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TRIPOSPERMUM CAMELOPARDUS SP.NOV.

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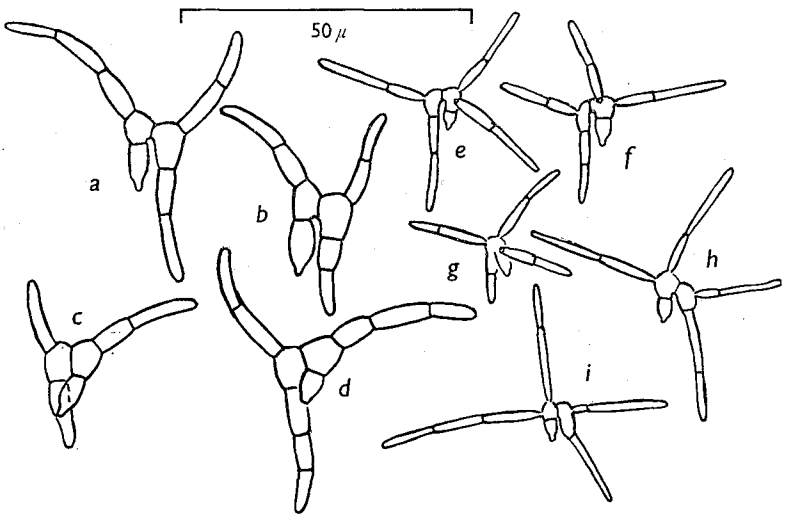
(With Plate 2 and 4 Text-figures)

Tripospermum camelopardus sp.nov. is described. It was grown in culture from a spore from river foam. In addition to spores characteristic of the genus, minute spherical phialospores and structures which are possibly perithecial initials with trichogynes are produced. The temperature optimum for growth is low (around 15–20° C).

In a previous paper (Ingold, 1965) attention was drawn to a rich spora in the foam of small rivers, or rather torrents, cascading down wooded valleys. It was pointed out that a number of spores seen in this spora

