

Fungi of Pakistan. — I.

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With 3 textfigures.

1. *Valsella moricola* Ahmad sp. nov.

Stroma valseum corticale, innato-erumpens; perithecia (3—4) globosa vel subglobosa, atra, 360—390 μ diam.; ostiola brevia, convergentia, punctiformia; pariete pseudoparenchymatico 10—14,5 μ crasso; asci cylindrico-clavati, basi longe attenuati, 18,5 \Rightarrow 90 μ , polyspori; sporae continuae, allantoideae, flavo-fuscae, 2,5—2,8 \Rightarrow 7,5—9,5 μ ; paraphyses filiformes, hyalinae.

In ramis mortuis *Mori albae* L., Shahdara, Lahore, 14. II. 1948, leg. S. A. Lodhi, No. 2251, typus.

Stroma valsoid, corticolous, innate-erumpent; perithecia (3—4) globose or sub-globose, black, 360—390 μ in diameter; ostiole short, convergent, opening on the surface; wall pseudoparenchymatous, 10—14,5 μ thick; asci cylindric-clavate, base attenuated into a long stalk, 18,5 \Rightarrow 90 μ polysporous; spores 1-celled, attantoid, yellowish-brown, 2,5—2,8 \Rightarrow 7,5—9,5 μ ; paraphyses filiform, hyaline.

The species is close to *Valsella minima* Niessl, but differs in the size of the perithecia and the asci.

*2. *Nitschkia cupularis* (Pers. ex Fr.) Karst.

On dead wood, Gakkhar, Gujranwala, Sep. 28, 1947, leg. S. Ahmad No. 2024.

3. *Anthostomella Lodhii* Ahmad sp. nov.

Perithecia solitaria vel caespitosa, innato-erumpentia, globosa vel subglobosa, 120—215 μ diam., ostiolo brevi erumpenti; pariete hyalino, 10,5—14,8 μ crasso; asci 8-spori, cylindraco-clavati, 8,3—10 \Rightarrow 58,6—66,5 μ ; paraphyses simplices, filiformes, hyalinae, 2,5 \Rightarrow 58 μ ; sporae uniseriatae, ovato-oblongae, leves. fusco-brunneae, unicellulares, 5,8—6,5 \Rightarrow 11,6—15 μ .

In petiolis *Palmarum*, Hort. Bot. Lahore, 5. IV. 1948, leg. S. Ahmad, No. 2283, typus.

Perithecia solitary or caespitose, innate-erumpent, globose or sub-globose, 120—215 μ in diameter; ostiole short, opening on the surface;

wall formed of interwoven hyaline hyphae, 10,5—14,8 μ thick; the epidermal cells and the cells surrounding the perithecia containing numerous dark-brown hyphae; asci 8-spored, cylindric-clavate, 8,3—10 \Rightarrow 58,6—66,5 μ ; paraphyses simple, filiform, hyaline, 2,5—58 μ ; spores uniseriate, ovate-oblong, smooth, dark brown, 1-celled, 5,8—6,5 \Rightarrow 11,6—15 μ .

*4. *Rosellinia aquila* (Fr.) De Not.

On dead branches of *Capparis aphylla*, Ladhar, Sheikhpura, Juli 18, 1947, leg. S. A h m a d, No. 1939; on dead branches of *Ficus palmata*, Ladhar, Sheikhpura, Sep. 16, 1947, leg. S. A h m a d, No. 2156.

*5. *Rosellinia pulveracea* (B. et Br.) Ces. et De Not.

On dead wood, Rohtak; on peelings of Sugar cane, Ladhar, Sheikhpura, Sep. 14, 1947, leg. S. A h m a d, No. 2082.

*6. *Hypoxylon latissimum* Speg.

On dead branches of *Capparis aphylla* and *Gossypium* sp., Ladhar, Sheikhpura, Juli 18, 1947, leg. S. A h m a d, No. 1940; Nov. 28, 1947, No. 2217. Very common.

