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# Notes on some Indian Ustilagineae III*

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1. *Cintractia Cyperi* Clinton, Proc. Bost. Soc. Nat. Hist. **31**: 400, 1904.

Syn. *Cintractia peribebuyensis* Speg. var. *major* Pavgi and Mundkur in Indian Phytopathology **1**: 109, 1948.

Hab. in the peduncles of *Cyperus* sp. Cocanada Madras. December, 1906; leg. S. Sundararaman.

*Cintractia peribebuyensis* (Speg.) Speg. described by Spegazzini from Argentina has been found to be synonymous with *C. axicola* (Berk.) Cornu by Ling (1948) on the basis of an examination of the type material. Several of the smut collections on species of *Cyperus* in India which have been hitherto referred to *C. peribebuyensis* should be placed under *C. minor* (Clinton) Jackson. A new variety var. *major* of *C. peribebuyensis* was proposed by Pavgi and Mundkur (1948) on *Cyperus* species collected in Cocanada, South India. The sori were on peduncles, 2 to 5 mm. long and covered by the pseudo-membrane in the early stages and exposing the olive-black agglutinated spore mass later on. The spores were chestnut brown, 13—18 $\mu$ in diameter with a mean of 15 $\mu$ and smooth epispore. Since *C. peribebuyensis* has been found to be an invalid species, the status of the var. *major* was reconsidered. Comparative studies indicated that from the spore characters the smut under study was identical with *C. Cyperi* Clinton, also known to parasitise species of *Cyperus* and having reddish-brown smooth spores measuring 12—18 $\mu$ in diameter. However, in the North American form on *Cyperus cylindricus, C. filiculmis* and *C. Grayii,* the sori are mostly within the spikelets replacing the utricles with agglutinated spore mass, while in the Indian form, the infection is mostly on the peduncles. The closely related species *C. minor* also infects both the spikelets and the peduncles of *Cyperus* sp. so that the seat of sorus formation in *Cintractia* may not be of much taxonomic significance.

2. On a *Sorosporium* species on *Aristida adscenscionis* and *A. hystrix.*

Two collections of smuts on *Aristida adscenscionis* Linn. and *A. hystrix* L. f. made by the senior author, proved to be interesting

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smut species not recorded in India so far. A single species was found infecting both the hosts. The sori were formed by the infection of the stray spikelets in the inflorescence, the ovary becoming enlarged into a bullate, globular body, 3 to 6 mm. long and 2 to 3 mm. broad. When the sori were teased out, dusty spore mass composed of numerous spore balls were released out. The spore balls on examination were found to be rather firm, composed of spores that were not easily separable and approaching the condition present in *Tolyposporium* species. The spore balls were 35 to 110 $\mu$ in diameter, dark brown, somewhat polyhedral in outline, with 50 to 200 spores in each spore ball. The mature spores were dark reddish-brown, subglobose to spherical, smooth, 6.5 to 10 $\mu$ with a mean of 8.3 $\mu$.

Comparative studies indicated that the smut species under study agreed very closely with *Sorosporium consanguineum* Ell. & Ev. (1887) with minor variations. The latter species also parasitises spikelets of several species of *Aristida*. The sori are stated to be concealed within the glumes and are not conspicuous and bullate as in the smut under study. The spore balls though firm at the beginning are ephemeral in older stages, the spores getting separated easily. In contrast, in the collection studied by us, the spore balls were firm and compact even in old material. The spores also were slightly larger, 6—11 $\mu$ as against 6—9 $\mu$ given for *S. consanguineum*. To indicate these minor differences, we propose to present the smut studied by us as a new variety of *Sorosporium consanguineum*.

*Sorosporium consanguineum* Ell. & Ev. var. **bullatum** Pavgi and Thirumalachar var. nov.

Sori in the ovaries, bullate, ovate to globular, 3 to 6 mm. long, 2 to 3 mm. broad, hard and firm. Spore balls polyhedral, firmly united, 35—110 $\mu$ in diameter. Spores subglobose to spherical, reddish-brown, thick-walled, smooth, 6—11 $\mu$ in diameter, with a mean of 8.3 $\mu$.

