

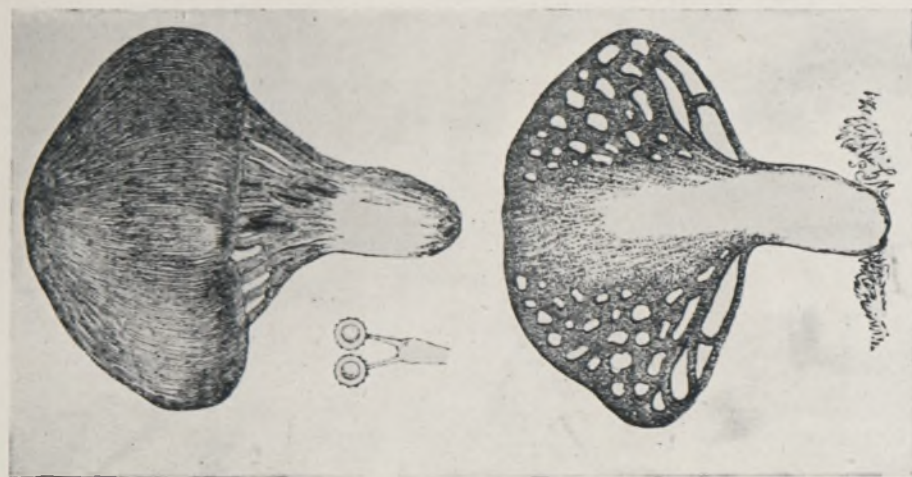
#### IV.—FUNGI OF SPECIAL INTEREST FOUND BY EARLY COLLECTORS.

Of the fungi which attracted the attention of the early travellers and collectors, several of particular interest belong to the series of the Gasteromycetae named by Fischer (1933 : 109-119) the Podaxineae, a series which comprises the families Secotiaceae and Podaxaceae. The Secotiaceae are a very interesting family ; they have characters suggesting the Agarics, and characters apparently connecting them with the Hymenogastraceae, which they resemble in later stages of development.

The Rev. M. J. Berkeley (1843 a : 200) in his introductory remarks to his paper " On two Hymenomycetous Fungi belonging to the Lycoperdaceous group " writes as follows :—

" Few fungi have as yet been received from South Africa ; but, from the collections hitherto made in that country, it is evident that far the most striking feature is the variety of forms under which the Lycoperdaceous group presents itself to the notice of the mycologist. Not only the common European genera and even species occur, while the curious *Battarea*, represented by the British species accompanies them ; but we have *Podaxon carcinomatis* on the ant hills, differing altogether in habit from any European species."

*Secotium Gueinzii*, the type species of the genus *Secotium*, was briefly described by Kunze (1840 : 322) and in more detail by Berkeley (1843 a : 201) whose illustration is reproduced. [Plate 5 (a)]. It was found by Gueinzus in 1839 " in arenosis Promontorii Bonae Spei " and shortly afterwards, also in 1839, by Zeyher at Uitenhage. *Secotium Gueinzii* was not found again for nearly one hundred years ; in December, 1932, it was collected at Brackenfel, near Bellville in the Cape Province by J. P. H. Acocks. Some 25 species of *Secotium* have been described, mostly from Australasia ; only three species have been recorded from South



*b* *Macowanites agaricinus* Kalchbr. (after Berkeley 1876 b & c).



*a* *Secotium Gueinzii* Kunze (after Berkeley, 1943 a, Tab. V).





*Polyplocium inquinans*.

Plate 6.—*Polyplocium inquinans* Berk. (after Berkeley, 1843 a, Tabs. VI-VII).



Africa. A species of the nearly related genus *Gyrophragmium*, *G. Delilei* Mont., has also been collected in recent years by Acocks at Bellville and in the arid regions of Kimberley, Kuruman and Barkly West.