This was first collected in 1933 and sent to late H. Sydow for identification. He remarked, "*Rosellinia* sp. I am unable to determine the species. It is a very difficult genus which needs a thorough revision." It was later collected in very large quantities and sent to Dr. Julian H. Miller, who identified it as *Hypoxylon latissimum* Speg. with the remark. "This is a species that often develops practically free perithecia as in *Rosellinia*." The perithecia occur in dense clusters but they never occur in a true stroma characteristic of other species of *Hypoxylon*.

7. *Metasphaeria saccharicola* (Mundkur & Ahmad) Ahmad comb. nov.

Syn. *Clypeosphaeria saccharicola* Mundkur & Ahmad, Myc. Papers of Imp. Myc. Inst. Kew, No. 18, p. 2, 1946.

On dead decaying leaves of *Saccharum munja*, Ladhar, Sheikhpura, Sep. 15, 1947, leg. S. A h m a d, No. 2103.

8. *Penzigia capparidis* (Mundkur & Ahmad) Ahmad comb. nov.

Syn. *Bagnisiopsis capparidis* Mundkur & Ahmad, Myc. Papers of Imp. Myc. Inst. Wew, No. 18, p. 1, 1946.

Dr. Julian H. Miller remarks (in correspondence) "This on *Capparis* is an *Penzigia* rather than *Bagnisiopsis*. *Penzigia* differs from *Hypoxylon* in the white internal stroma. Then it differs from *Bagnisiopsis* in possessing true perithecia with a wall and free paraphyses. Also all *Bagnisiopsis* species are parasites on leaves. It is very near *P. eterio* (B. & Br.) Petch and differs only in slightly larger spores."

9. *Phomatospora Salvadorina* Ahmad sp. nov. Fig. 1, a—c.

Perithecia innato-erumpentia, ostiolo minuto, pertuso praedita, globosa vel sub-globosa, 105—120 μ diam.; pariete pseudoparenchymatico, atro, 7—9,5 μ crasso; paraphyses desunt; asci clavati, 8-spori, 14,8—16,5 \Rightarrow 42—46,5 μ ; sporae uniseriatae, ellipsoideo-oblongae, hyalinae, unicellulares 12,5—15 \Rightarrow 3,2—3,5 μ . — *Pycnidia* innato-erumpentia, nigra, ostiolo parvo papilliformi praedita, globosa, 90—100 μ diam.; conidia ellipsoidea, hyalina, unicellularia, 4,5—6,65 \Rightarrow 8,5—10 μ .

In ramis mortuis *Salvadorae oleoidis*, Ladhar, Sheikhpura, 10. VII. 1947, leg. S. Ahmad, No. 1881, typus.

Perithecia innato-erumpent, opening on the surface by means of a minute ostiole, globose or sub-globose, 105—120 μ in diameter; wall pseudoparenchymatic, black, 7—9,5 μ thick; paraphyses absent; asci clavate, 8-spored, 14,8—16,5 \Rightarrow 42—46,5 μ ; spores uniseriate, elliptic-oblong, hyaline, 2-guttulate, 1-celled, 12,5—15 \Rightarrow 3,2—3,5 μ . — *Pycnidia* innato-erumpent, black, globose, 90—100 μ in diameter; conidia elliptic, hyaline, 1-celled, 4,5—6,65 \Rightarrow 8,5—10 μ .



Fig. 1. *Phomatospora salvadorina*. — a) conidia \times 600. — b) ascus \times 600. — c) ascospores \times 600.

10. *Didymosphaeria verrucispora* Ahmad sp. nov. Fig. 2, a—d.

Perithecia innato-erumpentia, globosa vel subglobosa, 225—345 μ diam.; pariete pseudoparenchymatico, 15—18,5 μ crasso, fusco-brunneo; asci clavati, 8-spori, 11,5—14,8 \Rightarrow 60—85 μ ; sporae biseriatae, ovatae vel ovato-oblongae, apice rotundatae, bicellulatae, medio septatae et constrictae, episporio verruculis papilliformibus, numerosis, prominulis obsito, fusco-brunneae, 10—12 \Rightarrow 15—20 μ ; paraphyses filiformes 1,5—2 \Rightarrow 55,8—80 μ .