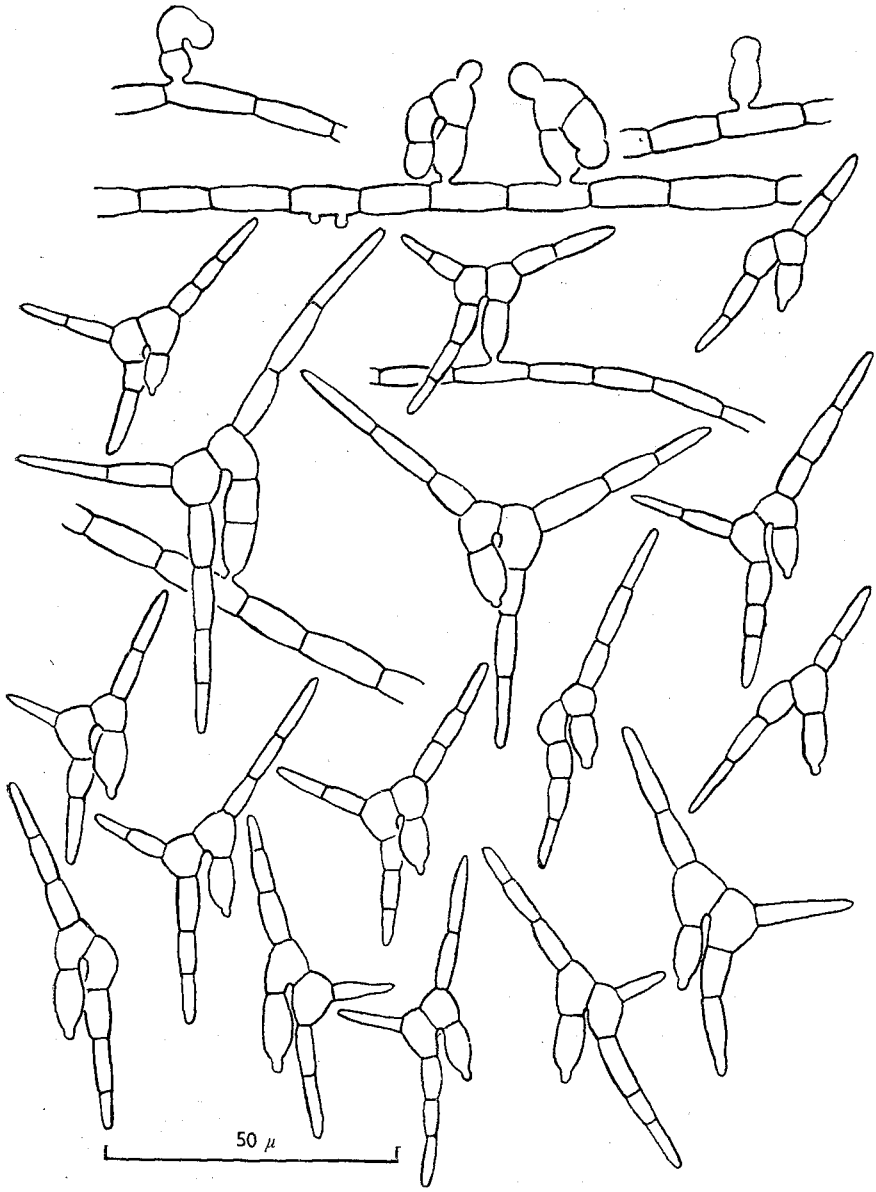


Text-fig. 1. Spores from foam. *a–d*, spores of *T. camelopardus*; *e–i*, spores of another species of *Tripospermum*.

were of types probably belonging to undescribed fungi. In September 1965 the visit of one of us (C.T.I.) to the laboratories of the Freshwater Biological Association on Windermere provided the opportunity to look at the

foam on the Cunsey Beck, which was then in spate. This small river flows steeply from Esthwaite into Windermere.

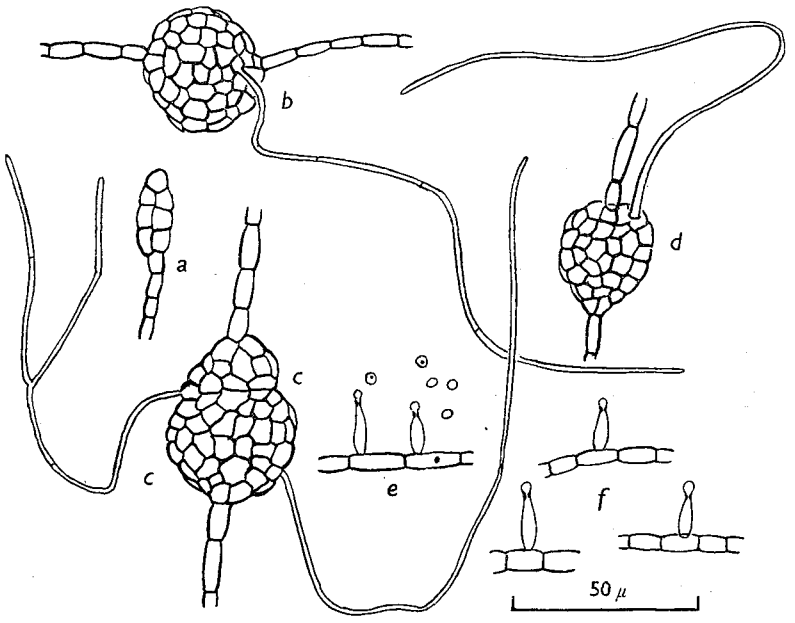
The aquatic spora of the foam contained spores of many well-known aquatic hyphomycetes, but in addition there were other interesting types. In passing it may be remarked that the characteristic spores of *Jaculispora*



Text-fig. 2. *T. camelopardus*. Spores at various stages of development attached to the prostrate mycelium and also a number of isolated spores. All are from water-agar cultures.

submersa Hudson & Ingold were observed. This fungus, originally described from Jamaica, has not previously been reported from Britain. As quite common constituents of the spora, two distinct hyaline spore types clearly belonging to the genus *Tripospermum* were observed. Probably two undescribed species are involved (Text-fig. 1).

In *Tripospermum*, the spore, which is hyaline to fuscous, has a filamentous main axis, sharply bent back on itself at a point about a third of the way along its length, and typically three straight filamentous laterals arising fairly close together near the bent region of the main axis. Of the



Text-fig. 3. *T. camelopardus*, *a*, Young 'protoperithecium' arising in terminal position; *b–d*, fully developed 'protoperithecia' (developed in intercalary position) and each with 'trichogynes'; *e–f*, phialides and phialospores.

two types of *Tripospermum* spore one usually had the full complement of three laterals, but the other never had more than two. Later one of us (P. J. Mc. D.) succeeded in growing a culture from a spore of the latter type derived not from Cunsey Beck, but from Aira Force in Patterdale. This paper is concerned with the description of this fungus based on this single isolate. It should be emphasized that there is no evidence for deciding if this species is aquatic or not.

