

outer epidermal walls, but did not penetrate the epidermal cells. The palisade cells below were, however, stimulated to form a layer of suberised tissue.

2. The fungus in culture gave rise to perithecia of *Pleospora herbarum*, and the conidia were classed, in the light of recent work, as *Macrosporium sarcinula* Berk.

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**A NEW SPECIES OF HEMITRICHIA  
FROM JAPAN.**

By G. Lister, F.L.S.

(With Plate IV.)

IN April, 1928, I received from Dr Hattori, of the Biological Laboratory, Imperial Palace, Tokyo, Japan, two specimens of Mycetozoa. They are mounted in glass-topped boxes and are accompanied by photomicrographs illustrating their structure.

Both of the specimens had been collected in the palace grounds by the Emperor of Japan himself. They were no chance gatherings, for the Emperor has made a special study of Mycetozoa and has observed them extensively in the field. Students of Mycetozoa in all lands will learn with deep interest that they have so distinguished a colleague.

One of the specimens is a fine growth of *Physarella oblonga* (Berk. and Curtis) Morgan, a species not previously recorded from Japan.

The other is a *Hemitrichia*, the determination of which, as Dr Hattori wrote, presents some difficulty. The tawny-yellow sporangia are clustered and shortly stalked; the walls are broken away above, and the emerging masses of capillitium consist of sparingly-branched flexuose threads marked with three or four smooth or spinulose spiral bands.

In August, 1928, I received from Dr Hattori a further specimen of the *Hemitrichia*, which had developed in his laboratory from a culture of spores taken from the former gathering. He

records that the spores were sown on February 1st, 1928, on carefully sterilised rotten wood, and were kept at a temperature of 21° C.; from April 19th onwards the culture was exposed to the temperature of the laboratory; on April 30th sporangia had formed. This fresh development is perfectly matured and resembles the parent growth in all essentials. The glossy sporangia are pale copper-coloured, curved and somewhat contorted; they are mostly sessile and form a compact cluster about 8 mm. across; the capillitium threads are so little branched as to constitute a twisted skein rather than a network, and are marked throughout with three or four sharply-defined smooth spiral bands, the spirals having a sinistral arrangement.

In some respects this form shows affinities with *Hemitrichia leiocarpa* (Cooke) Lister, a rare species which differs in the sporangia being yellowish-grey and more scattered, and in the spiral markings of the capillitium having a dextral arrangement. In all other species of *Hemitrichia*, as well as in the allied genus *Trichia*, the direction of these spirals is sinistral.

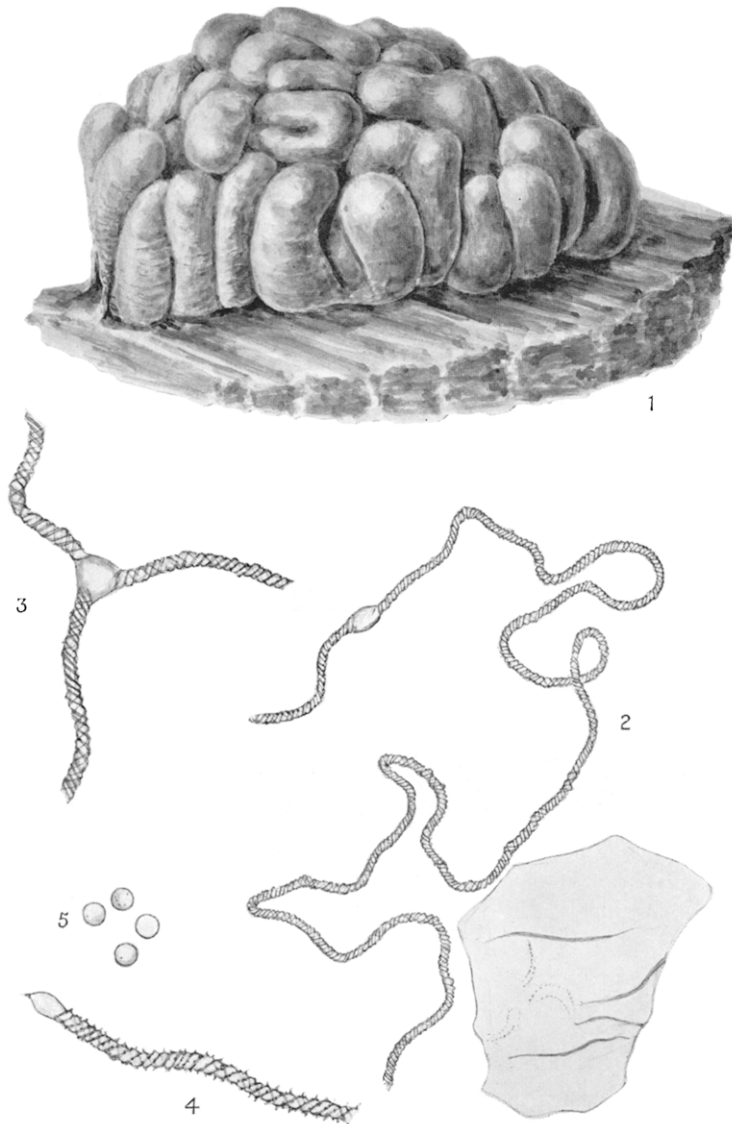
Externally the present specimen closely resembles some developments of *Arcyria stipata* (Schwein.) Lister, a widely-distributed and variable species, recorded from Japan by Mr Kumagusu Minakata, in which the network of capillitium is marked with cog-like or half-ring-shaped thickenings, and also with three or four delicate spiral bands; the latter are often apparent only on the basal threads. The cog-like markings are characteristic of the genus *Arcyria*, and the spiral bands of *Hemitrichia*. Prof. T. H. Macbride therefore in *North American Slime-Moulds* places *A. stipata* in the genus *Hemitrichia* and regards it as "a boundary species."

