MOLDS OF THE PUNJAB—II.

The Penicillia.

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In the second paper on the Molds of the Punjab, the Penicillia are grouped together. Out of 15 species of Penicillium and one of Scopulariopsis listed here, 11 have been studied in this laboratory. Remaining 5 have been included to make the list so far complete for all India. Of the forms studied here, descriptions of some have already been published by the author and his students; descriptions of the rest of the species as well as illustration of most of the species noted from this laboratory are given to make the paper useful to workers on Indian Penicillia. Thom's (1930) method of description has been followed generally.

Descriptions of Species.

1. Penicillium viridi-varians Chaudhuri & Sachar.
   Chaudhuri & Sachar (1932).
   Isolated from soil (Fig. 1).

   Fig. 1.—P. viridi-varians.
   Mode of branching of conidiophore. × 1080.

2. P. glabrum (Wehmer) Westling.
   Thom (1930), Thakur & Norris (1928).
   Isolated from soil.
3. *P. fellutanum* Biourge.
   Isolated from Petri-dishes exposed to air.

Colonies upon Czapek’s solution agar, narrowly growing with margin velvety and not over 100–200 μ deep, showing radiating lines of conidial areas, running out unevenly with central areas thin almost papery but convoluted or wrinkled with ridges; colour bluish-green becoming dull dark green with age; reverse yellow but later shading towards dark almost black areas with the wrinkling of the colony distinctly evident; conidiophores rising from creeping hyphae; penicillus 20·37–37·29 μ long with walls smooth, mostly monoverticillate, sterigmata 6·78–11·88 × 2·36–3·39 μ in verticils of 2–8; conidia about 3·4 μ, globose (Fig. 2).

4. *P. digitatum* Sacc.
   Thom (1930), Thakur & Norris (1928).
   Isolated from soil.
5. *P. oxalicum* Currie & Thom.

Thom (1930), Thakur & Norris (1928).
Isolated from soil.


Isolated from Petri-dishes exposed to air.

Colonies upon Czapek’s solution agar, velvety, azonate, dull dark green with margin 1-2 mm. wide and a trace of bluish in the newer conidial arrears with reverse in purple brown; conidiophores 50.92–176.54 μ; metulae 10.18–12.56 μ, sterigmata deciduous in mounts, 10.18–12.56 μ, closely packed; conidia oval to elliptical, 3.39–4.1 × 2.38–3.1 μ; penicillus from a verticil of metulae about 25 μ long with the main axis occasionally prolonged to form a second superposed verticil, 40.7–61.1 μ in total length (Fig. 3).


Isolated from Petri-dishes exposed to air.

Colonies upon Czapek’s solution agar, velvety, with some creeping hyphae about 1000 μ deep with white margin 1–1.5 mm. wide, dull deep green to grey green, reverse uncoloured, brownish with age; conidiophores 2.38–3.4 μ in diameter: Penicillus a single verticil of sterigmata or a central axis and 1 to 3 branches or metulae from topmost node, unequal, 10.18–20.3 μ long in the same group; sterigmata 8.48–10.18 × 2.71 μ bearing parallel chains of conidia; conidia globose, 3.73–4.1 μ (Fig. 4).
8. *P. steckei* Zaleski.

Isolated from soil and air (Fig. 5).


Isolated from exposed Petri-dishes.

Colonies upon Czapek’s solution agar, velvety with a broad white zone from 100 to even 500 μ deep towards the centre where the mass becomes more or less wrinkled, reverse and agar yellow with rich yellow drops; conidiophores 2·5–3·5 μ in diameter with smooth walls. Penicillus about 50 μ, terminal verticil of metulae with irregular branching, branches 20·30 μ.
long in pairs or threes; metulæ 8·84–15·27 × 2·3 – 3·1 μ in threes or fours; sterigmata 6·78–10·18 × 2·37–3·1 μ in verticils of 2 to 5; conidia globose, 3·4–4 μ; a few ovate, caducous (Fig. 6).

![Fig. 6.—P. cyaneo-fulvum.](image)

a–Penicillus with metulæ and sterigmata ;
b–Branched conidiophores. All × 540.

10. *P. casei* Staub.
Isolated from exposed Petri-dishes.

Colonies upon Czapek’s solution agar forming thin, tough close-textured felts, buckled and wrinkled, in bluish glaucous to dull green shades, 150–200 μ deep, reverse yellow to orange brown; conidiophores 74·7 to 227·5 μ long × 3·4–4 μ in diameter, walls granular; penicillus varies from 44·13–152·17 μ bearing verticils of metulæ 10·18–16·9 μ (occasionally upto 23·76 μ) long, 1·7–3·1 μ wide; sterigmata 7·46–10·18 μ, few in the verticil; conidia smooth, globose, 3·73 to 4·4 μ in diameter, produced in long parallel to divergent columns (Fig. 7).

![Fig. 7.—P. casei.](image)

a–Conidiophore ;
b–Penicillus with rami ;
c–Penicillus with metulæ and sterigmata. All × 540.
11. *P. puberulum* Bainier.  
Isolated from exposed Petri-dishes.

Colonies on Czapek's solution agar, velvety, restrictedly growing, azonate during the rapidly growing period but later dense in central areas, bluish green, later green; reverse tan, agar uncoloured; conidiophores 67.9–169.7 × 3.4–4.1 μ, slightly sinuous with walls smooth or more or less roughened; Penicillus 27.16–135.8 μ consisting of terminal verticil of matulæ with branching from a lower node, all elements enlarged and more or less vescicle-like at the apex; sterigmata 8.4–11.87 × 2–2.5 μ, 4 to 6 in verticil, conidia smooth, globose, 3.4–4.75 μ (Fig. 8).

Thom (1930), Chaudhuri & Sachar (1932).  
Isolated from soil (Fig. 9).

![Fig. 8.—*P. puberulum*.](image)

*a*-Branched conidiophore arising from submerged hyphae;  
*b*–*c*-Penicilli;  
*d*-Spores. All × 540.

Thom (1930), Thakur & Norris (1928).  
Isolated from soil.

Thom (1930), Chaudhuri & Sachar (1932).  
Isolated from soil (Fig. 10).

![Fig. 9.—*P. terrestre*.](image)

*a*–*c*-Conidiophores with sterigmata and spores. × 1080.
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15. *P. tenellum* Cooke.
Thom (1930), Cooke (1878).

On rotting leaves of *Symlocos* from Bengal.

Thom (1930), Ray & Chaudhuri (1930).

Isolated from opium in storage, causes losses of morphine in storage.

LITERATURE CITED.


