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REMARKS ON SPECIES OF PHOMA REFERRED TO PEYRONELLAEA—II

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(With Plates 10, 11 and one Text-figure)

Additional data are given on *Phoma glomerata* (Cda.) Wr. & Hochapf., *Phoma prunicola* (Opiz) Wr. & Hochapf., and *Phoma jolyana* Pirozynski & Morgan-Jones. The new combination *Phoma indianensis* (Deshpande & Mantri) is proposed and its characteristics and habitat are discussed.

In an earlier paper on this subject (Boerema & al., 1965) we concluded that there is no reason for separating *Peyronellaea* Goid. ex Togliani from *Phoma* Sacc. It was recognized that the material ascribed to the former genus represents the species *Phoma glomerata* (Cda.) Wr. & Hochapf., *P. prunicola* (Opiz) Wr. & Hochapf., and *P. musae* (Joly) Boerema & al.

In the present paper some further data on these three species are given, while a fourth species, recently described as *Peyronellaea indianensis*, is discussed more extensively.

PHOMA GLOMERATA (Cda.) Wr. & Hochapf.

Phoma herbarum var. *euphorbiae-guyonianae* Pat., Cat. rais. Pl. cell. Tun. 116. 1897.

To the numerous synonyms listed in our previous paper (Boerema & al., 1965: 52) the one mentioned above can be added.

The holotype material (PC; as '*Phoma Euphorbiae Guyonianae* Pat.', Tozeur 1893) consists of one stem piece with a few pycnidia associated with multicellular chlamydosporal structures similar to those produced by *P. glomerata* in vivo. Moreover, the shape and dimensions of the spores (averaging 6.6 × 3.1 μ, but varying from 5.1–11 × 2.5–4 μ) agree with those of *P. glomerata*. The identity of *P. herbarum* var. *euphorbiae-guyonianae* with *P. glomerata* is also in accordance with Patouillard's original opinion that it represented only a variant of a ubiquitous species.

ADDITIONAL DATA. —

A convenient description and summary of diagnostic data of *P. glomerata* was recently given by Morgan-Jones (1967a).

Concerning the effect of the composition of the agar media on the production of dictyochlamydospores (Boerema & al., 1965: 56) we must in addition refer to the experimental study of Bosmans (1961) on five strains of *P. glomerata* (some indicated

with different names, now all known to be synonyms of *P. glomerata*). His conclusion that in certain growth-conditions "the chlamydospores of *Peyronellaea* are not formed, so that it is difficult to distinguish *Peyronellaea* from *Phoma*" accords completely with our statement that it is undesirable to separate the two genera (Boerema & al. 1965: 48, 49).

PHOMA PRUNICOLA (Opiz) Wr. & Hochapf.

Coniothyrium prunicola (Opiz) Husz *in* Magy. kertész. szölész. Föisk. Közl. **5**: 23. 1939 [as '*C. prunicolum* (Sacc.) Husz'].
Phoma herbarum f. *capparidis* Sacc. *in* Michelia **2** (1): 93. 1880.
Phoma herbarum var. *tulostomatis* Pat., Cat. rais. Pl. cell. Tun. 116. 1897.

To the synonyms listed in our previous paper (Boerema & al. 1965: 59) the three cited above can be added.

Husz made the combination *C. prunicola* because of the sometimes olive-green to brownish colour of the mature spores (compare Boerema & al., 1965: 60).

The infraspecific taxon *P. herbarum* f. *capparidis* was described by Saccardo from an exsiccatum of Roum., Fungi gall. exs. No. 280, current name '*Pleospora capparidis* Speg.' The specimen concerned was not found in Saccardo's herbarium, but a copy preserved in the Farlow Herbarium (FH, stems of *Capparis spinosa*, Toulouse 1878) apparently contains a pycnidial fungus identical with that described by Saccardo (compare Wehmeyer, 1961: 294). The characteristics of this fungus agree completely with those of the ubiquitous *P. prunicola*, including the occurrence of chlamydospores and the often pale-brown colour of the mature spores.