Tripospermum camelopardus sp.nov. (Text-fig. 2 and Pl. 2)

Fungus mycelio ramoso, septato, fusco. Conidium, ex latere a repente mycelio oriens in brevi sterigmate, paene semper hyalinum (raro fuscum) ramosum, septatum, consistens ex axe principali recurvato et uno aut duo (numquam tribus) rectis lateralibus ramis. Axis principalis conidii 4–5 septatus, ita recurvatus ut breviorem proximalem partem (15–20 μ longam, 5 μ latam basi mammilliformi) formet et distalem partem

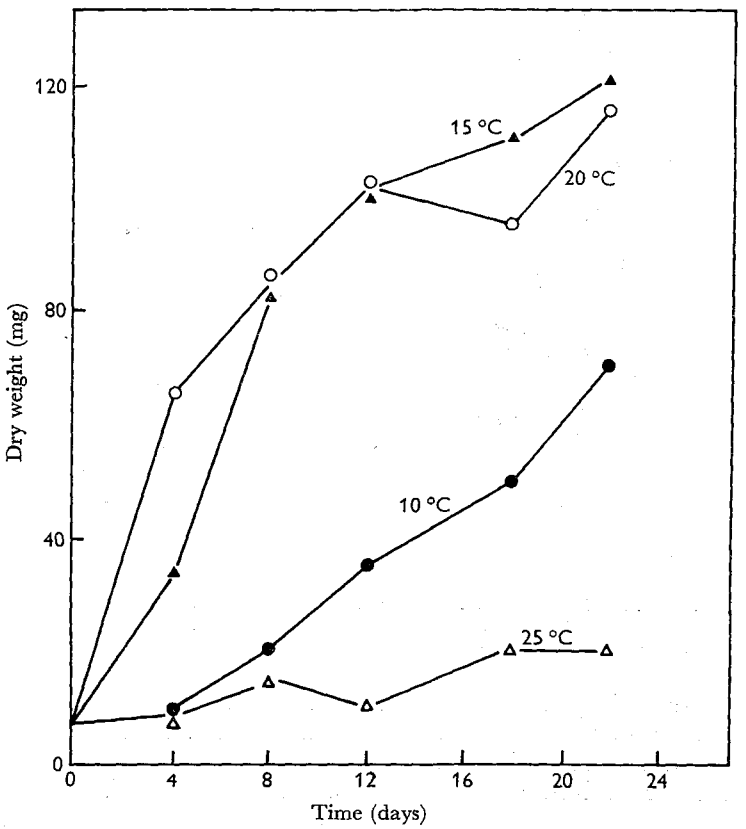
(25–40 μ longam, 3–4 μ latam). Proximales et distales partes principalis axis plus aut minus parallelae. Ramus conidii, qui primum oritur ex proximali parte principalis axis, 15–35 μ longus, 3 μ latus, 1–2 septatus. Ramus conidii, qui post primum oritur ex distali parte principalis axis, 10–20 μ longus, 3 μ latus, 0–1 septatus.

Hab. Ignotum. Fungus colitur in agaro ex conidio a spuma, Aira Force, Cumberland, Anglia.

Typus. Herb. **IMI** 123907.

The specific epithet was suggested by the fancied resemblance of the spore to a giraffe.

The fungus grows slowly on most media tested producing essentially the same type of colony. On 2 % malt agar a dense colony with compact low



Text-fig. 4. *T. camelopardus.* Dry weight plotted against time for cultures grown in 2 % malt solution at various temperatures. Each point is the average of two flask cultures. Dry weight at zero time is that of the agar disk with mycelium used as inoculum.

aerial growth is formed which is dark grey to almost black. On this medium comparatively few spores are produced and they tend to have brown walls, the individual cells being crowded with oil droplets. Strangely enough the fungus grows quite vigorously on 2 % unwashed agar made up with tap water but lacking any other food supply. A rather

thin colony is formed with little aerial growth, but abundant formation of hyaline spores occurs.

Hughes (1951) dealt with the morphology of described species of *Tripospermum*, and Ingold & Cox (1957) have given a detailed account of *T. myrti* based on studies of a pure culture isolated from spores derived from stream scum in Kent. In many ways *T. camelopardus* strongly resembles *T. myrti* and spores of the latter lacking one of the three laterals (and such spores are commonly to be seen particularly in culture) may be indistinguishable from those of *T. camelopardus*. However, of the many spores of the latter seen in the scum and of the thousands of spores examined from culture, none had more than two laterals and quite often only one.

Another feature of cultures was the production of what looked like protoperithecia. These started as parenchymatous terminal, or more commonly intercalary, structures which enlarged and eventually became hollow. From these there arose filamentous outgrowths very different from the normal mycelium. They were hyaline, unbranched, or sparingly branched, and with few septa. Perhaps they are to be regarded as trichogynes, and for this interpretation there is additional evidence. In cultures on some media the mycelium produced lateral phialides forming small colourless spherical phialospores 2–3 μ diam. (Text-fig. 3). In liquid shake-cultures, in which phialospores and the supposed protoperithecia with trichogynes were formed, the phialospores not only adhered thickly to the trichogynes, but also apparently fused with them. These spores showed no tendency to adhere to the ordinary vegetative hyphae. The failure of these protoperithecia to develop further may well be due to the fact that throughout this work an isolate derived from only one spore was studied. Possibly complementary mating types are necessary for the production of the 'perfect' state.