The second of the 'Two new fungi' described by Berkeley (l.c.) was *Polyplocium inquinans*, and his excellent illustration is reproduced here. The type was found by Burke and Zeyher on the banks of the Orange River, and this rare fungus was not recorded again for 80 years, when Dr. Pole Evans, in 1919, found it near Lake Chrissie in the Transvaal and again, in 1924, at Armœdsvlakte. The only other collector who has added to our knowledge of this remarkable fungus is Gideon Joubert, a farmer of the Cape Province, a keen observer and one intensely interested in plants. From 1918 he was farming at Knapdaar in the Burghersdorp district, where he found *Polyplocium inquinans* on several occasions. He sent specimens to Pretoria in 1921 and in 1936, and saw others in too advanced a state of development to send by post. On one occasion he found two particularly fine specimens, one of which measured 17 inches in diameter. His son also saw this fungus, growing at Vlei Draai near Franklin in East Griqualand, but did not know that it was of any particular interest and did not collect it.

A third fungus of this group is *MacOwanites agaricinus* Kalchbr. The genus was first named MacOwania (Berkeley 1876 a : 249) and (1876 c : 785), but a change of generic name was necessary as Professor Oliver had already published a genus of Compositae under that name. This fungus is known only from the type collection made by MacOwan at the foot of trunks of *Acacia Karroo* in fields near Somerset East. Kalchbrenner (1882 a : 107) says that *MacOwanites agaricinus* is the size of a small potato and has a strong odour of garlic. The type is *MacOwan* 1211, of which there are several slices in the South African Museum, Cape Town, one slice in the National Herbarium, Pretoria, a slice at Kew and another slice at Upsala (Zeller & Dodge, 1937 : 636). At Kew there are two water colour drawings, showing this fungus with pileus buffy brown, gleba isabella colour, and stipe white, with cut surface cartridge buff or a little darker below. These drawings seem to have been based on another specimen, perhaps the one at Upsala, which is much less expanded than those in other herbaria; they were reproduced in black and white by Berkeley (l.c.) [Plate 5 (b)]. Dr. Pole Evans sent a photograph of Berkeley's illustration to Gideon Joubert, but he was unable to find anything resembling it, and the fungus has not been found by any other collector. Only one other species has been assigned to this genus, it was found in Oregon and California and named *MacOwanites magnus* Parks.

Familiar to every traveller through South Africa in the summer and autumn are the sporophores of *Podaxis*, which stand like sentinels on termite hills in many parts of the country. (Plate 7.) They could not fail to attract the attention of the early travellers and collectors.

The first specimen to be sent to Europe was collected by Thunberg and described by the younger Linnaeus (1781 : 453) as follows:—

“*Lycoperdon carcinomalis clavatum stipite cylindrico recto.*

Habitat in Cap. bonae spei, D. D. Thunberg.

Fungus statura Agarici pileo nondum a stipite distincto clavatus.

Clava ovata-oblonga, basi dehiscente tomento et farina fusca.

Stipes cylindricus fibris rectis.

Pulvis in Capite bona spei ad Ulcera cancrosa in usu est.”

The specific name used by Linnaeus evidently had reference to the supposed efficacy of the powdery mass of spores in the prevention of carcinomatous ulcers. In his *Prodromus* (1800 : 182) and *Flora capensis* (1823 : 756), Thunberg states : “Crescit in summis apice acervorum *Termium argillaceorum*. Usus : Pulvis contra ulcera cancrosa adhiberi dicitur.” Pappe (1850 : 31), the first colonial botanist at the Cape, describes the *Podaxis* as “*Scleroderma carcinomale* Pers., a mushroom of an oblong, club-shaped form, which grows gregariously on ant hills. It contains a blackish powder (seeds) which is used occasionally for curing carcinomatous ulcers.”

