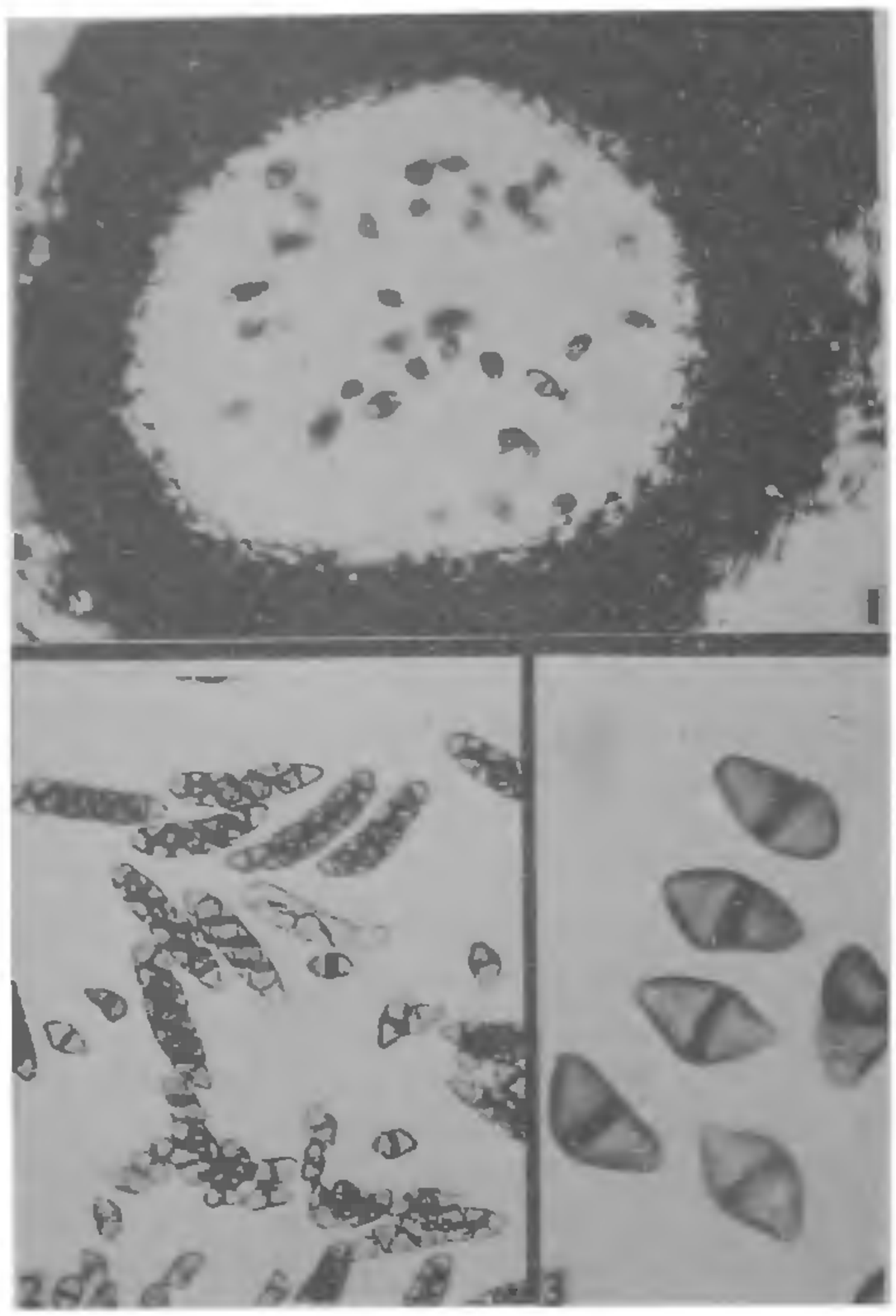

Figures 1–3. 1. T. S. of the ascomata (×500). **2.** Asci with ascospores (× 255). **3.** Ascospores (×1630).

Neostudina cunninghamiae (D. Hawksw and C. Booth) V. Arx and E. Müll, Stud. Mycol. 9: 1–159, 1975 (figures 1–3).
= *Zopfia cunninghamiae* Hawksw and C. Booth Mycol. Pap. 135: 1–38, 1974.

Colonies on PDA slow growing (1 cm diam in a week) greyish black to black, felted, reverse black, ascomata cleistothecial, spherical, 180–320 μm diam; peridium thick-walled, outer layers with sclerotized cells, 15–45 μm thick and inner layers hyaline to light brown, 10–30 μm thick with compressed cells, 2–5 × 4–8 μm; pseudoparaphyses present; asci bitunicate, cylindrical to subcylindrical, stipitate, biseriate, 8-spored, evanescent; ascospores brown, bicelled, not constricted at the septum, broadly ellipsoidal to asymmetrical, 11.9–17 × 6.8–8.5 μm.