The holotype of *P. herbarum* var. *tulostomatis* (FH; as '*Phoma Tulostomatis* Pat.', Fedjej 1893) consists of one fruit body of *Tulostoma volvulatum* (Sclerodermatales-Homobasidiomycetidae), on whose fibrous stalk many pycnidia occur associated with chains of single chlamydospores and multichlamydosporal structures similar to those of *P. prunicola*. Furthermore the shape and dimensions of the spores agree with those of *P. prunicola*. As the latter has been shown to be one of the most common soil-borne fungi (Dorenbosch, 1969) its occurrence on a mushroom is not surprising.

ADDITIONAL DATA. —

A convenient description and summary of diagnostic data of this species was recently given by Morgan-Jones (1967b).

Concerning the confusing misinterpretation of the synonym *Phyllosticta pirina* Sacc. by Sheldon (1907), who had in mind a true *Coniothyrium* species (Boerema & al., 1965: 60), it may be helpful to refer to a study of Mutto & Pollacci (1915). These authors were the first to make clear that *Phyllosticta pirina* (= *Phoma prunicola*) is entirely different from the *Coniothyrium* species studied by Sheldon, which is *Coniothyrium tirolense* Bubák.

With respect to the variability of *P. prunicola* in culture and the influence of the culture media on the production of dictyochlamydospores (Boerema & al., 1965: 62) we also refer to an experimental study published by Mutto & Pollaci (1917; as

Phyllosticta pirina). It is of interest to note that they found that 2 % of the spores are septate on a certain medium, while dictyochlamydospores are absent when grown on various other substrata.

PHOMA JOLYANA Pirozynski & Morgan-Jones

Phoma musae (Joly) Boerema, Dorenb. & Kest. *in* Persoonia **4**: 63. 1965; not *Phoma musae* (Cke.) Sacc. *in* Sylloge Fung. **3**: 163. 1884; not *Phoma musae* Carp. *in* Rep. Hawaii agric. Exp. Stn **1918**: 39. 1919.

Phoma jolyana Pirozynski & Morgan-Jones *in* Trans. Br. mycol. Soc. **51**: 200. 1968.

When we proposed the combination *P. musae* we failed to observe that it was preoccupied. Dr. Patrick Joly, who made an extensive study of this funges, is rightly honoured in the new name given by Pirozynski & Morgan-Jones.

Phoma indianensis (Deshpande & Mantri) Boerema, Dorenb. & Kest., *comb. nov.* — Fig. 1, Pls. 11, 12.

Peyronellaea indianensis Deshpande & Mantri *in* Mycopath. Mycol. appl. **30**: 341–344. 1966 (basionym).

DESCRIPTION. — Pycnidia (Fig. 1, Pl. 11) superficial on or partly immersed in agar, dark brown to pitch black, irregularly obpyriform to ampulliform, usually with a characteristic neck; ostiole irregularly lined by dark-walled cells (pore-like); size variable, as a rule 80–200 × 75–200 μ. Occasionally pycnidia coalesce to form irregular fructifications with several cylindrical necks. In aerial mycelium occasionally aberrant small globose pycnidia, light brown in colour, 5–15 μ diam.

Pycnidiospores (Fig. 1) hyaline to brown coloured, with or without guttules, mostly ovoid to ellipsoid or globose, usually continuous, very occasionally 1-septate, 2.5–8 × 1.5–4 μ, mostly 4–7 × 2–3.5 (average 5.4 × 2.5) μ

Single chlamydospores (Fig. 1, Pl. 11) brown to dark brown, separate or in short chains, 7–15 μ diam.

Dictyochlamydospores and intermediate stages between chlamydospores and dictyochlamydospores (Fig. 1, Pl. 11) brown to dark brown, as a rule intercalary, usually fusiform-ellipsoid, sometimes ovoid-globose or irregular, size variable, 15–50 × 7–25 μ.

Habitat. — Apparently soil-borne in tropical and subtropical regions. Isolated from different parts (leaves, stems, roots and fruits) of various plants, e.g. *Ananas*, *Citrus*, *Coffea*, *Mangifera*, and *Pinus* spp. Probably a secondary invader.