Burchell's collections of fungi unfortunately have not been traced, but in the Gubbins Library (University of Witwatersrand) there is an admirable drawing (No. 606) labelled "*Lycoperdon formicarum*—*Lycoperdon carcinomale* Syst. Beg. Intus scatens pulvere nigro-fusco". I am indebted to Mrs. Helen M. McKay, author of several papers on 'William John Burchell, Botanist' for drawing my attention to this drawing, and to the trustees of the Gubbins Library for permission to reproduce it. (Plate 8).

Fries changed the name of this fungus to *Podaxon carcinomalis*. It was collected again by Drège "inter Omtendu et Omsamculo in campis collinis herbosis" and by Zeyher "on ant hillocks, Uitenhage, Zeyher 99". By this time, Berkeley (1843 b: 522) refers to it as "the old species *P. carcinomatis*", and points out (1843 a: 200) that "the specific name is so spelt in the Linnaean Herbarium where the original specimen remains in excellent preservation."

Recent research (Morse 1933: 27) identifies *Podaxon carcinomale* with *P. pistillaris*; the latter was described in 1771 as *Lycoperdon pistillare* Linn. from a specimen collected in India. This specific name therefore has priority as also the generic spelling *Podaxis* over *Podaxon*. The fungus is therefore now known as *Podaxis pistillaris* (Linn. ex Pers.) Fr.; it is a widely distributed species, found intermittently in a belt encircling the earth approximately within the fortieth parallels north and south (Morse 1933: 1).

Some Lycoperdineae of special interest were also found by early travellers and collectors.

In 1838, there travelled in South Africa a Quaker missionary, James Backhouse, who, being a nurseryman of York, England, was naturally interested in plants. In the Albany District he collected a specimen of a curious fungus which was described by Berkeley (1844: 193) as *Broomeia congregata*, new genus and species. This interesting fungus may be described as a compound Geaster, an aggregate of a varying number of individuals surrounded by a common outer peridium. The type has over 150 individuals; Pole Evans and Bottomley (1919) found specimens with the number of individuals varying from 60 to 900.

Several mycologists have mentioned the characteristic odour of this *Broomeia*: "When fresh or moistened, it exhales a strong scent of aniseed" (Berkeley l.c.); "Non oculis sed naso detexit monet MacOwan" (Kalchbrenner 1882: 108); "Fungus insignis caryophylli odore" (v. Thumen 1876: 424). Later Pole Evans (1917: 4) wrote "The plants emit a strong, though somewhat pleasant smell of benzaldehyde, and their presence in the bush can be frequently detected from the odour emitted."

Backhouse reported that the fungus occurred on rotten wood, but MacOwan pointed out that it occurred under Acacias, and later observations indicate that it is usually found close to the foot of such trees.

MacOwan was evidently very much interested in *Broomeia congregata*, which he collected under Acacias on the banks of the Klein Vis Rivier near Somerset East and also not far from the Boschberg Mountains. It was also found at Inanda by Medley Wood. Portions of all these collections are to be found in Kew Herbarium and there is a portion of the Boschberg collection in the Herbarium of the South African Museum, Cape Town. In 1877, in the Cape Monthly Magazine, MacOwan published an "Inquiry for two Cape Fungi, *Broomeia congregata* Berk. and *Podoxan carcinomatis* Fr." The fungi were briefly described and an appeal sent out for specimens. In 1882, *Broomeia* was listed in *Fungi MacOwaniana* (Kalchbrenner l.c.).

This fungus was also found in Damaraland by Capt. Eén; he was a Swedish master mariner who, in 1866, joined the traveller Charles John Andersson, his fellow countryman, whose field was the northern part of what is now South West Africa, between the Swakop and Cunene Rivers (Wallis 1936: 354). On more than one occasion Capt. Eén took charge of Andersson's wagon train and he conducted a trading expedition as far north as Ondonga (Wallis 1936: 361). In the course of his travels he must have become interested in natural history for "in 1879, Capt. Eén brought back from Damaraland a few specimens *Broomeia congregata* which he divided between the British Museum and Kew. They were



Plate 7.—*Podaxis pistillaris* (Linn. ex Pers.) Fr. growing on termite hills. (Photo.: R. A. Dyer.)