The specimen we are now considering is, however, from the markings of the capillitium completely a *Hemitrichia*, and one which corresponds with no published description.

Having received Dr Hattori's permission to describe the new species, I have the honour to propose for it the name *Hemitrichia imperialis* to commemorate the fact that it was first gathered by the Emperor of Japan. I may add that the Emperor has graciously presented his gathering to the British Museum.

*Hemitrichia imperialis* n. sp.

Colour of plasmodium not observed. Sporangia clustered, shortly stalked or sessile, cylindrical, curved, 0.8 to 1.5 mm. high, pale copper-coloured, fading to dull tawny-yellow; sporangium-walls more or less persistent, nearly smooth or marked with transverse wrinkles below, smooth above. Stalk nearly black, attaining 0.3 mm. in height, filled with spore-like cells. Capillitium consisting of sparingly-branched flexuose threads,



*HEMITRICHIA IMPERIALIS* N. SP.

4 to  $4.5\ \mu$  diam., unattached to the sporangium-walls and with few or no free ends, marked with three or four prominent spiral bands; the latter are either smooth or spinulose and have a sinistral arrangement. Spores in mass pale copper-coloured or dull yellow, smooth or marked with a few faint scattered warts,  $6.5$  to  $7\ \mu$  diam.

*Habitat.* On decayed wood in the grounds of the Imperial Palace, Tokyo, Japan.

*Latin diagnosis.* Peridiis congestis, curvatis, stipitatibus vel sessilibus, dilute cupreo-coloratis, membrana subpersistente; stipite breve, fusco; tubulis capillitii flexuosis, raro ramosis,  $4-4.5\ \mu$  diam., taeniolis spiralibus, sinistrorsis, 3-4, laevibus vel spinulis minutis armatis; sporis fere laevibus, dilute cupreo-coloratis,  $6.5-7\ \mu$  diam.

Dr Hattori is much to be congratulated on his success in obtaining sporangia from a spore culture, a success rarely obtained in the laboratory with one of the Mycetozoa inhabiting wood.

#### EXPLANATION OF PLATE IV.

Fig. 1. Group of sporangia from Dr Hattori's spore culture; two stalked sporangia are seen to the left, the rest are sessile.  $\times 20$ .

Fig. 2. Capillitium with fragment of wrinkled sporangium-wall.  $\times 280$ .

Fig. 3. Branching capillitium with smooth spiral bands.  $\times 460$ .

Fig. 4. Capillitium showing a free end, and with spinulose spiral bands.  $\times 460$ .

Fig. 5. Spores.  $\times 460$ .

## SOME OBSERVATIONS ON MYCETOZOA OF THE GENUS DIDYMIUM.

*By Dorothy M. Cayley, John Innes Horticultural Institution.*

(With Plates V and VI and three Text-figures.)

SEVERAL species of *Didymium* lend themselves to experimental investigation. The spores germinate easily and well, and though the different species discussed in this paper vary somewhat, germination does not depend, as in many Mycetozoa, on a very delicate osmotic balance between spore content and the surrounding medium or solution.

Within recent years a considerable amount of work has been done by various investigators on the conditions necessary for the germination of spores of different species of Mycetozoa, but very little is known as to the conditions which bring about sporulation. The solution of this problem is very difficult, as normal development must depend upon the complex interaction