The growth habit of this fungus in vitro varies widely (Pl. 12). It is easily distinguishable from the other *Phoma*-species producing dictyochlamydospores, especially by the black, beaked pycnidia and the intercalary occurrence of the dictyochlamydospores. Furthermore, it is characterized by the production of a conspicuous reddish (orange to red-purple) pigment.

This species was originally described from soil in India and was isolated from a filter paper buried in the soil. Examination of a culture of the type, obtained from Prof. Deshpande (Marathwada University, Aurangabad, India) revealed that it is apparently identical with an unnamed *Phoma*-species in our collection isolated from

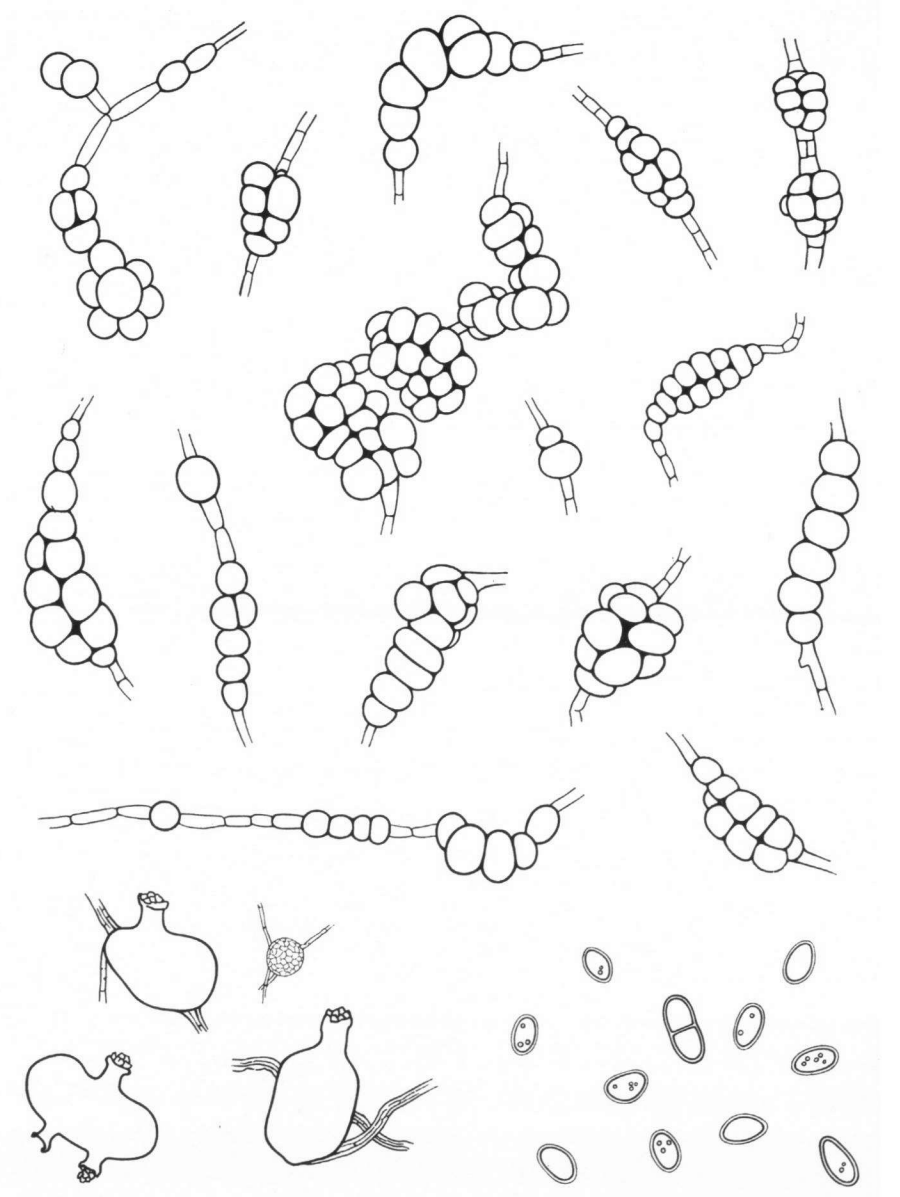

Fig. 1. *Phoma indianensis;* pycnidia, pycnidiospores, chlamydospores and dictyochlamydospores. Note the intercalary position of the dictyochlamydospores.

