DIDYMOSPHAERIA PELTIGERAE FUCK.— A LICHEN PARASITE FROM SOUTH INDIA

DURING the course of our lichenological collections at Kodaikanal (Tamil Nadu), the writers encountered an ascomycete fungus *Didymosphaeria peltigerae* Fuck. on lichen thalli of *Parmelia reticulata* Tayl. AMH No. 4222.

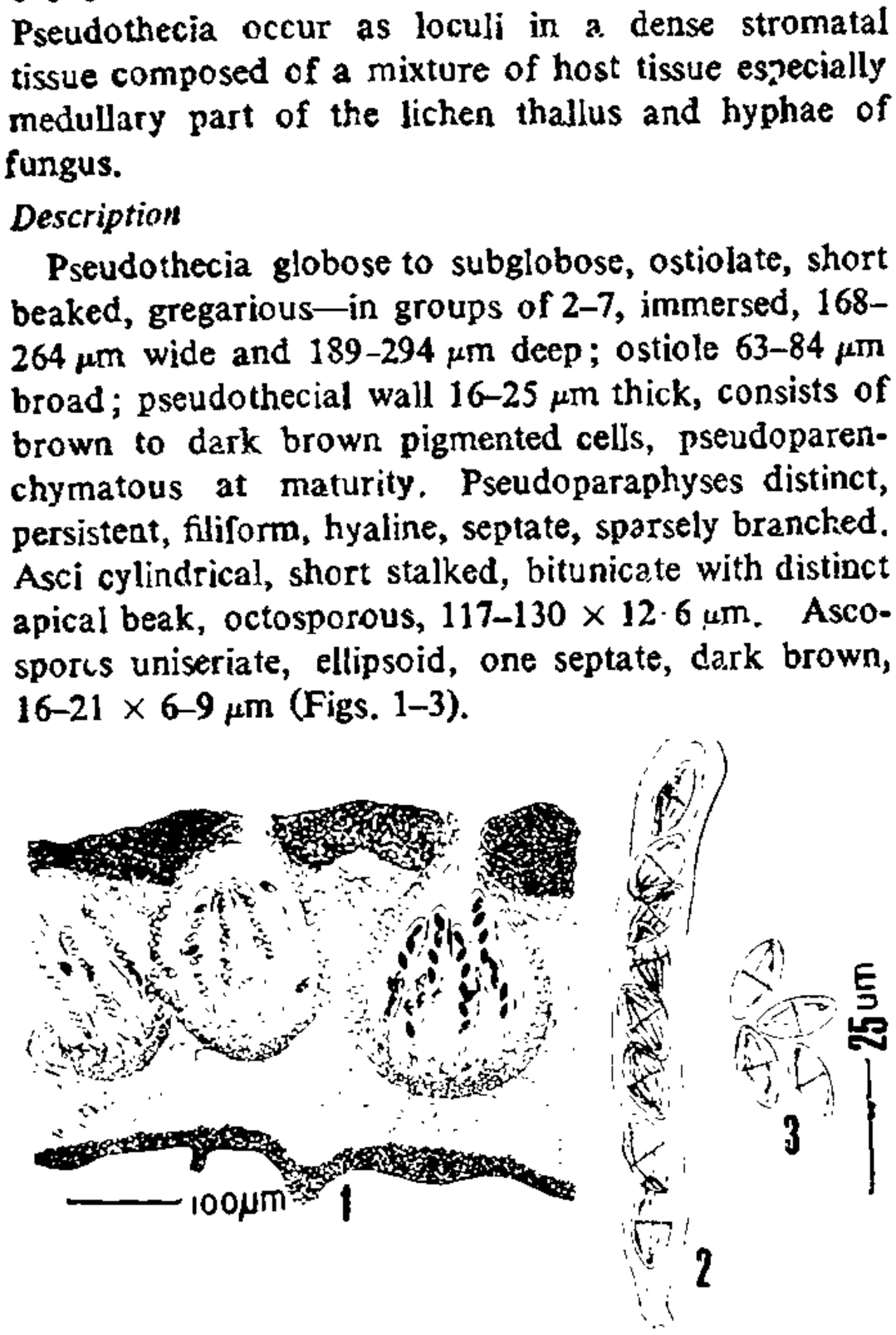
The fungus *Didymosphaeria peltigerae* Fuck.[1] has previously been reported on thalli of *Peltigera canina* (L.) Schaer from Europe. Since such host-parasite association has not previously been reported from India, a brief description of the fungus is given below:

Didymosphaeria peltigerae Fuck. appears to be a parasite in this case rather than a parasymbiont as is evident from infected areas which become black and conspicuously thick.

The parasite forms blackened, stromatic patches of 0·5–3 mm size on its host *Parmelia reticulata* Tayl. Pseudothecia occur as loculi in a dense stromatal tissue composed of a mixture of host tissue especially medullary part of the lichen thallus and hyphae of fungus.