Hab. in the ovaries of *Aristida adscenscionis* Linn., Benares Hindu University, leg. M. S. Pavgi, 2—11—1948 (Type); on *Aristida hystrix* L. f. New Delhi, leg. M. S. Pavgi, Oct. 1947.

Soris ovariicolis, bullatis, ovoideis vel sphaericis; 3—6 mm. longis, 2.3 mm latis. Sporarum globi aliquantulum permanenter uniti, subglobosae ad ovales, 35—110 $\mu$ in diam. Sporae subglobosae vel sphaeroideae, rubro-brunneae, 6—11 $\mu$ plerumque 8.3 $\mu$ diam. episporio levi, crasso praeditae.

Hab. In ovariis *Aristidae adscenscionis* Linn., Benares Hindu University, leg. M. S. Pavgi, 2—11—1948 (Typus). On *Aristidae hystrix* L. f. New Delhi, leg. M. S. Pavgi, Oct. 1947.

3. *Tilletia transvaalensis* Zundel, Mycologia **23**: 299, 1931.

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Hab. in the ovaries of *Eragrostis plumosa* Stapf, Benares Hindu University, leg. M. S. Pavgi & M. J. Thirumalachar, 20—11—1949.

Collections of a smut on *Eragrostis plumosa* Stapf growing in the Ayurvedic Gardens, Benares Hindu University, were made and studied. The smut was ovariicolous, infecting stray spikelets in the panicle. The sori were about 1 mm. long, concealed by the glumes at first and later protruding sligthtly and exposing the black spore mass. The spores were 20—26 $\mu$ in diameter with a mean of 23.1 $\mu$, black in mass and reddish-brown under the microscope. The epispore possessed warty projections which gave an echinulate appearance for the spore. The sterile cells were associated with the spores, 18 to 24 $\mu$ in diameter, hyaline or sligthly tinted.

Comparative studies indicated that the smut was identical with *Tilletia transvaalensis* described by Zundel from South Africa on *Eragrostis aspera* Nees. This smut has not so far been collected outside the type locality. Though the type specimen of *T. transvaalensis* was not available for comparison, the identical spore measurements and characters indicated that the collection studied by us should be referred to the same species.

4. *Urocystis agropyri* (Preuss) Schroet. Abh. Schles. Ges. Abh. Nat. Med. 1869, 72: 7, 1870.

Syn. *Tuburcinia Poae* Liro in Ann. Univ. Fenn. Aboensis Ser. A. i, p. 22, 1922.

*Urocystis Poae* (Liro) Padwick & Azmatullah in Mycol. paper in I. M. I. Kew, No. 10, pp. 17, 1944.

A collection of the leaf stripe smut on Poa sp. made in Kashmir, was placed under *Urocystis Poae* by Padwick and Azmatullah by proposing a new combination *U. Poae* (Liro) Padwick & Azmatullah. Liro (1922) who merged the genus *Urocystis* with *Tuburcinia,* segregated numerous species on host basis, of which *Tuburcinia Poae* Liro is one. Recent studies have however indicated, that like *Ustilago striiformis* (Westend.) Niessl, *Urocystis Agropyri* is a composite species with several host genera. Morphologically the spores are indistinguishable on the several hosts, but showing only physiological specilization in infecting the hosts. Hence there seems to be no good reason to separate *Urocystis Poae* as distinct morphologic species from *U. Agropyri.*

5. *Urocystis Anemones* (Pers.) Wint. in Rabenh. Krypt. Fl. **1**: 123, 1881.

Hab. on the stems and petioles of *Ranunculus* sp., Marpola pass (15000 ft.) Kashmir, leg. R. R. Stewart and Nazir, 9—8—1946.

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The smut produces warty sori on the stems and petioles which later on rupture and expose the black spore mass. There seems to be no previous record of this smut species in India.

6. *Tilletia pennisetina* Syd. in Ann. Mycol. **27**: 421—22, 1929.

Hab. on *Pennisetum hohneckeri* Bhowali, Nainital, 22—9—50; leg. D. Srinivasachar.

The smut attacks stray ovaries, and converts them into black powdery mass. There is no previous record of this smut in India.

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