

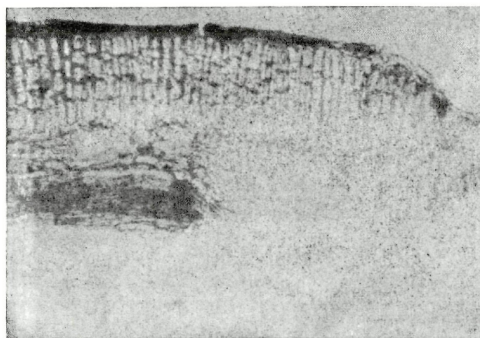
Some New or Revised Species of *Physopella* (Uredinales) from India.

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With 3 Figs. in the text.

During his mycological survey work of the rust-fungi of Maharashtra State (India), the writer encountered several species of *Physopella* Arthur (Uredinales), which were found to be either new to science or needed revision as far as their taxonomic status was concerned. This paper describes three species of *Physopella* Arthur, one of which is new to science and others new combinations.



1. Photomicrograph of T. S. leaf of *Heterophragma* showing telial sorus, of *Physopella stakmanii* Sathe.

1. *Physopella stakmanii* Sathe spec. nov.

Living laeves of *Heterophragma quadriloculare* (Roxb.) K. Schum., (= *Heterophragma roxburghii* DC), were collected at Matheran — a hill station in the Maharashtra State, India — showing black infection spots on their upper surface, resembling tar spots. On careful observation under the microscope, these spots were found to be made up of non-erumpent crusts of telia in which the teliospores were catenulately arranged, resembling telia of rust genus *Physopella* Arthur. Previous records showed that there was only one rust recorded namely *Phragmidiella heterophragmae* (Mundk. & Thirum) Thirum & Mundk. The present fungus differed from the previous record of *Phragmidiella* P. Henn. in having non-erumpent

telia and thick walled teliospores, catenulate arrangement of teliospores being common in both. Thus the non-erumpent telia and the catenulate arrangement of the teliospores in the present fungus is characteristic of *Physopella* Arthur, and since there is no previous report of rust-genus *Physopella* Arthur on *Heterophragma quadriloculare* (Roxb.) K. Schum., the present fungus is described here as new to science and is presented below with Latin diagnosis.

Physopella stakmanii Sathe spec. nov.

Infection spots epiphyllous, appearing as black shining crusts resembling tar spots, Pycnia, aecia and uredia not known. Telia subepidermal, non-erumpent, consisting of laterally and terminally united teliospores. Telial sorus spreading, 1,9—2 mm. deep below the epidermis. Teliospores catenulate, in sessile chains of 3—5 spores, one celled, measuring 14,4—27×9—21,6 μ , germ pore obscure, wall thick 2—3,6 μ , pigmented brown. Terminal teliospores often curved or beaked, with wall 3,6 to 7 μ in thickness, germination without dormancy, basidium external.

Maculae epiphyllae, crustaceae, nigrescentes, nitidae; pycnidia, aecidia, uredia ignota; sori teleutosporiferi subepidermales nec erumpentes, e teleutosporis longitudinaliter et lateraliter coalitis compositi, 1,9—2 mm diam.; teleutosporae catenulae, 2—5 superpositae, continuae 14,4—27/9—21,6 μ , poro germinationis obscuriore praeditae, episporio 2—3,6 μ crasso, brunneo; teleutosporae terminales saepe curvulae vel quasi rostratae, episporio 3,6—7 μ crasso, mox germinantes; basidium extraneum.

The type of *Physopella stakmanii* Sathe was collected at Matheran-India, by A. V. Sathe & P. G. Patwardhan on 20. 2. 1965 and deposited in Ajrekar Mycological Herbarium M. A. C. S. under M. A. C. S. No. 239 (Type).

This species is named after Dr. E. C. Stakman, Professor Emeritus, University of Minnesota, USA., in recognition of his outstanding contributions to the rust-fungi.

The type material of the above described species is deposited in Herb. Indiae Orient. New Delhi & Herb. C. M. I., Kew, Surrey, England, besides Ajrekar Mycological Herbarium M. A. C. S. Poona India.