Isolated from soil, Mamandur, S. Arcot, South India, March, 1978.

The present isolate shows considerable variation in ascospore shape. Even in a single ascus both symmetrical and asymmetrical spores are present. Similar observations were made in the case of *Zopfia rosatti* by Hawksworth and Booth[1].

This is the only second record of this fungus and is being recorded for the first time from the soil[2].

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HISTOCHEMICAL STUDIES IN COTTON STENOSIS

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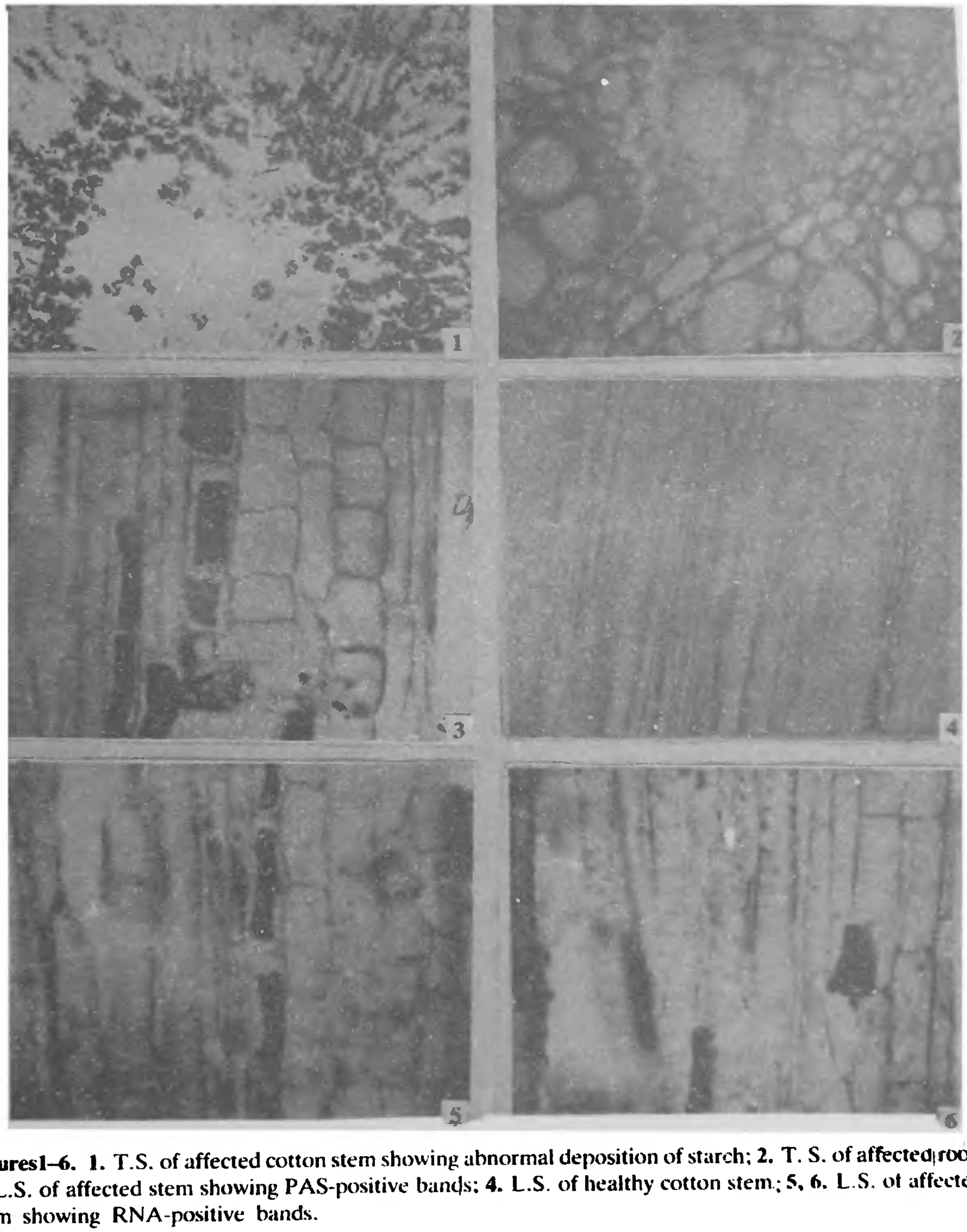
LITTLE leaf or cotton stenosis has been recently shown to be caused by mycoplasma-like bodies[1]. Both light and electron microscopic studies on mycoplasma-affected plants reveal that the association of mycoplasma-like organisms (MLOS) with the host bring about cytopathological changes[2,3]. Recently in the light microscopic study of sandal spike disease some cytoplasmic inclusions of mycoplasmal origin have been reported[4]. The other reports available on this line are on the detection of mycoplasma-like organisms in the affected tissues of *Nicotiana tabacum* and *Vinca rosea*[3], in the plants affected by legume little leaf and tomato bigbud[5], yellow type of plant disease[6,7], and little leaf disease of *Acanthospermum hispidum*[8]. In the present investigation, an attempt was made to find out the histochemical changes in the healthy and diseased plants.

