affected. With a further rise in temperature, i.e., at 32°C, the vegetative growth was inhibited and ultimately at 34°C the growth of the fungus was completely arrested.

This accounts for the total absence of the fungus on plates exposed during the months with temperatures higher than 33°C.

Thanks are due to Professor S. M. Sircar, Director and Dr. D. M. Bose, former Director of this Institute.

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October 4, 1971.


**PROTOSTROMA INDICA SP. NOV. FROM INDIA**

An interesting but a rare Sphaeropsisidaceous fungus was recently collected by the writers growing on dried twigs of Lantana camara L. at Sinhagad Fort (near Poona). Critical examination of the fungus revealed the following characters: Stroma black, innate-erumpent, sub-cortical, sessile, non-olivolate, multiloculate; conidiophores minute sub-hyaline; conidia catenulate, acrogenous, spherical to globose, one-celled and verrucose, light-brown to olivaceous brown at maturity. On the basis of these characters, the fungus was identified as a species of the form-genus *Protostroma* Batista. This fungus genus was established by Batista (1957) with *Protostroma hyphaeuae* Batista as type collected on *Hyphaenium thebeaica* at Brazil (S. America). The genus is monotypic and has not been previously reported from India. The present collection was, therefore, critically compared with type species and found to be significantly distinct in respect of habit, morphological characters, dimensions of fruiting structures and host-relationship (Table I), thus justifying its accommodation in a new taxon. Accordingly, the fungus is described here as a new species with the following Latin diagnosis.

**Protostroma indica** sp. nov.

Mycelio libero nullo. Pycnostrorumata atra, erumpentia, dispersa, pulvinata, sub-corticolibus; non-olivolata, multiloculata, Pories, fusce-brunneae, 480-720 x 400-560 μ; pycnia, sphaerica vel globoidea, 176-224 x 144-176 μ interi-ribus stratis, pallidibus-brunneis, parenchymatis. Conidiophora minuta, sub-hyalina, in parietis strata. Conidia (pynidiosporae) hyalina, fusca vel olivacea-brunneae ad maturitas, uni-cellularia, sphaerica vel globoidea, continua, crassi-uscule tunicati, leviter verrucose, 2.7-3.6 μ in diam.

![Diagram](image)

**Fig. 1.** A. Habit; B. Section through pycnidial stroma; C. Pycnidiospores.

In culmis emortius, Lantanae camarae L. (F. Verbenaceae); Legit. D. N. Prakash (26-6-1971), ad Sinhagad (Poona); M.A.C.S. Mycol. Herb. Sub-Numero 1514 (Typus).

The form-genus *Protostroma* Batista is a new generic record to Indian Fungi and the

**Table I**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habit</th>
<th>Pycnidiospore in μ</th>
<th>Locules</th>
<th>Pycnidiospores in μ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protostroma hyphaeuae</strong>&lt;br&gt;(Batista, 1957)</td>
<td>Epiphytic sub-cortical</td>
<td>Sea-isle. 93-165 x 60-100</td>
<td>Plurilocular cavities irregular, elliptical, 65-126 x 33-63</td>
<td>Aerogenous, ellipsoid, olivaceous brown, verrucose, 10-15 x 4.8-7</td>
</tr>
<tr>
<td><strong>Protostroma sp.</strong>&lt;br&gt;(under study)</td>
<td>Sub-cortical</td>
<td>Sessile. 480-720 x 400-500</td>
<td>Plurilocular cavities spherical to glo- bular. 176-224 x 144-176.</td>
<td>Catenulate, sub-spherical, to globoid olivaceous brown thick walled, verrucose, 2.7-3.6 μ in diam.</td>
</tr>
</tbody>
</table>
present fungus, a second known species of this genus.

Grateful thanks are offered to Prof. M. N. Kamat, for his keen interest and helpful suggestions and to the Director, for laboratory and literature facilities at the Institute.

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ENDOPOLYPLOIDY IN THE TAPETAL CELLS OF CHRYSANTHEMUM CARINATUM*

ABSTRACT

In the tapetal cells of the mature anthers of Chrysanthemum carinatum (2n = 18) two large tetraploid nuclei were commonly observed. Occasionally uninucleate cells were also seen, which divided endomitotically resulting in 16x ploidy level.

TAPETAL cells of mature anthers of several angiosperms have been reported to be polyploids. The origin of polyploidy in these cells has been ascribed to the failure of cell wall formation after the nuclear division and coming together of the daughter chromatids of two different nuclei into the same nucleus at the time of second and subsequent divisions. In only one species, Spinacia oleracea, endopolyploidy in the tapetal cells has been reported to occur due to endomitosis.

In Chrysanthemum carinatum (2n = 18), the mature anthers were found to have uninucleate, binucleate and tetranucleate tapetal cells. It was observed that first division of the tapetal nucleus was normal, but the cell wall was not formed and a binucleate cell resulted. During the second division of the nuclei, the orientation of metaphase plate was such that two large or four small nuclei were formed in the same cell (Figs. 1 and 2).

Most of the cells had two large tetraploid nuclei. Some of the cells were uninucleate due to the arrangement of the metaphase plates of two nuclei very close to each other. These cells were thus octoploids. The nuclear division was usually not observed after this stage. But, some of the cells appeared to undergo another nuclear division which was endomitotic in nature. As seen in Fig. 3, in a uninucleate tapetal cell more than 26 chromosomes can be conveniently counted and the ploidy level in this cell is thus 8x. It is clearly seen that the chromosomes are further preparing for equational division, as two chromatids in each chromosome are observed. After this stage no clear-cut observations were possible. It is, however, obvious that the ploidy level in such cells can rise upto 16x.

Mather suggested that the cells of tapetum have no future in development and hence are no longer subject to the rigid control of cell division. Lewis on the other hand has emphasised the significance of endopolyploidy in the tapetal cells. He has suggested that endopolyploid tapetal cells synthesise more nucleic acids than the pollen mother cells. On the breakdown of the tapetum these products become available to the pollen mother cells.