2. *Physopella sterospermii* (Mundk.) Sathe nom. nov.

Syn.: *Mehatamyces sterospermii* (Mundk.) Mundk. & Thirum.

Phakospora sterospermii Mundk.

While referring to the lists of 'Fungi of India' (1:87) the writer came across the record of *Mehatamyces sterospermii* (Mundk.) Mundk. & Thirum. which was accompanied by a note: "Although *Mehatamyces* has been listed as a synonym of *Phragmidiella* by Thirumalachar

and Mundkur, this fungus has not been formally transferred to *Phragmidella*." This remark stimulated the writer to undertake the work of determining the status of the rust *Mehatamyces sterospermii* (Mundk.) Mundk. & Thirum.

The original type material was procured through the courtesy of Dr. Munjal New Delhi, for which the writer is much obliged. The free hand sections stained with Fuchsin red in lactophenol and mounted in lactophenol, clearly revealed telia, which agreed with the original description of *Mehatamyces sterospermii* (Mundk.) Mundk. & Thirum. (3:623). The telia were seen to be made up of very regular

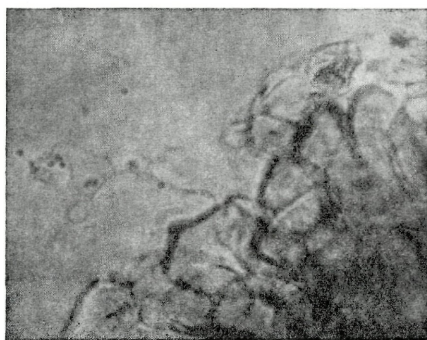


2. Photomicrograph of (1) under high power to show the catenulate teliospores.

chains of squarish teliospores which were laterally and terminally adherent. The telia were non-erumpent and the teliospores showed the nuclei in various stages of fusion, those in the upper layers with the syncaryon or the fusion nucleus, which clearly indicated that the material was mature. These telial characters are duplicated in the previous validly established (2:741) rust-genus *Physopella* Arthur, the only difference being that the wall of the teliospores in the present fungus is hyaline while the wall in *Physopella* Arthur is pigmented. This difference, however, if considered to be of species level, the accomodation of the present fungus as a new species of *Physopella* Arthur is justified. It is, therefore, proposed here to transfer *Mehatamyces* Mundk. & Thirum. to *Physopella* Arthur and that its only species namely *Mehatamyces sterospermii* (Mundk.) Mundk. & Thirum. be considered synonymous with *Physopella sterospermii* (Mundk.) Sathe nom. nov.

3. *Physopella elephantopidis* (Mundk. & Thirum.) Sathe nom. nov.

During the mycological survey at Khandala, the writer collected the living leaves of *Elephantopus scaber* L. (Compositae) showing rust infection on the back side. This when checked through the previous records of rust fungi, was found to belong to the genus *Angiopsora* Mains, under the name *Angiopsora elephantopidis* (Hiratsuka) Mundk. & Thirum. This fungus, however, needs to be transferred to the genus *Physopella* Arthur for reasons discussed in the following paragraphs. Hence it is proposed here that *Angiopsora elephantopidis* (Hiratsuka) Mundk. & Thirum. be transferred to *Physopella elephantopidis* (Mundk. & Thirum) Sathe nom. nov. and considered synonymous with it. This rust is recorded for the first time from the Maharashtra State., India.



3. Photomicrograph of germinating teliospore of *Physopella stakmanii*.

Discussion

Above described rust-fungi are closely allied to the genus *Angiopsora* Mains as originally established by Mains (1934) to accommodate several grass-rusts with non-erumpent telia and catenulate arrangement of teliospores. Recently Cummins & Ramachar (2:741) have pleaded for the replacement of the rust-genus *Angiopsora* Mains by validly and previously established rust-genus *Physopella* Arthur. The writer follows Cummins & Ramachar (1958) in referring the above described species to the genus *Physopella* Arthur.

Acknowledgement

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