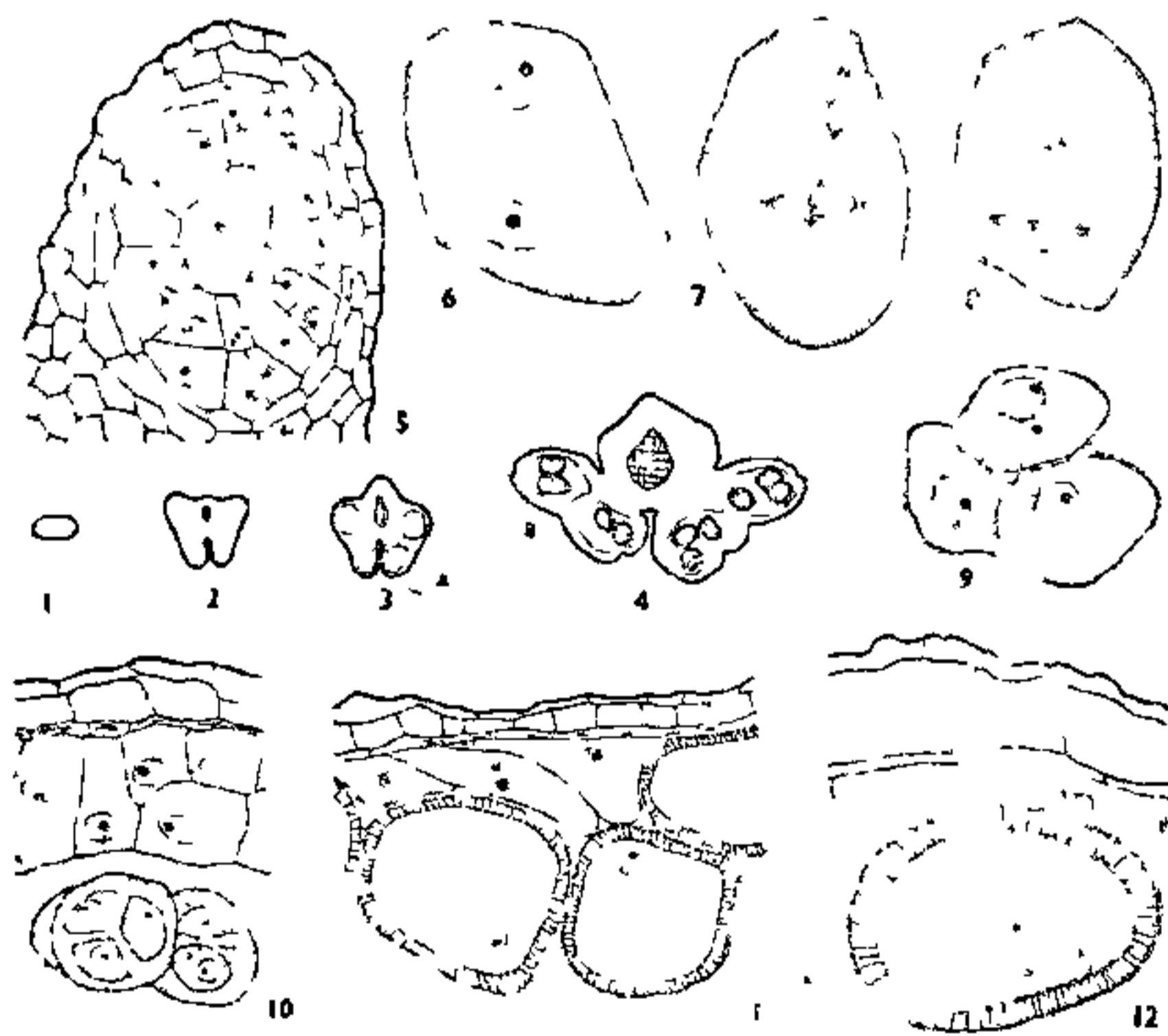


microsporangium. During meiosis II the spindles may be oriented parallel or at right angles to each other (Figs. 7-8) forming isobilateral, tetrahedral (Figs. 9-10) and decussate tetrads. As the young microspores enlarge the special mucilaginous wall is consumed and the original wall of the mother cell breaks down (Fig. 9). In *Rauwolfia canescens*, Meyer (1938)² noted both successive and simultaneous divisions. However, in *R. serpentina*, the author observed only simultaneous divisions.