In ramis mortuis *Gossypii* sp. Ladhar, Sheikhpura, 29. VII. 1947, leg. S. Ahmad, No. 2011, typus.

Perithecia innato-erumpent, globose or sub-globose, 225—345 μ in diameter, wall parenchymatous, 15—18,5 μ thick, dark-brown; paraphyses filiform, hyaline, 1,5—2 \Rightarrow 55,5—80 μ ; asci clavate, 8-spored,

11,5—14,8 \Rightarrow 60—85 μ ; spores biseriatae, ovate or ovate-oblong, apex rounded, 2-celled, constricted in the middle at the septum, episporium verrucosum, covered with numerous prominent papillae or warts, dark brown, 10—12 \Rightarrow 15—20 μ .

The species is characterised by the verrucosum spores which have not been described in any other species of the genus.



Fig. 2. *Didymosphaeria verrucispora*. — a) L. s. perithecium \times 70. — b) an ascus with mature spores \times 300. — c) a young ascus \times 600. — d) ascospores \times 600.

11. *Ophiobolus spirosporus* Ahmad sp. nov. Fig. 3, a—c.

Perithecia innato-erumpentia, globosa vel subglobosa, nigra, 180—255 \Rightarrow 120—195 μ ; raro complura aggregata et connata, quasi stromata, 180 \Rightarrow 450 μ metientia formantia; ostioli prominentibus; pariete pseudoparenchymatico, fusco-brunneo, 7,5—12,5 μ crasso; para-

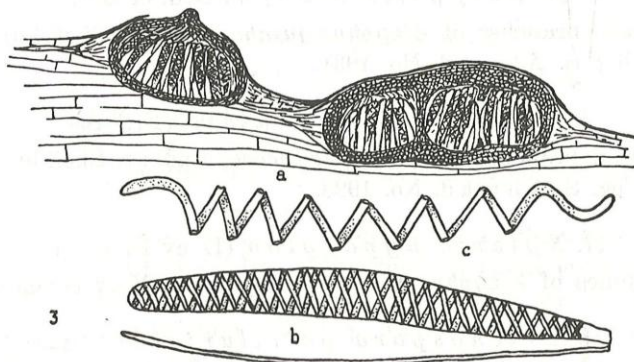


Fig. 3. *Ophiobolus spirosporus*. — a) L. s. perithecia \times 70. — b) ascus and paraphyses \times 600. — c) ascospores \times 600.

physes numerosae filiformes, hyalinae, $1,5 \rightleftharpoons 70 \mu$; asci clavati, 8-sporei, $10,5 \rightleftharpoons 100 \mu$; sporae spiraliter convolutae, filiformes, hyalinae, continuae, $2-2,5 \rightleftharpoons 150-180 \mu$.

In culmis mortuis *Sacchari spontanei*, Lahore, 29. II. 1948, leg. S. A h m a d, No. 2276, typus.

Perithecia innate-erumpent, globose or sub-globose, black, $180-255 \rightleftharpoons 120-195 \mu$; rarely forming a stroma, $180 \rightleftharpoons 450 \mu$; ostiole prominent; wall parenchymatous, dark-brown, $7,5-12 \mu$ thick; paraphyses numerous, filiform, hyaline, $1,5 \rightleftharpoons 70 \mu$; asci clavate, 8-spored, $10,5 \rightleftharpoons 100 \mu$; spores spirally coiled, filiform, hyaline, continous, $2-2,5 \rightleftharpoons 150-180 \mu$.

The eight spores in the ascus are coiled round one another in a spiral manner like the chloroplasts of *Spirogyra*. This species is unique in this respect as in all other species of *Ophiobolus* the spores lie parallel in an ascus.

12. *Emericella variecolor* Berk.

On fallen leaves of *Mangifera indica* L., Ladhar, Sheikhpura, Sep. 16, 1947, leg. S. A h m a d, No. 2167; on dead branches of *Gossypium* sp., Ladhar, Sheikhpura, Dec. 25, 1947, leg. S. A h m a d, No. 2293; on fallen leaves, Lahore, March 24, 1948, No. 2294.

