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Some interesting Micro-Fungi from flood affected Substrata in Poona, India.

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With 6 Textfig.

The unprecendented floods that visited Poona on the 12th of July, 1961 left behind a large number and varieties of substrata as well as consumers goods completely soaked in the waters and mud brought by them. These substrata soon started developing many types of moulds and microfungi. A survey and detailed study were undertaken of these micro-fungi as, such a study was always helpful in determining the occurence, distribution and the sources of pathogenic fungi. The total number of fungal genera collected by the writer is over 25 comprising mostly of *Hyphomycetes*, and a few of *Zygomycetes*. It was interesting to note that different substrata showed

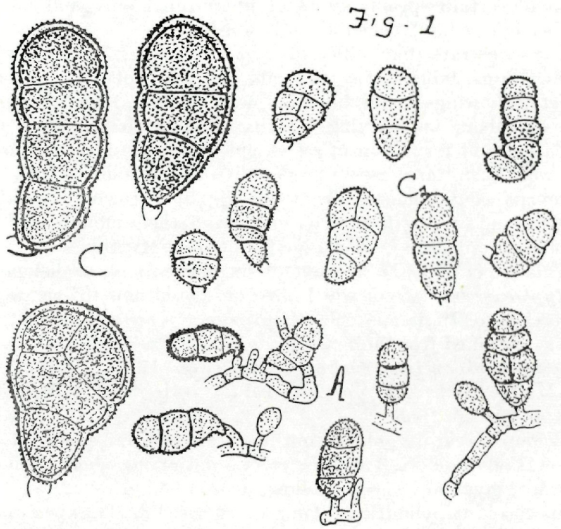

Fig. 1. *Sporodesmium backeri* Syd. — A. Conidiophores with spores × 440. — C_1 Developmental stages of Conidia × 440. — C. Conidia × 950.

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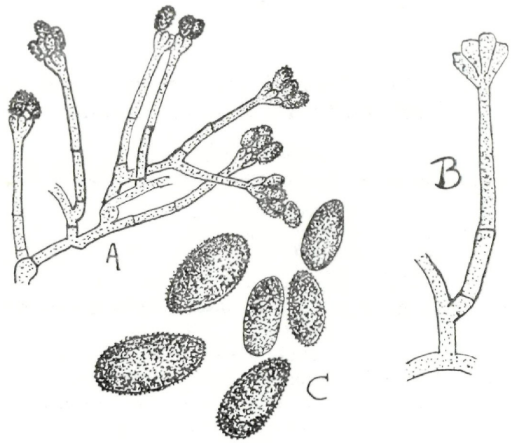

Fig. 2. *Stachybotrys lobulata* Berk. — A. Branched conidiophores with conidia × 264. — B. Conidiophore × 440. — C. Conidia × 950.

growth of certain specific types of micro-fungi only and no other, probably indicating biochemical relationship.

The substrata like different types of paper, leather, wooden articles, grains, fabrics of cotton, silk and wool, plastics, soil, gunny bags etc. showing mould infection were collected and kept under moist chambers for varying lengths of time to stimulate proper sporulation and formation of developmental stages. Semi-permanent slides were then immediately prepared from the colonies with a view to prevent contamination from the rapidly growing moulds like *Rhizopus* and *Aspergillus*; the fungi were then mounted in lacto-phenol and stained in Cotton Blue for final observation.

This paper gives an account of six micro-fungi, all belonging to the *Hyphomycetes*, two of which are considered new to science, three new records for India and one, *Microsporum gypseum* a dermatophyte and was obtained from animal hair.

1. *Sporodesmium bakeri* Syd. (Fig. 1). — Sydow, P. A. Ann. Mycol. Berl. XII, pp. 204, 1914. — Hughes, S. J., C. M. I. paper *50*: pp. 66, 1953.

Colony black, irregular in outline, scattered, raised 0.5—1.5 mm. in diam. Conidiophores crowded, erect, continuous, short, cylindrical, persistant, hyaline to pale yellow, 6.5—13.00 μ × 2.15—5.25 μ. Conidia fusoid to cylindric oval and muriform, broad at apex, tapering at base, thick walled, 3—4 septate, generally 3-septate, constricted at septa, septa transverse, longitudinal as well as oblique, formed

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singly, dark, brown, finely echinulate, 19.5—28.0 μ × 9.5—10.75 μ, detached from the conidiophore invariably bear a basal hyaline frill.

On plywood, collected by S. Anantha Narayanan, 22, VII, 1961, Poona, India.

Remarks: Hughes (1953) has collected this fungus from dead leaves of *Zea mays* and *Bridelia ferruginea*.