Description

Pseudothecia globose to subglobose, ostiolate, short beaked, gregarious—in groups of 2–7, immersed, 168–264 μm wide and 189–294 μm deep; ostiole 63–84 μm broad; pseudothecial wall 16–25 μm thick, consists of brown to dark brown pigmented cells, pseudoparenchymatous at maturity. Pseudoparaphyses distinct, persistent, filiform, hyaline, septate, sparsely branched. Asci cylindrical, short stalked, bitunicate with distinct apical beak, octosporous, 117–130 × 12·6 μm. Ascospores uniseriate, ellipsoid, one septate, dark brown, 16–21 × 6–9 μm (Figs. 1–3).



FIGS. 1–3. 1. V.S. through stroma; 2. Ascus; 3. Ascospores.

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SECONDARY POLYPLOIDY IN THE *SOLANUM NIGRUM* L. COMPLEX

THE interrelationship and nature of polyploidy, and the origin and evolution of higher chromosomal forms of species of the *Solanum nigrum* L. complex have often been a puzzle to the evolutionary biologist. The author while studying the various cytogenetical aspects of species of the *S. nigrum* complex produced autotetraploids of *S. americanum*. The present note deals with cytology of two triploid plants ($n = 18$) obtained in C_2 population of autotetraploids of *S. americanum*.

Solanum americanum Mill. ($n = 12$) is an unarmed herb with small, globose, dark purplish black fruits. At maturity the fruits are held erect with strongly recurved calyx lobes. The pollen fertility was 94·7%. The colchicine induced tetraploids bore large, globose, deep purplish black fruits. The pollen fertility was 59·90%.

The triploids were vigorous in growth, but highly sterile. The pollen fertility was 14 03%. The plants produced small black fruits without viable seeds.

In triploids the course of meiosis was highly irregular. At diakinesis the mean pairing of chromosomes, per cell, was $4·85_{I} + 6·75_{II} + 5·71_{III} + 0·13_{IV}$. The chiasma frequency per cell and per bivalent was 24·87 and 1·38 respectively. At metaphase I the mean pairing of chromosomes, per cell, was $5·72_{I} + 6·61_{II} + 5·62_{III} + 0·05_{IV}$ and about 30% of the cells showed as many as 6 trivalents. The chiasma frequency per cell was 19·98 whereas per bivalent it was 1·11. The disjunction of chromosomes at anaphase I was irregular. Cells with 20 : 16, 21 : 15 and 24 : 12 distribution of chromsomes at poles were observed, but cells with 18 chromsomes at each pole were recorded only in 3·10% of the cells. Laggards were seen in about 14·00% of the cells, but bridges and fragments were not observed. At telophase I, micronuclei were recorded in 2·98% of the cells. At anaphase II, in about 16·00% of the cells, laggards were observed. At telephase II, micronuclei were observed in 7·82% of the cells.

At metaphase I, the recorded mean value of trivalents per cell (5·62) may indicate the secondary polyploidy nature of species of the *Solanum nigrum* complex. This is further corroborated by the occurrence of as

many as 6 trivalents at metaphase I in a few pollen mother cells. These observations indicate that 12, the existing basic chromosome number of species of the complex, is consequently of secondary polyploid origin and 6 is likely the original basic number, and therefore, a search for species with $n = 6$ chromosomes may be useful in comprehensive study of the origin and evolution of higher chromosomal forms of species of the *S. nigrum* complex.