The fungus grows readily both on solid and in liquid media. Text-fig. 4 gives growth curves at a number of temperatures. It is of interest that the optimum is rather low, perhaps around 20 °C. At 25° growth is considerably reduced. It might be remarked that generally aquatic fungi tend to have low optima (Thornton, 1963) and the temperature relations, perhaps, suggest that this may be a truly aquatic species.

We express with pleasure our thanks to Professor E. H. Warmington for his lively help in the preparation of the Latin diagnosis.

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EXPLANATION OF PLATE 2

Tripospermum camelopardus

Fig. 1. Prostrate mycelium on water agar with developing spores. × 800.
Figs. 2–5. Liberated spores. × 800.
Fig. 6. Intercalary 'protoperithecium' with two 'trichogynes'. × 400.

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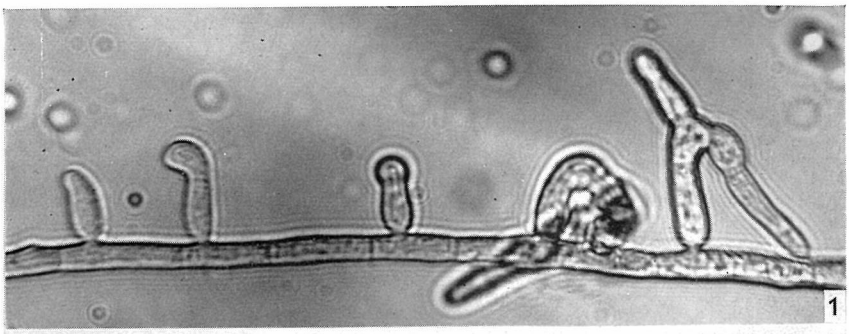

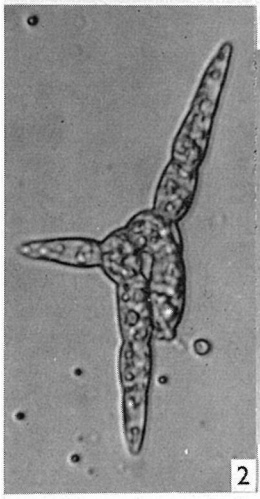

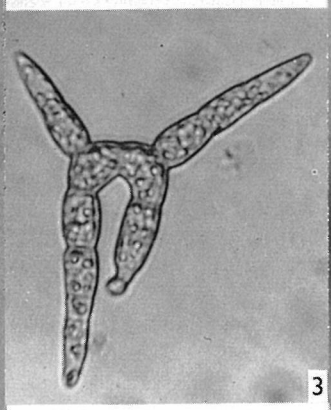

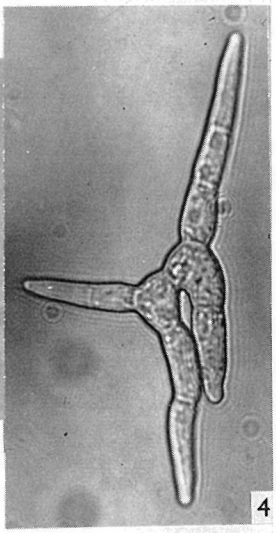

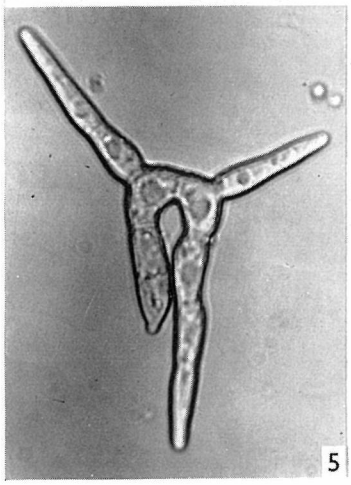

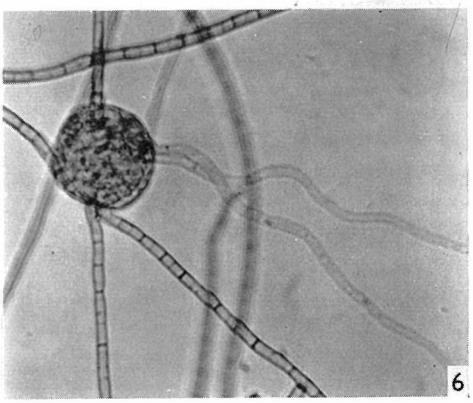

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