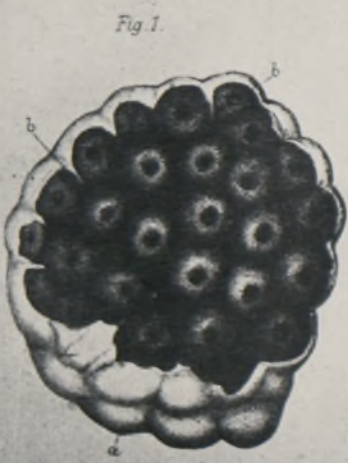
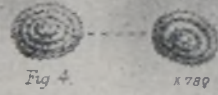


Plate 8.—*Podaxis pistillaris* (Linn. ex Pers.) Fr. Burchell's drawing of "*Lycoperdon formicarium*—*Lycoperdon carcinomale*". (Photograph by courtesy of the Gubbins trustees.)



G. Murray.

LINN. SOC. JOURN. BOT. VOL. XX PL. 29.



Bergius del. et lith.

**BROOMEIA CONGREGATA, Berk**  
*showing outer and inner peridia*

Hanhart imp.

Plate 9.—*Broomeia congregata* Berk. (after Murray, 1884, Pl. 29).



exhibited at the time by Mr. Thistleton Dyer, who called attention to the interest of the specimens." (Murray 1884 : 311).

There was evidently some discussion about the structure of the outer peridium, which was later accurately described and figured from Een's specimens by Murray, (l.c.) (Plate 9) for in 1883, MacOwan (1883 : 373) gave his own observations on this fungus, which bear out the details later published by Murray. He says that "if the Rev. C. Kalchbrenner and myself had been able to carry out our original idea of publishing an extended paper on the South African fungi collected by myself, there would have been no question as to the outer peridium. My venerable friend has, no doubt, the MS. notes upon this rarity, which I have sent to Kew, to Vienna and to sundry private mycologues."

*Broomeia congregata* has been found a number of times in recent years, always on the ground, in close proximity to the trunk of living trees of *Acacia Karroo* (Pole Evans and Bottomley 1919 : 189). It is, however, not very common and is sporadic in its appearance.

A second species of *Broomeia* was found by Emil Holub, a Bohemian explorer and naturalist, who made three exploring trips in Southern Africa between 1872 and 1879, reaching the Zambesi and the Victoria Falls. This species was described by von Höhnelt as *Broomeia ellipsospora* and said to occur "in sabulosis africa australi". *Br. ellipsospora* was also found in Mozambique territory by the Rev. H. Junod, the Swiss missionary and collector, and has been collected several times in South West Africa, the Transvaal and the Orange Free State.

Owing to their ephemeral character, records of the occurrence of the Phalloids are comparatively few, but are of exceptional interest.

One of the most beautiful and remarkable of the phalloid genera, *Kalchbrennera*, is represented by a single species, and is known to occur only in southern and tropical Africa. The genus was named after the well-known Hungarian mycologist, Kalchbrenner, who sent specimens to Berkeley (1876 b and c) for description; the species, *K. Tuckii*, was named after the collector of the original specimen, William Tuck, formerly Curator of the Botanic Garden, Grahamstown.

The white volva of this fungus, measuring about 1½ inches in diameter, is half buried in the soil. From the volva emerges a hollow stalk, about 4 inches long, which is cylindrical or becomes gradually broader upwards; it is pale waxy yellow, tinged with red above, and is spongy in texture. At its top, the stalk merges into a hemispherical receptacle, formed like a narrow meshed trellis, and from this arise a number of 'processes'. The processes are 12-16 in number, one half to three quarters of an inch long, bright cinnabar red to scarlet in colour; they are simple and nail or clubshaped, or once or twice bifurcate, and have a transversely wrinkled surface. On the hemispherical receptacle, between the bases of the processes, is spread the even stratum of spores, of which the olive black colour throws the scarlet processes into bold relief. (Plate 1. Frontispiece.) Like most of the phalloids, *Kalchbrennera* has a strong and extremely disagreeable smell.

