised by *Olpidium uredinis*. Collection of the material was made near Talakad, Mysore State. The affected spores are without any cell contents and fail to germinate when placed in moist chambers. The sporangium of the hyperparasite is single-celled (Fig. 1), hyaline, ovate or spherical. As many as nine such sporangia have been noticed within a single urediospore. The

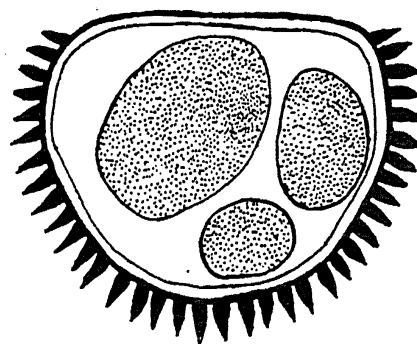


FIG. 1

Urediospore of *Hemileia canthii* parasitised by *Olpidium uredinis*. × 1800.

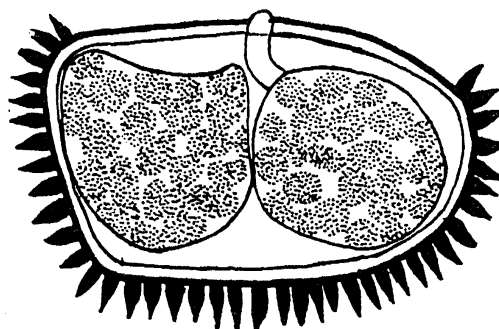


FIG. 2

Formation of zoosporangium, × 1800.

division of the contents of the sporangium into zoospores takes place (Figs. 2 and 3). In one instance the formation of the exit tube which pierces through the wall of the urediospore was observed (Fig. 2). The hypnosporangium can be differentiated from the sporangium by its

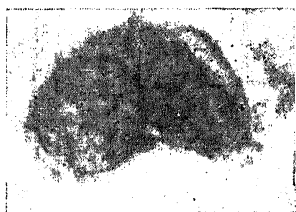


FIG. 3

Photomicrograph of urediospore showing the sporangia of *Oplidium uredinis*.

thick wall, the exospore being smooth and hyaline.

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¹ Fischer, A., *Phycomycetes in Rabenhorst's Kryptogamen Flora*, 1892, 2 Aufl., Leipzig, Bd. I.

² Arthur, J. C., *The Plant Rusts*, (Uredinales), 1929.

A NOTE ON THE RAINFALL AT MADRAS AND BANGALORE

THOUGH Madras and Bangalore are on very nearly the same latitude, the difference between their heights and the distances from the sea, affect the distribution of rainfall in a characteristic way. September is the wettest month in Bangalore while in Madras, November is the corresponding month. January is the driest month in Bangalore and February in Madras. The number of rainy days is very nearly the same, *viz.*, 57.7 for Bangalore and 57.2 for Madras; but the average annual rainfall at Bangalore is 36.05" only while at Madras it is 49.57"; thus on an average more rain falls at Madras than at Bangalore on a rainy day. Madras gets in the North-East Monsoon 63 per cent. of the annual total while Bangalore gets

only 25 per cent., and Bangalore gets 56 per cent. of the annual total in the South-West Monsoon while Madras gets only 31 per cent.

When hourly distribution of rainfall is considered the following interesting details are noticed. If the day is divided into periods of six hours, it is found that at Bangalore the period 6 p.m. to midnight is the wettest part of the day in all the seasons and 6 a.m. to noon, the driest. Madras resembles Bangalore only during the South-West Monsoon; in summer 6 a.m. to noon is the most rainy period and 6 p.m. to midnight the driest period while during the North-East Monsoon season midnight to 6 a.m. is the wettest period and noon to 6 p.m. the driest period. The difference is probably due to conditions of instability developing over land masses towards the evening and early hours of the night and over the sea towards late hours of the night and early hours of the morning.

It is also found that rainfall per rain-hour at Madras is generally greater than at Bangalore in all the seasons.

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THE VERTICAL AND HORIZONTAL SHRINKAGE OF BLACK COTTON SOIL AT MANDALAY, BURMA

WHILST investigating the cause of the excessive and continual warping and cracking of buildings constructed in Mandalay, Burma, an endeavour has been made to trace the Clarke* buckling effect of the substrata during expansion and contraction of the clay under variations in moisture content.

Mandalay soil resembles a black cotton soil, and is slightly calcareous and alkaline. It possesses a massive† columnar structure and it was, therefore, thought that vertical and horizontal contraction of the natural elements during drying might be unequal and hence ultimately