a *Pinus*-stem and roots of a conifer in Madagascar, the stem of *Citrus* in South France, leaves of *Ananas* and roots of *Mangifera* in Mali (Africa), and *Coffea*-fruits in India respectively (all received via CBS, Baarn). Recently the fungus has also been isolated from *Chrysanthemum*-cutlings in a greenhouse in the Netherlands.

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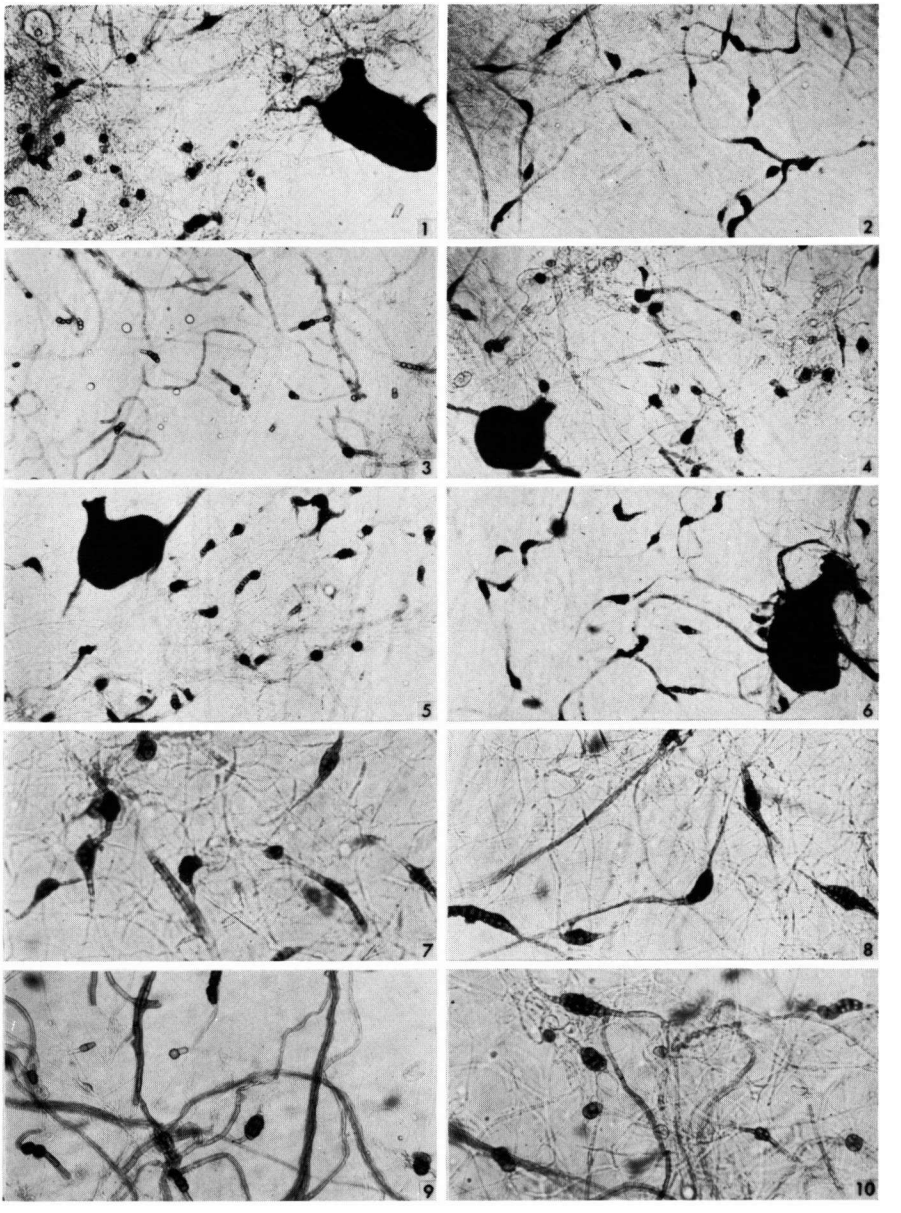
EXPLANATION OF PLATES 10, 11

PLATE 10

Figs. 1–10. *Phoma indianensis;* various types of pycnidia, chlamydospores and dictyochlamydospores in culture. — Figs. 1–6, c. × 65. — Figs. 7–10, c. × 130.