13. *Pleospora herbarum* (Pers.) Rabenh.

Syn. *Pleospora spinarum* Syd.

On spines of *Acacia arabica*, Rohtak; Ladhar, Sheikhpura.

14. *Ceratostomella adiposa* (Butl.) Sartoris.

Syn. *Sphaeronema adiposum* Butler.

On dead culms of Sugar cane, Ladhar, Sheikhpura, Juli 14, 1947, leg. S. A h m a d, No. 1912.

15. *Eutypella zizyphi* Syd. et Butl.

On dead branches of *Zizyphus jujuba*, Ladhar, Sheikhpura, Juli 18, 1947, leg. S. A h m a d, No. 1931.

*16. *Eutypella stellulata* (Fr.) Sacc.

On dead branches of *Suaeda fruticosa*, Ladhar, Sheikhpura, Juli 18, 1947, leg. S. A h m a d, No. 1928.

17. *Xylaria hypoxylon* (L. ex Fr.) Grev.

On stones of *Zizyphus jujuba*, Gujranwala. Very common.

*18. *Teichospora patellarioides* Sacc.

On dead wood of *Salvadora oleoides*, Ladhar, Sheikhpura, Juli 16, 1947, No. 1920; on a dead branch of *Suaeda fruticosa*, Ladhar, Sheikhpura, Sep. 14, 1947, leg. S. A h m a d, No. 2085.

19. *Phyllosticta cycadis* Ahmad sp. nov.

Pycnidia innata, nigra, ostiolo minuto punctiformiter erumpentia, globosa vel subglobosa, 180—200 \Rightarrow 205—240 μ ; hyphis dilute brunneis, septatis, 4,5 μ crassis praedita; pariete ca. 10 μ crasso; conidiophora hyalina, simplicia, 15,5 \Rightarrow 1,5 μ ; paraphysibus nullis; conidia ellipsoidea, unicellularia, hyalina, 11—19,5 \Rightarrow 4,5—6 μ .

In foliis *Cycadis circinalis*, Lahore, 3. XI. 1948, leg. S. Ahmad. No. 2228, typus; in follis *C. revolutae*, Hort. Bot. Lahore, 3. XI. 1948, leg. S. Ahmad, No. 2227.

Pycnidia innata-erumpent, black, opening on the surface by a minute ostiole, globose or subglobose 185—200 \Rightarrow 205—240 μ , enveloped by numerous light brown, septate, branched hyphae, 3—4,5 μ in thickness; wall about 10 μ thick, outer part formed of interwoven hyphae, inner distinctly pseudoparenchymatous; conidiophores hyaline, simple, 15,5 \Rightarrow 1,5 μ ; paraphyses absent; conidia elliptic, rounded at the ends, 1-celled, hyaline, 11—19,5 \Rightarrow 4,5—6 μ .

20. *Phyllosticta ficina* Ahmad sp. nov.

Pycnidia innato-erumpentia, globosa vel subglobosa, 120—135,5 \Rightarrow 145—155 μ ; pariete pseudoparenchymatico, fusco-brunneo, 10,5—12 μ crasso; conidiophora simplicia, hyalina, 10,2—13,6 \Rightarrow 1,5 μ ; conidia ellipsoidea, unicellularia, hyalina, 13,6—16,5 \Rightarrow 3,5—4,5 μ .

In foliis *Fici elasticae*, Hort. Bot. Lahore. 8. IV. 1948, leg. S. Ahmad, No. 2289, typus.

Pycnidia innata-erumpent, black ostiolate, globose or subglobose, 120—135,5 \Rightarrow 145—155,5 μ ; wall pseudoparenchymatous, formed of 3 or 4 layers of polygonal cells, dark brown, 10,5—12 μ thick; conidiophores simple, hyaline, 10,2—13,6 \Rightarrow 1,5 μ ; conidia elliptic, 1-celled, hyaline, 13,6—16,5 \Rightarrow 3,5—4,5 μ .

21. *Phoma graminis* Ahmad sp. nov.