This is a new genus record and an addition to the fungi of India.

2. *Stachybotrys lobulata* Berk. (Fig. 2). — Saccardo, P. A. Sylloge Fungorum **4**: pp. 269—270, 1886. *10*: pp. 577 (1892); *11*: pp. 612 (1895); *14*: pp. 1071 (1899) and **22**: pp. 1352 (1913). — Bisby, G. R. Trans. Brit. Mycol. Soc. *26*: pp. 133—143 (1943); *28*: pp. 11—12 (1945). — Subramanian, C. V. Proc. Ind. Aca. Sci. *36*: pp. 43—53 (1953).

Colony, black, raised, in irregular patches, 1—1.5 mm. diam. Mycelium pale brown, branched, septate, 3—4.5 μ thick. simple to branched, sparingly septate (1—2), dark brown at apex and paler below, broader at base, thin-walled, 30—68.8 × 3.2—4.2 μ, bearing

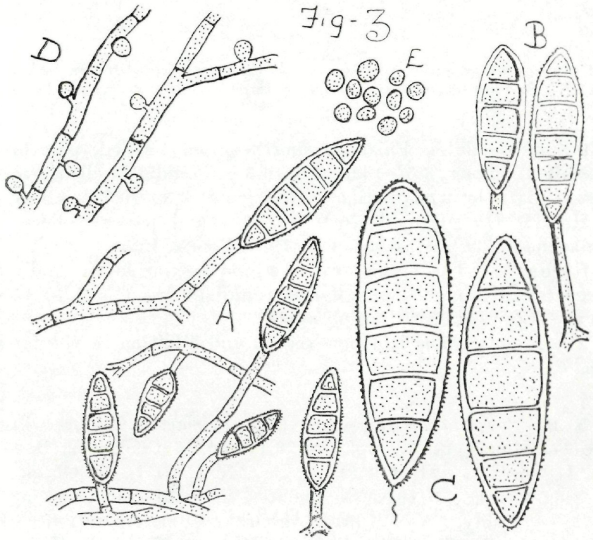

Fig. 3. *Microsporum gypseum* (Bodin) Gniart & Grigork.— A. Macroconidiophores with macro conidia attached × 440. — B. Macroconidiophore enlarged × 950. — C. Macroconidia × 1710. — D. Mycelia with Microconidia × 950. — E. Microconidia × 950.

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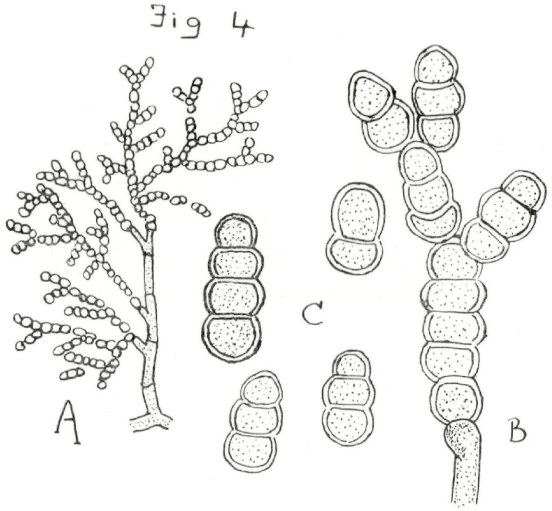

Fig. 4. *Septonema punctiforme* B et C. — A. Conidiophore with attached conidia × 264. — B. Part of the Conidiophore enlarged × 792. — C. Conidia × 792.

a whorl of phialides. Phialides short simple, 1-celled, pale brown, thin-walled, oblong, 8.5—13.0×4.5—6.5 μ. Conidia 1-celled, ovoid to ellipsoid, dark brown, distrinctly verrucose, 6.5—10.75×4.3—6.5 μ.

Habit: On plywood, cotton fabrics and paper, collected by S. Anantha Narayanan, 24, VII, 1961, Poona, India.

Remarks: The species collected on cotton fabric and paper showed much branched and longer conidiophores (150.5 to 155 μ), than the species collected on plywood.

The fungus genus is a new record and addition to the fungi of India.

3. *Microsporium gypseum* (Bodin) Griart & Grigork. (Fig. 3). — Ajello, Mycologia, *51*: pp. 69—76 (1959). — Cooke, W. B. Mycologia *44*: pp. 247—248 (1952). — Dey, N. C. & L. M. Ghosh, Ind. Med. Gaz. *79*: pp. 51 (1944). — Fuentes, F. A., Mycologia *48*: pp. 614 (1956). — Padhye, A. A., Prof. Agharkar Commemoration Volume pp. 117—119 (1961). — Randhwa, A. N. et. al, Sci. Cult. (India) *25*: pp. 326—327 (1959).