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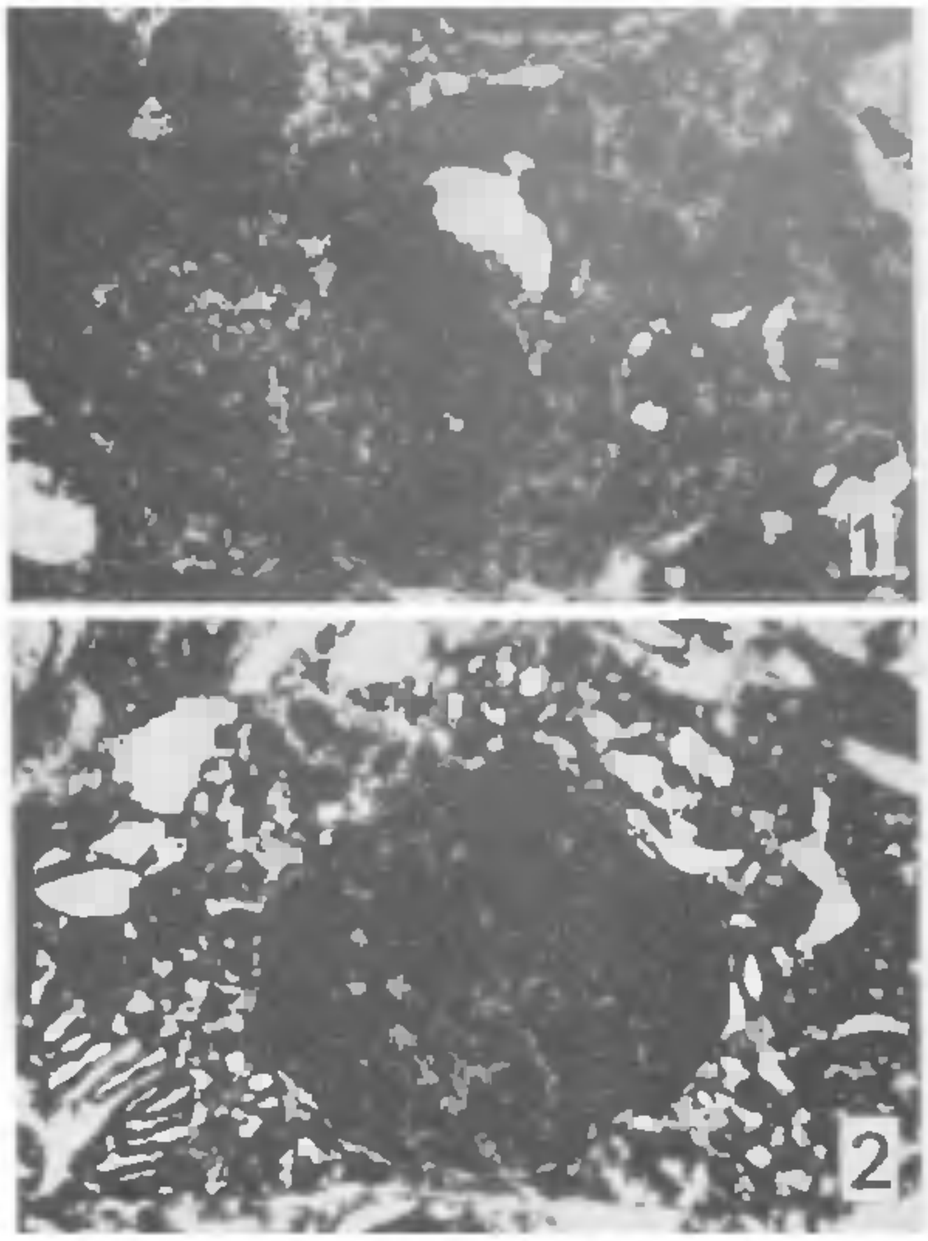
ULTRASTRUCTURAL CHANGES IN THE INTERSTITIAL CELLS OF LEYDIG IN THE TESTIS OF CADMIUM INJECTED RATS

Literature on the toxic influence of cadmium (Cd) on the testis of mammals is voluminous[1,2]. Recently Dutt *et al.*[3] have reported changes in the serum levels of gonadotropins and androgens following a single injection of Cd. These authors have also described parallel histological changes in the testis. This communication relates to our observations on the ultrastructure of the interstitial cells of Leydig in the testis of Cd treated rat.

Male rats of Wistar strain weighing around 300 g were used in this study. They were housed in cages, three individuals in each, in the laboratory on a 12 h light/12 h dark schedule (lights on 06·00 h). Cadmium chloride was dissolved in distilled water in the concentration of 0·04 M (9·12 g/litre). One ml/kg body weight was injected subcutaneously as recommended by Parizek[4]. Distilled water-injected rats served as controls. Food and water were always available to them. All the animals were killed by decapitation. Small pieces of testis of both the control and experimental animals at intervals of 6, 12, 24 and 48 h after the administration of Cd were fixed in 3% ice-cold glutaraldehyde at pH 7·4 with phosphate buffer (0·1M phosphate buffer containing 3% sucrose) for 2 h and subsequently in 1% solution of buffered osmium tetroxide. Araldite epon was used for embedding. Ultrathin sections cut with a glass knife on a Porter Blum Microtome MT–1 type and mounted on copper grids were stained with uranyl acetate and lead citrate solutions. They were examined with a Hitachi electron microscope Model HS–8.

Normal Leydig cells under electron microscope were seen to be rich in oblong and spherical mitochondria, lipid droplets and lysosome-like bodies (Fig. 1). Agranular endoplasmic reticulum was also observed. Nuclei of these cells appeared irregular in shape with a dense rim of chromatin close to the nuclear membrane. Serum testosterone level in the controls as reported earlier by us was moderate (1756 ± 335)[3]. At 6 h, after Cd treatment the Leydig cell cytoplasm contained several vacuoles (Fig. 2). Mitochondria were abundant, whereas the nucleus contained darkly stained bodies. These observations which suggest cellular hypertrophy correlates well with the sharp increase in the level of serum testosterone (5782 ± 1826)[3]. At 12 h after Cd injection, the Leydig cell cytoplasm was completely devoid of mitochondria and the cytoplasm had a distorted appearance (Fig. 3). The nucleus underwent shrinkage and the chromatin appeared course probably due to condensa



Figs. 1–3. Fig. 1. A portion of a Leydig cell from a control rat testis showing mitochondria, lipid droplets and lysosome-like bodies, × 21,000. Fig. 2. Leydig cell from rat testis 6 h after cadmium injection showing extensive vacuolisation in the cytoplasm, × 18,000. Fig. 3. Same as above but 12 h after the administration of cadmium. Note the complete distortion of cytoplasmic details. × 22,000.