Pycnidia sparsa, primitus tecta, postea per epidermidem fissam erumpentia, globosa, raro subglobosa, ostiolo prominente, atro, praedita, 170—190 μ diam.; pariete pseudoparenchymatico, 3—4,5 μ crasso; conidiophora simplicia, hyalina, 9,5—12,5 \Rightarrow 2 μ ; conidia ellipsoidea, hyalina, unicellularia, 3,5—4,5 \Rightarrow 9—14,5 μ .

In stolonibus mortuis *Eleusines flagelliferae*, Ladhar, Sheikhpura, 8. VII. 1947, leg. S. Ahmad, No. 1850, typus; in culmis mortuis *Panicum antidotalis* Retz., Ladhar, Sheikhpura, 29. VII. 1947, leg. S. Ahmad, No. 2007 a; in culmis mortuis *Triticum* sp., Ladhar, Sheikhpura, 14. IX. 1947, leg. S. Ahmad, No. 2080.

Pycnidia innata at first, becoming exposed by the rupture of the epidermis, globose, rarely subglobose, ostiole very prominent, 170—190 μ

in diameter; wall pseudoparenchymatous, formed of one or two layers of very small cells, 3—4,5 μ in thickness; conidiophores simple, hyaline, 9,5—12 \Rightarrow 2 μ ; conidia elliptic, hyaline, 1-celled, 3,5—4,5 \Rightarrow 9—14,5 μ .

22. *Phoma psidii* Ahmad sp. nov.

Pycnidia innata, ostiolo minuto erumpentia, depresso-globosa, nigra, 60—85 \Rightarrow 100—105,5 μ ; pariete e cellulis minutis composito, 7,6—9,6 μ crasso; conidiophora simplicia, hyalina, interdum nulla; conidia ellipsoidea, hyalina, unicellularia, 3,5—4,5 \Rightarrow 2,5 μ .

In ramis mortuis *Psidii Guajavae*, Lahore, 23. III. 1948, leg. S. A. L o d h i, No. 2255, typus.

Pycnidia innata becoming erumpent by a small ostiole, depressed globose, black, 60—85 \Rightarrow 100—105,5 μ ; wall pseudoparenchymatous, formed of very small cells, 7,6—9,6 μ thick; conidiophores hyaline, simple, sometimes absent; conidia elliptic, hyaline, 1-celled, 3,5—4,5 \Rightarrow 2,5 μ .

23. *Phoma zizyphina* Ahmad sp. nov.

Pycnidia solitaria, erumpentia, nigra, globosa vel subglobosa, 120—135 μ diam.; pariete pseudoparenchymatico, 6,5—8,6 μ , crasso e cellulis fusco-brunneis composito; conidiophora hyalina, simplicia, 9,5 \Rightarrow 1,75 μ ; conidia hyalina, unicellularia, ellipsoidea 3,5—4 \Rightarrow 5,5—6 μ .

In ramis mortuis *Zizyphi jujubae* Lamk., Ladhar, Sheikhpura, 5. VIII. 1947, leg. S. A h m a d, No. 2019, typus.

Pycnidia solitary, erumpent, black, globose or subglobose, 120—135 μ in diameter; wall pseudoparenchymatous, 6,5—8,6 μ thick, cells dark brown; conidiophora hyaline, simple, 9,5 \Rightarrow 1,75 μ ; conidia hyaline, 1-celled, elliptic, 3,5—4 \Rightarrow 5,5—6 μ .

24. *Phoma mangiferae* Ahmad sp. nov.

Pycnidia sparsa vel gregaria, innato-erumpentia, depresso-globosa, 74—110 \Rightarrow 115—150 μ ; ostiolo erumpente papilliformi; pariete pseudoparenchymatico, fusco-brunneo; conidia bacillaria, hyalina, unicellularia, 1,5 \Rightarrow 3,4—5 μ .

In ramis mortuis *Mangiferae indicae* L., Ladhar, Sheikhpura, 14. VII. 1947, leg. S. A h m a d, No. 1901, typus.