Colony thick, raised, shining, cream white, irregularly spreading on the substrata. — Mycelium hyaline, thin walled, much branched,

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septate 2.15—3.25 μ in breadth. — Conidiophores erect, rather short, slender, simple, 1—2 septate, hyaline, 10.75—47 μ × 2.15—3.25 μ, rarely longer (82.0×2.5 μ). — Micro-conidia on lateral sides of mycelium, minutely stalked, 1-celled, hyaline, globular, thin-walled, 2.3—2.75 μ × 2.2 μ. — Macroconidia fusoid, 4—7 celled, double-walled, distinctly warty, hyaline to tan coloured formed singly, 21.5—43 μ × 8.5—13.0 μ.

Habit: On animal hair, collected by S. Anantha Narayanan, 20. VII, 1961, Poona, India.

Remarks: The fungus is a soil-dwelling dermatophyte and is known to incite scalp infections. This is the 3rd record from India, the two previous ones being by Randhwa et al. (1959) from Delhi, India and Padhye (1961) from Poona Soils.

4. *Septonema punctiformae* B. et. c (Fig. 4). — Saccardo, P. A. Sylloge Fungorum *4*: 397—401 (1886). — Vol. *10*: pp. 609 (1892); Vol. *11*: pp. 622 (1985); Vol. *14*: pp. 1084 (1899); Vol. *16*: pp. 1062 (1902); Vol. *18*: pp. 583 (1906); Vol. *22*: pp. 1381 (1913). — Cash & Watson, Mycologia *47*: pp. 745 (1955).

Colony deep brown, effuse, scattered, 1.5—2 mm. Mycelium pale yellow, septate, much branched, thin-walled, 4—6 μ in width. Conidiophores branched, erect, thin-walled, subhyaline to pale yellow, septate, slightly constricted at septa, individual branches short 1—2 celled, slightly bulged at apex, 13.0—30.0 μ × 4.3—5.3 μ. Conidia in acropetal chains, profusely branched, deep yellow to brown, 2—4 celled, rarely 5-celled, deeply constricted at septa, thick-walled (elliptical to obovate), cylindrical to fusoid, smooth-walled, 13,0—21.5× 4.3—8.5 μ.

Habit: on old jute bag, plywood & bark, Poona, India, 24. VII. 1961, collected by S. Anantha Narayanan.

Remarks: This is a new record and addition to the fungi of India. Subramanian (1956) has recorded *S. bombyence* Subr. from Bombay, which however, is distinct from the present species in having 1-septate, non-constricted and verrucose nature of conidia.

5. **Cephaliophora uniformis** S. A. Narayanan sp. nov. (Fig. 5).

Coloniae albae vel alutaceae, patentes 2—2.5 mm. diam. Mycelium alutaceum, tenue, ramosissimum, septatum, 6.4—8.5 μ latum. Conidiophora typice curvata gibbo ad latus posito, qui evolvitur in capitulum apicale et fertile, septata, angusta ad basin (6.4—8.6 μ), latiora ad apicem (10.75—19.4 μ), tenuibus parietibus praedita, pallide brunnea, 64.5—99 μ longa. Capitula fertilia pallide brunnea ex ovoideo globosa, 17.2—23.5×21.5—30 μ, cellulis sporogenis radialiter dispositis hyalinis cuneiformibus ornata. Conidia cellulis sporogenis, singulariter insidentia, semper unicellularia et obovata, levia, parietibus crassis

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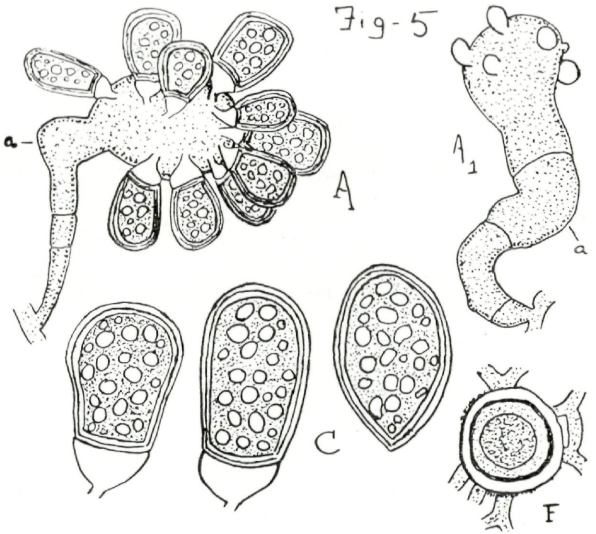

Fig. 5. *Cephaliophora uniformis* S. A. Narayanan sp. nov. — A. Conidiophore with conidia. × 440. — A_1 Developing conidiophore × 440. — C. Conidia × 792. — F. Chlamydospore × 440.

praedita, pallide brunnea. 15—30 μ × 10.75—17.2 μ. Chlamydosporae sphaericae, parietibus crassis praeditae, plerumque intercalares, obscure brunneae, 21.5—23.65 μ diam.

