has reached its full development, the activity disappears from the middle-wall layers, and a short time afterwards also the entire wall is free of enzyme.

According to conditions of growth and species of plant the number of cell series showing in their walls an enzyme activity differs. In each case, the walls of xylem cells, which are formed first and the lignification of which is complete, are already free of any enzyme activity. Fig. 1 shows a cross-section through *Pinus sylvestris*, in which the unbroken circle of indophenol blue in the differentiating xylem can be recognized. The same situation can be observed in the differentiating bast fibres of the bark, which lignify likewise, at least partially. During a certain development stage also here appears an important activity of cytochrome oxidase, which conforms with the lignification process. Tests on woody shoots many years old have shown the same results as such shoots one year old: cytochrome oxidase is found only in the differentiation region of the xylem; all older wood regions react negatively.

From the results of the investigation recorded here, we suggest that the principal redoxase involved in the lignification process of cell walls of higher plants is cytochrome oxidase. In order to establish the place on which the proton of the phenolic hydroxyl entered in the oxido-reduction chain of the succinic oxidase system, further investigations are necessary; presumably cytochrome *c* is primarily reduced.

H. Koblitz
D. Koblitz

Deutche Akademie der
Wissenschafter zu Berlin,
Institut für Faserstoff-Forschung,
Teltow-Seehof.

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Piricauda Bubak from India

Bubak (1914) recognized *Stigmella* Lev. as a pycnidiaceous, phæophragmosporous fungus and so erected the genus *Piricauda* to accommodate *S. uleana* Sacc., a simple dematiaceous and phæodictyosporous member. Moore[1], working on 'sensu Saccardo', where many forms producing phæophragmo and dictyospores were immixed with simple dematiaceous, pycnidial, sporodochial and acervular forms, separated genera like *Cheiromyces* Berk and Curt., *Dictyosporium* Corda., *Sporidesmium* Link. ex Fr., *Steganosporium* Corda., *Berkleasmium* Zoebel., *Stemphylium* Wallr., and *Piricauda* Bubak, with monacrogenous conidia. Moore's[2] monograph on the genus *Piricauda*, in which 38 species were considered, further establishes and clarifies this.

The genus *Piricauda* is characterized by producing micronemic, dematiaceous colonies, consisting of continuous or separate, simple conidiophores arising from the creeping hyphæ, cutting off phæodictyospores monacrogenously. The conidiophores are sometimes reduced to a single cell or a peg-like structure or entirely absent. During an investigation of Hyphomycetes of Hyderabad a species of *Piricauda* was collected by us and described as new, *Piricauda obclavata*, since it differed from the known ones. This is not only the first record of this fungus from India but also an addition to the known species.

Piricauda obclavata sp. nov. This fungus produces black, pin-head-sized colonies on the substratum. Colonies are micronemic, cushion-shaped with dark brown, septate, sparingly-branched hyphæ. Hyphæ are characteristically

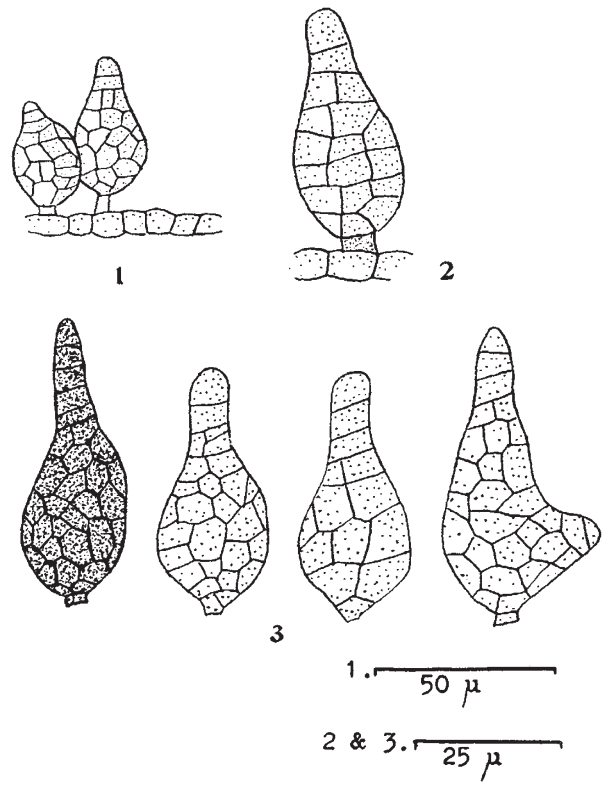

Fig. 1. 1, part of colony; 2, conidiophore and conidium; 3, conidia

attenuated at the septa, thick-walled, 3–7·2μ broad and the septa are 7·2–10·8μ apart. Conidiophores arise singly from the cells of the creeping hyphæ. The conidiophores arise continuous, yellowish-brown, very short, 3–7μ long, 1·5–3·6μ broad, producing conidia monacrogenously. Conidia are dictyosporous, black to blackish brown, opaque when mature, obclavate, 32–47μ long, 14–22μ broad at its widest, with a short or slightly elongate apical beak, 13–35 celled. Rarely are conidia observed with a lateral beak also.

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Full diagnosis of *Piricauda obclavata* can be obtained from the author.

P. Raghuveer Rao
Department of Botany, Nizan College,
Dev Rao
Department of Botany, Vivek Vardhini College,
Hyderabad-A.P., India.

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MICROBIOLOGY

Sub-microscopic Structure of Injured Surface of *Paramecium caudatum*

Paramecium caudatum is a very suitable object for observing the regeneration of the surface of Protozoa. The cell surface of *Paramecium caudatum* is composed of pellicula and cilia which are distributed evenly all over the cell surface.

The defect in pellicula of *Paramecium* was made in such a way that the front or back part (about 0·25 of the cell) was removed. The nuclear fragments were fixed with buffered 1 per cent osmium tetroxide (*p*H 7·2) for