Pycnidia separate to caespitose, innate-erumpent, depressed-globose, 74—110 \Rightarrow 115—150 μ , opening on the surface by a papillate ostiole; wall pseudoparenchymatous, formed of 3 or 4 layers of dark brown cells; conidia hyaline, 1-celled, bacillar, 1,5 \Rightarrow 3,4—5 μ .

25. *Phoma nyctaginea* F. Tassi var. *boerhaaviae* n. var.

Conidia hyalina unicellularia, ellipsoidea, 3,5—4,5 \Rightarrow 7,5—10,6 μ .

In ramis mortuis *Boerhaaviae diffusae* Linn., Ladhar, Sheikhpura, 8. VII. 1947, leg. S. A h m a d, No. 1853, typus.

26. *Phoma chenopodii* Ahmad sp. nov.

Pycnidia sparsa, innato-erumpentia, nigra, 170—190 μ diam., globosa, ostiolo papilliformi praedita; pariete pseudoparenchymatico e cellulis minutis composito, 3—4,5 μ crasso; conidiophora hyalina, simplicia; conidia ellipsoidea, hyalina, unicellularia, 3,7—4,9 \Rightarrow 9,5—12,6 μ .

In ramis mortuis *Chenopodii albi* L., Ladhar, Sheikhpura, 24. VII. 1947, leg. S. Ahmad, No. 1972; 11. VIII. 1947, leg. S. Ahmad, No. 2047, typus; in ramis mortuis *Atriplicis crassifoliae* C. A. Mey, Ladhar, Sheikhpura, 14. VII. 1947, leg. S. Ahmad, No. 1896.

Pycnidia scattered, innate-erumpent, ostiole papillate, black, 170—190 μ in diameter, globose; wall pseudoparenchymatous, of one or two layers of very small cells, 3—4,5 μ in thickness; conidiophores simple, hyaline; conidia elliptic, hyaline, 1-celled, 3,5—4,9 \Rightarrow 9,5—12,6 μ .

27. *Macrophoma triticina* Ahmad sp. nov.

Pycnidia innato-erumpentia, atra, depresso-globosa, 120 \Rightarrow 180 μ ; ostiolo vix erumpente; pariete pseudoparenchymatico, 10—12 μ crasso; conidiophora hyalina, simplicia, 6—8,5 \Rightarrow 2 μ ; conidia hyalina, unicellularia, ellipsoidea, 13,5—16 \Rightarrow 5—5,7 μ .

In culmis mortuis *Triticis* sp., Sheikhpura, 2. II. 1948, leg. S. Ahmad, No. 2239, typus.

Pycnidia innate-erumpent, black, depressed globose, 120—380 μ ; ostiole hardly projecting above the surface; wall pseudoparenchymatous, 10—12 μ thick; conidiophores hyaline, simple, 6—8,5 \Rightarrow 2 μ conidia hyalina, 1-celled, ellipsoid, 13,5—16 \Rightarrow 5—5,7 μ .

28. *Macrophoma asphodeli* Ahmad sp. nov.

Pycnidia innato-erumpentia, atra, globosa vel subglobosa, 100—128,5 \Rightarrow 188,5—192,5 μ ; ostiolo papilliformi, erumpente praedita; pariete membranaceo, pseudoparenchymatico, 10—15 μ crasso conidiophora simplicia, hyalina, 25 \Rightarrow 2 μ ; conidia unicellularia, hyalina, fusoido-ellipsoidea, 7,5—9 \Rightarrow 20—22,5 μ .

In caule emortuo *Asphodeli tenuifolii*; Ladhar, Sheikhpura, 15. IX. 1947, leg. S. Ahmad, No. 2116, typus.

Pycnidia innate-erumpent, subglobose or globose, 100—128,5 \Rightarrow 188,5—192,5 μ , ostiole papilliform-erumpent; wall pseudoparenchymatous, membranous, 10—15 μ thick; conidiophores simple hyaline, 25 \Rightarrow 2 μ ; conidia 1-celled, hyaline, fusoid-elliptic, 7,5—9 \Rightarrow 20—22,5 μ .

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