plied to the roots is effective in aiding the recovery of tomato plants that have been exposed to illuminating gas and to ethylene.

CARL G. DEUBER
OSBORN BOTANICAL LABORATORY
YALE UNIVERSITY

RESTING SPORANGIA OF CLADOCHYTRIUM

IN the course of experiments to determine the host range and pathogenicity of *Cladochytrium replicatum* Karling and its growth on artificial media during the past spring and summer, an abundance of resting sporangia were found in most of the host tissues examined. These sporangia are predominantly spherical in shape and vary from 9 to 21 μ in diameter, but oval, lemon-shaped and elongated ones are not uncommon. If the host cell is small and narrow they may frequently fill it and assume its characteristic shape. All resting sporangia so far observed have been markedly hyaline in color, with a fairly thick wall. A large globule usually occupies the center of the cell and is generally hyaline, also, but may sometimes be golden-orange or brown in color. In elongated sporangia two or more such globules may be present.

The outer wall appears to be predominantly smooth, but in a large number of sporangia fine, hyaline, straight filaments or spines radiate from the surface. As many as thirty such slender threads, varying from 4 to 9 μ, have been counted on a single sporangium. Oftentimes they are so fine and colorless as to be almost invisible, and it is not yet certain that they are of universal occurrence or belong to the sporangium at all. Frequently they appear like long filamentous bacteria clinging to the surface. If they are a part of the outer wall, they are obviously unlike the spines on the resting spores of the majority of chytrids.

So far only four cases of germination have been observed. A short sporangial neck is developed, the contents undergo cleavage and a considerable number of zoospores are formed. These pass out of the neck in rapid succession and lie quiescent at the mouth for a few moments before becoming actively motile. Germination and zoospores formation thus appear to be very similar to the same process in ordinary zoosporangia.

The resting sporangia of *Cl. replicatum* are markedly different from those of *Physoderma* and *Urophlyctis* in color, shape and method of germination, according to these observations. On this basis it is now possible to distinguish the genus *Cladochytrium* quite clearly from the other two. Heretofore there have been no sharp lines of distinction between the genera, and many mycologists have separated *Cladochytrium* from *Physoderma* and *Urophlyctis* on the basis of lack of resting spores. In the latter two genera, according to Schroeter, Magnus, Clinton, Bally, Tisdale, Bartlett and others, the resting sporangia are usually dark brown in color, flattened slightly on one side, and at the time of germination dehisce by throwing off a large disk or cap. In *Cladochytrium,* on the other hand, they are predominantly spherical and hyaline, and germinate by the formation of a well-defined exit tube or neck.

JOHN S. KARLING
DEPARTMENT OF BOTANY
COLUMBIA UNIVERSITY

THE PRESENCE OF PHOSPHORUS IN THE SUN

ON the basis of spectrographic evidence phosphorus may now with considerable assurance be added to the long list of elements present in the sun. The observations consist of measurements of recent infrared solar spectrograms which, when compared with the laboratory data of Kiess,[1] show significant correspondence in position and intensity for five lines, all faint in the sun. The apparent absence from the solar spectrum of other phosphorus lines in this region is well explained by the fact that they would be expected to be still fainter and are thus beyond the power of our instruments. The only other known lines of phosphorus, besides these in the infra-red, lie in that part of the ultra-violet region that is rendered inaccessible for astronomical spectroscopy by the opacity of the earth's atmosphere. Full details of this work will be published elsewhere. The strongest lines are at λλ9796, 10529 and 10581 and the corresponding solar intensities are −3, −1 and −1 respectively.

CHARLOTTE E. MOORE
PRINCETON UNIVERSITY OBSERVATORY
HAROLD D. BABCOCK
MOUNT WILSON OBSERVATORY,
CARNEGIE INSTITUTION OF WASHINGTON
C. C. KIESS
BUREAU OF STANDARDS,
WASHINGTON, D. C.

1 *Bureau of Standards Journal of Research,* 8: 393 (R P 425), 1932; also unpublished material.

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