PLATE 11

Figs. 11–14. *Phoma indianensis;* cultures of different strains. — Fig. 11, on cherry agar. — Figs. 12 and 13, on oat agar. — Fig. 14, on malt agar.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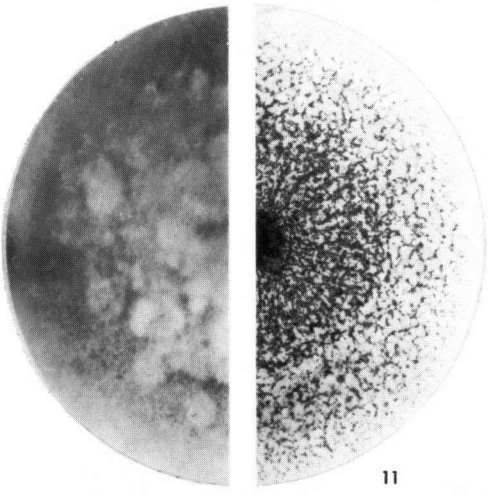

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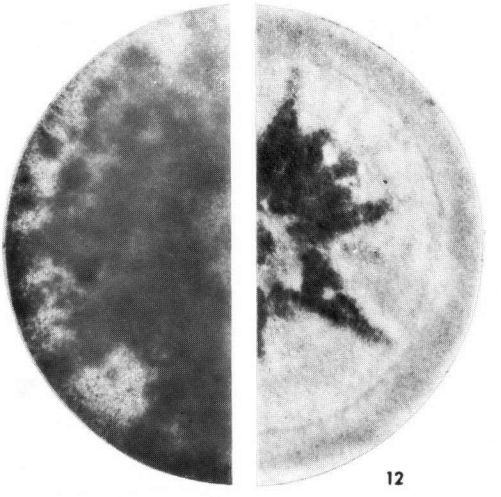

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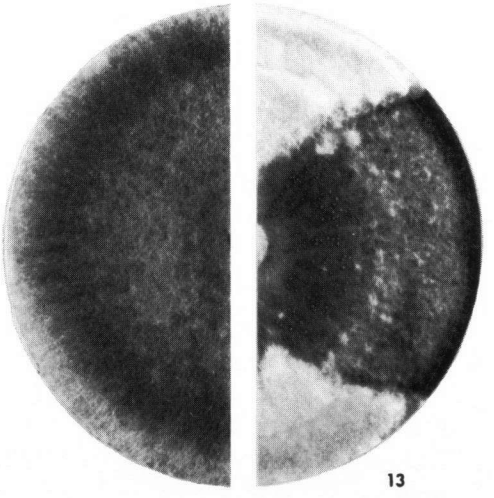

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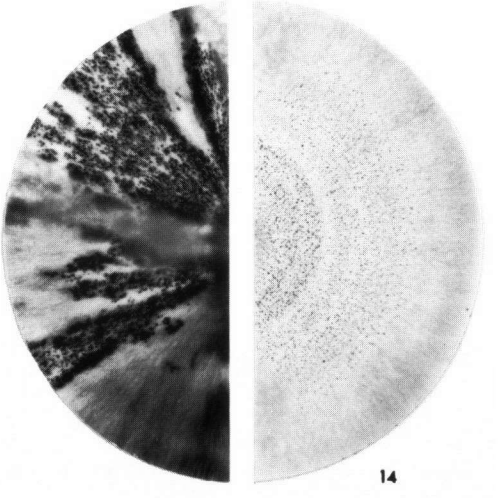

14