Stems and roots of healthy and diseased plants were fixed in formalin, acetic acid and alcohol (FAA) for 24 hr, dehydrated in alcohol, butanol series and embedded in paraffin. Transverse and longitudinal sections of these materials were taken at 10–15 μ thickness and mounted using gelatin adhesive. The sections were subjected to standard histochemical procedures. For the localization of starch, insoluble polysaccharides and RNA-IKI,



Figures1–6. **1.** T.S. of affected cotton stem showing abnormal deposition of starch; **2.** T. S. of affected root; **3.** L.S. of affected stem showing PAS-positive bands; **4.** L.S. of healthy cotton stem; **5, 6.** L.S. of affected stem showing RNA-positive bands.

periodic schiffs and Azure B methods were respectively[9] followed.

An affected stem in transection showed copious deposition of starch in the pith and the ray parenchyma and also in parenchyma associated with xylem and phloem (figure 1). The deposition of starch was not found in any tissues of uninfected plants. However, extremely low quantity of starch was found in the ray parenchyma of infected root (figure 2). While richly stained PAS positive bands

were observed in the cells of pith parenchyma and also in xylem and phloem parenchyma of infected stem (figure 3); no such PAS positive bands were observed in any tissues of uninfected stem (figure 4). The bands present in the pith, xylem and phloem parenchyma were also richly RNA-positive (figure 5). Some of these RNA positive bands were also present in the tracheal elements (figure 6).

Mycoplasma-like organisms are known to disrupt normal translocation process in the diseased plant. In the present investigation the abnormal deposition of starch in the tissue of mycoplasma-affected stem suggests that it is linked with disturbed photosynthesis and energy-mediated transport. This observation also lends support to the earlier work of viral-infected plants[10]. The presence of thick PAS-positive and RNA-positive bands in the stem of affected plant indicates the production of gum-like substance in the cells of pith parenchyma and xylem and phloem parenchyma. The gum is generally considered to be a decomposition product of carbohydrates especially starch, moving into tracheal elements. It is often been described as wound gum showing lignin reaction[11]. Such series of drastic biochemical changes naturally affect the normal translocation path ultimately bringing the degeneration of various tissues which further lead to stunting or cotton stenosis.

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HABITAT DIVERSITY AND FROND MORPHOLOGY OF TWO CYATHEACEOUS FERNS OF RAJASTHAN

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RAJASTHAN ferns occur in diversified habitats ranging from the comparatively drier Haroti plateau plains with lesser rainfall to humid habitats of Aravalli ranges, the highest peak of which is Mt. Abu (height 1727 m), the only hill station in the state of Rajasthan[1-2]. The frond morphology of two Cyatheaceous ferns; *Ampelopteris prolifera* (Retz) Copel, a fern with a prolific presence at Sitabari, Kota division (Haroti plateau plain) and *Dryopteris cochleata* (Don) C. Chr. occurring widely at Mt. Abu is described.

A. prolifera endures characteristic habitat dryness and frequent water deficiency for most of the year while *D. cochleata* happens to grow in a habitat with a rather extended period of humidity and in thickly shaded forest at Mt. Abu. It is relevant to mention here that comparative studies of leaf morphology and anatomy from diverse habitats possesing dissimilar vegation have been routinely carried out in Angiosperms[3-5], but have never been reported in ferns or fern allies.

Fresh fronds of *A. prolifera* from Sitabari (Kota) and *D. cochleata* from Mt. Abu (Sirohi) were fixed in 50% ethanol[3]. Sections of pinna were cut and stained with safranin-fast green combination and also with eosine.

The average thickness in microns of the frond tissue in these two ferns is shown in table 1. It is observed that *A. prolifera* possesses a thick cuticle and a thick palisade with thinner upper as well as lower epidermis, while in *D. cochleata* the cuticle and palisade are relatively thin and both the upper and lower epidermis are thick. *A. prolifera* is thus better adapted to the drier conditions prevailing at Haroti plateau plains whence water-deficit and soil-nitrogen deficiencies contribute further towards physiological dryness. *D. cochleata* with its thin