Due to the appearance of a vacuole the centrally situated nucleus of the richly cytoplasmic microspore is soon pushed to one side (Fig. 11). Subsequent to mitotic division in the microspore, the generative nucleus surrounded by a cytoplasmic sheath moves nearer the vegetative nucleus (Fig. 12). The mature pollen grain contains abundant starch (Fig. 12). The enlargement of the pollen grain is accompanied by the thinning of the exine. The pollen is shed at the 2-celled stage (Figs. 4-12) which is also the case in *Amsonia salicifolia* (Schnarf, 1931)⁵. Meyer (1938)² reported 3-celled condition in *Rauwolfia canescens* and some other Apocynaceae.



FIGS. 1-12.

In a mature anther the outer tangential wall of the epidermis becomes somewhat papillate. The cells of the endothecium elongate radially and develop fibrous thickenings (Fig. 12). The middle layers get flattened even before the formation of tetrads. The dehiscence of the anther is brought about by the breaking down of the thin walled cells at the junction of the pollen sacs (Fig. 4).

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CYTOLOGY OF PONGAM OIL TREE [*DERRIS INDICA* (LAMK.) BENNET]

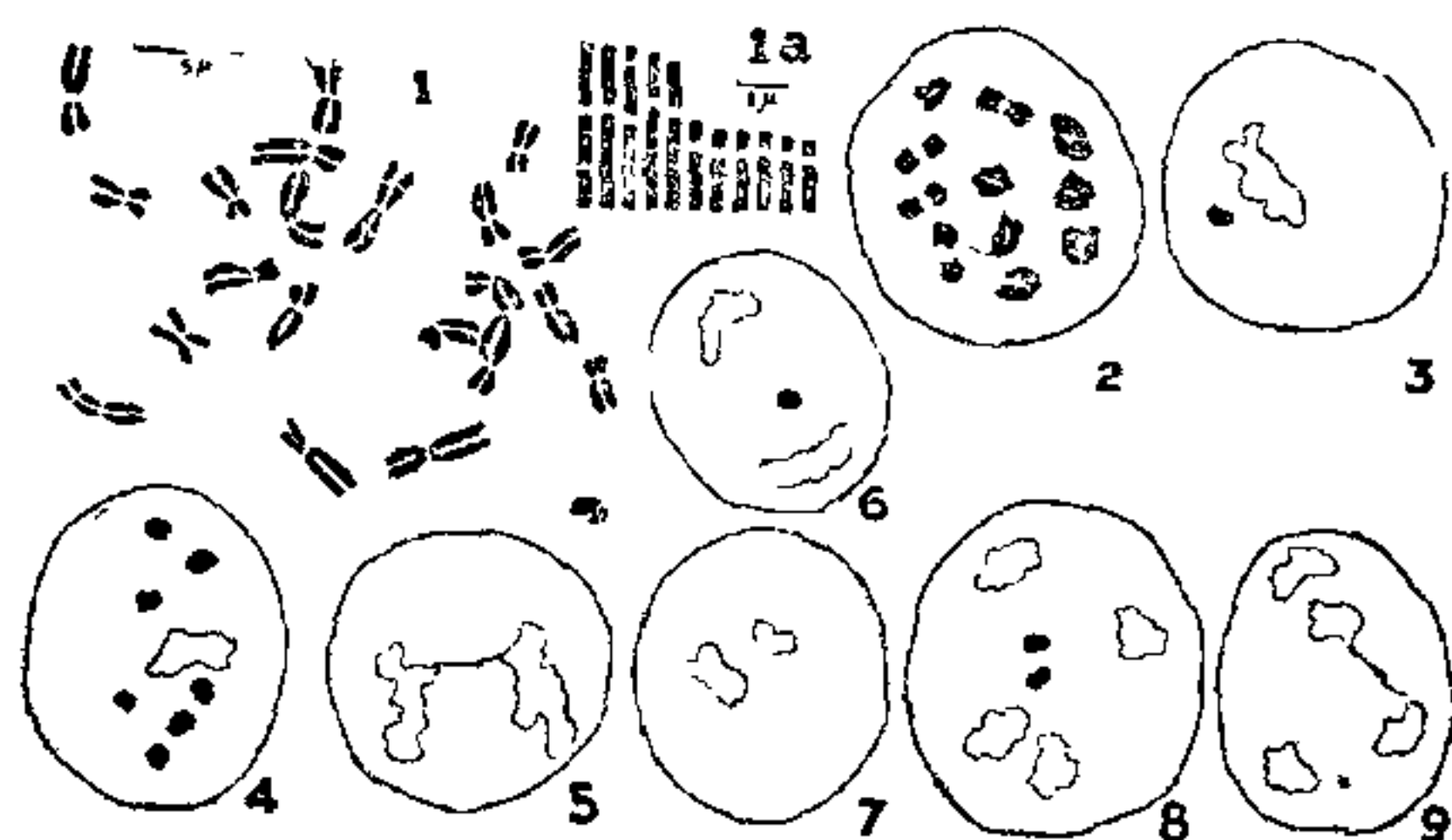
Derris indica (Lamk.) Bennet² [Syns. *Pongamia pinnata* (Linn.) Pierre., *Pongamia glabra* Vent.] is an economically important tree growing widely upto an altitude of 1200 meters (S.L.) in tropical Asia. Pongam oil from the seeds has many medicinal and industrial uses. The reports of only the chromosome number for the species are $2n = 20$ ¹ and $n = 11$ and $2n = 22$ ^{3,4}. This communication deals with the karyotype and meiotic studies of the plant.