In saccis e fibris *Corchori* factis, ad Poona, India 18. VII. 1961, leg. S. Anantha Narayanan, M. AC. S. Herb. No. 107.

Remarks: The genus was established by Thaxter (1903) for two coprophilous fungi with *C. tropica* Thaxt. as type and the second one as *C. irregularis* Thaxt. The Poona fungus appears to be quite distinct in the morphological characters of the conidiophore and conidia, their shape as well as septation from *C. irregularis* Thaxt. to which it bears resemblance. The conidia are characteristically uniform both in respect of shape and septation. The Poona fungus is therefore, described as a new species on the basis of these distinct characters with Latin diagnosis.

5. **Oedocephalum indicum** S. A. Narayanan sp. nov. (Fig. 6).

Coloniae albae, dispersae vel gregariae, pulverulentae ad maturitatem, 0.5—0.7 mm. diam. Mycelium hyalinum, ex hyphis breviter articularis, tenuiter tunicatis ad septa plus minusve dilatatis, 8.6—10.6 μ latis compositum. Conidiophora erecta, et angulum acutum

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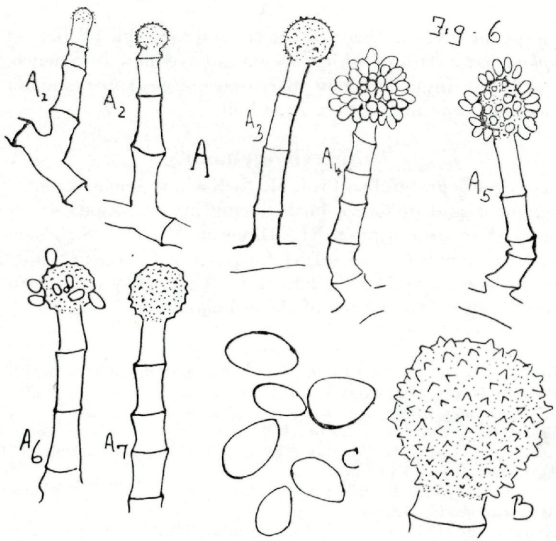

Fig. 6. *Oedocephalum indicum* S. A. Narayanan sp. nov. — A_1—A_7 Developing stages of conidiophore × 264. — B. Head or vesicle × 792. — C. Conidia × 792.

formantia, tenuiter tunicata 4—6-septata, ad septa tumescentia geniculata, ad basin usque ad 13 μ lata, apicem versus angustata, in vesiculam fertilem formantia 130—163.5 μ longa. Capitula fertilia globosa, hyalina, per totam superficiem sterigmatibus arte acutatis dense dispositis ornatis, 19.5—28.0 μ. Conidia singulatim sterigmatibus insidentia, hyalina, unicellularia, globoso-ovoidea, tenuiter tunicata, levia, 6.45—8.6 × 4.3 μ.

In saccis e fibris *Corchori* factis, leg. S. Anantha Narayanan, ad Poona, India 18. VII. 1961, M. A. C. S. Herb. No. 108.

Remarks: Saccardo (1886—1906) lists 25 species of this genus of which three species occur in India. *O. liniatum* Bakshi was recorded by Bakhsi (1950) from Great Britain associated with Ambrosia beetles and possessing non-septate conidiophores and thick-walled conidia. The Poona species has some resemblance to *O. fimitarium* (Riess.) Sacc. (Syll. Fung. 4: 47—50) but is distinct from it in possessing conidiophores characteristically bulged at septa, densely arranged sterigmata on the fertile vesicle and ellipsoid to oblong shape of conidia. The Poona fungus is therefore, considered new to science and presented as new species with Latin diagnosis. The fungus genus is an addition to fungi of Bombay, Maharashtra.

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Summary.

This paper gives an account of six micro-fungi, all belonging to the *Hyphomycetes*, two of which are considered new to Science, three new records for India and one *Microsporum gypseum* is a dermatophyte and was obtained from animal hair.

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