"Springing up after rainy, thundery weather and decaying in the course of twenty-four hour, this very interesting plant has occurred three or four times in rough places of the mountain Boschberg in East Somerset, Cape Colony, amongst *Acacia* thickets, where it was found by Julius Tuck, formerly prefect of the Botanic Garden and sent by Mr. MacOwan, Professor in Gill's College, Somerset East, a diligent collector of the Fungi in his neighbourhood", (Berkeley 1876 b : 248). It was also collected by Medley Wood in Natal and by Trollip near Bedford, at the foot of the Kagaberg. More recently, *Kalchbrennera* has been found in a number of localities, especially in the Cape and Natal; one collection was made at Knapdaar by Gideon Joubert.

The same fungus was collected by Welwitsch in tropical Angola, where it was found amongst plantings of *Zea Mays* in damp sandy loam, often three days after rain—usually after thunder storms. The specimen which was found at Pungo Andongo (*Welwitsch no. 119*) was described in 1868 as *Lysurus corallocephala* Welw. and Curr.; this specific name therefore has priority and the fungus is now known as *Kalchbrennera corallocephala* (Welw. and Curr.) Kalchbr.

Another phalloid found in Natal by Medley Wood was studied by MacOwan. Accompanying a sketch on an herbarium sheet in Kew Herbarium, there is the following note, apparently in MacOwan's handwriting: "We have a curious Phalloidea under description, very close to Kalchbrennera but quite generically distinct. This is the aspect. The crown of processes is of a magnificent yellow-scarlet, like Clathrus. The sporiferous centre dull bistre and slimy of course, the stipes waxy yellow, loosely cellular. I have not yet heard from Kalchbrenner about it. The scent is ten times worse than *Phallus impudicus*." This is the fungus originally collected at Inanda by Medley Wood and described as *Anthurus Woodii* MacOwan (Kalchbrenner 1880 a : 23); later it was transferred to the genus *Lysurus* by Lloyd. It grows on old cow dung, and appears to be fairly common in the Cape and Natal; it has also been seen in the Transvaal.

The earlier botanical travellers were collectors in search of flowering plants. Some of the larger fungi which attracted their attention were collected, but until MacOwan and Medley Wood began systematically to collect fungi in the eastern Cape and in Natal, the smaller fungi received little attention.

One of the earliest collections of a parasitic fungus was made by Thunberg, who found on the leaves and twigs of *Podocarpus* the ascomycete now known as *Corynelia uberata*. According to Thunberg (1800 : 176 and 1823 : 743) "Crescit in foliis et ramulis arborum in sylvis Houteniquas Grootvadersbosch et aliis". The single collection, of which a portion is in the herbarium of Elias Fries, was apparently divided and studied by a number of European botanists. It was described under a number of names. The authentic name, *Corynelia uberata* was proposed by Acharius in Fries: *Observationes Mycologicae* (Fries 1818 : 343-344, Plate 8, Fig. 1, a-e). The varied and rather dubious synonymy is discussed fully by Fitzpatrick (1920 : 247-251). Acharius, in connection with his description, cites *Mucor clavatus* Linnaeus f. (1781 : 453) and *Sphaeria turbinata* Persoon (1801 : 95) as synonyms, but this cannot be confirmed as a search for authentic material of the two latter species was unsuccessful.

Fitzpatrick's illustrations, which are reproduced, give an excellent impression of the appearance of *Corynelia uberata* Fr. ex Ach. (Plate 10). The fungus is extremely common throughout southern Africa on leaves, twigs and fruit of the Yellow-woods, *Podocarpus* spp. According to Fitzpatrick (l.c.) the same species has been found in Japan and in the Phillipines.