The seeds and flower buds were collected from different localities in Gujarat State. Following Tjio and Levan's (1950)⁶ oxyquinoline aceto-orcein squash technique, the mitotic preparations were made. The flower buds were fixed in Carnoy's fluid (6 : 3 : 1) before preparing the smears. The pollen fertility was determined by using Muntzing's mixture⁵.

The present investigation confirms the earlier reports of $n = 11$, $2n = 22$ ^{3,4}. The chromosomes within the complement can be classified into 2 categories, viz., the longer and the shorter types based on the length and ratio of the longest to the shortest pair of chromosomes. There are 5 pairs of long chromosomes (3.06μ to 3.90μ), of which 3 pairs are with nearly median and 2 pairs are with nearly sub-median centromeres. One of the 2 pairs with nearly median centromere is having a secondary constriction on the short arm. The short type of chromosomes is represented by 6 pairs (1.70μ to 2.55μ) having nearly sub-median centromeres without any secondary constriction (Figs. 1 and 1a).

Meiotic studies show the presence of 11 bivalents (Fig. 2). Frequent occurrence of abnormalities were encountered during the first and second meiotic divisions. The common abnormalities

recorded were occurrences of laggards, bridges, unequal distribution and cytomixes (Figs. 3 to 8).



FIGS. 1-9. Fig. 1 and 1a. Karyotype and idiogram. Fig. 2. Normal diakinesis. Fig. 3. PMC showing association of 10 bivalents and 1 separate. Fig. 4. PMC showing association of 4 bivalents in the middle and 7 bivalents around. Figs. 5. and 6. Laggard and bridge at anaphase I. Fig. 7. Unequal distribution. Figs. 8. and 9. Laggards and bridge at anaphase II respectively.

From the total number 385 pollen mother cells scored for observations nearly 41.57% showed abnormal divisions. This behaviour was confirmed by determining the pollen fertility, which turned out to be 56.40%. The presence of abnormalities and the reduced pollen fertility in an established species like *Derris indica* are important for understanding the mode of speciation in highly evolved plant species.

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A LEAF DISEASE OF POPLAR FROM KASHMIR?

DURING the course of my investigations on the morphological variations of the conidia of *Spilocca pomi* Fr ex Fr. on different varieties of apples in the Kashmir valley, I came across a leaf spot disease on *Populus alba* in the Doabga orchard at

Sopore. This fungus has been identified as *Cladosporium martianoffianum* Thüm., and has not been reported from India before. Some of the orchardists have mistaken this for the scab-causing organism.

Cladosporium martianoffianum Pilzfl. *Sibir n.* 474 et 653, Saccardo, *Syll. Fung.* 4 : 357-358, 1886. Spots irregular, measuring 1-3 mm in diameter, hypophyllous, velutinous, deep olivaceous, often perforating the leaf; stroma absent. Conidiophores macronematous, rarely branched, subfasciculate, deep brown, upto 45 μ long and 4-6 μ wide, conidigenous cells polyblastic, indeterminate, terminal, pale brown to subhyaline; conidia single, sometimes in short chains, broadly fusoid or obtuse, one septate, rarely single, pallid brown, 8-15 (-16) \times 4 \times 5 (-6) μ . Collected on living leaves of *Populus alba*, on 9th of July 1975, from Doabga apple orchard, Sopore, Baramula Dt., Kashmir (Herb. No. 195518 of the Commonwealth Mycological Institute, U.K.). This fungus was originally described on *Populus saveolens* and *P. laurifolia* from Siberia.

It may be of interest to mention here that *Fusicladium radiosum* (Lib.) Lind¹, was described on *Populus tremuloides* from Manitoba. This fungus was later on described as *Pollaccia radiosa* (Lib.) Bald. and Cliff, the perfect state being *Venturia macularis* (Fr.) E. Muller et Arx.

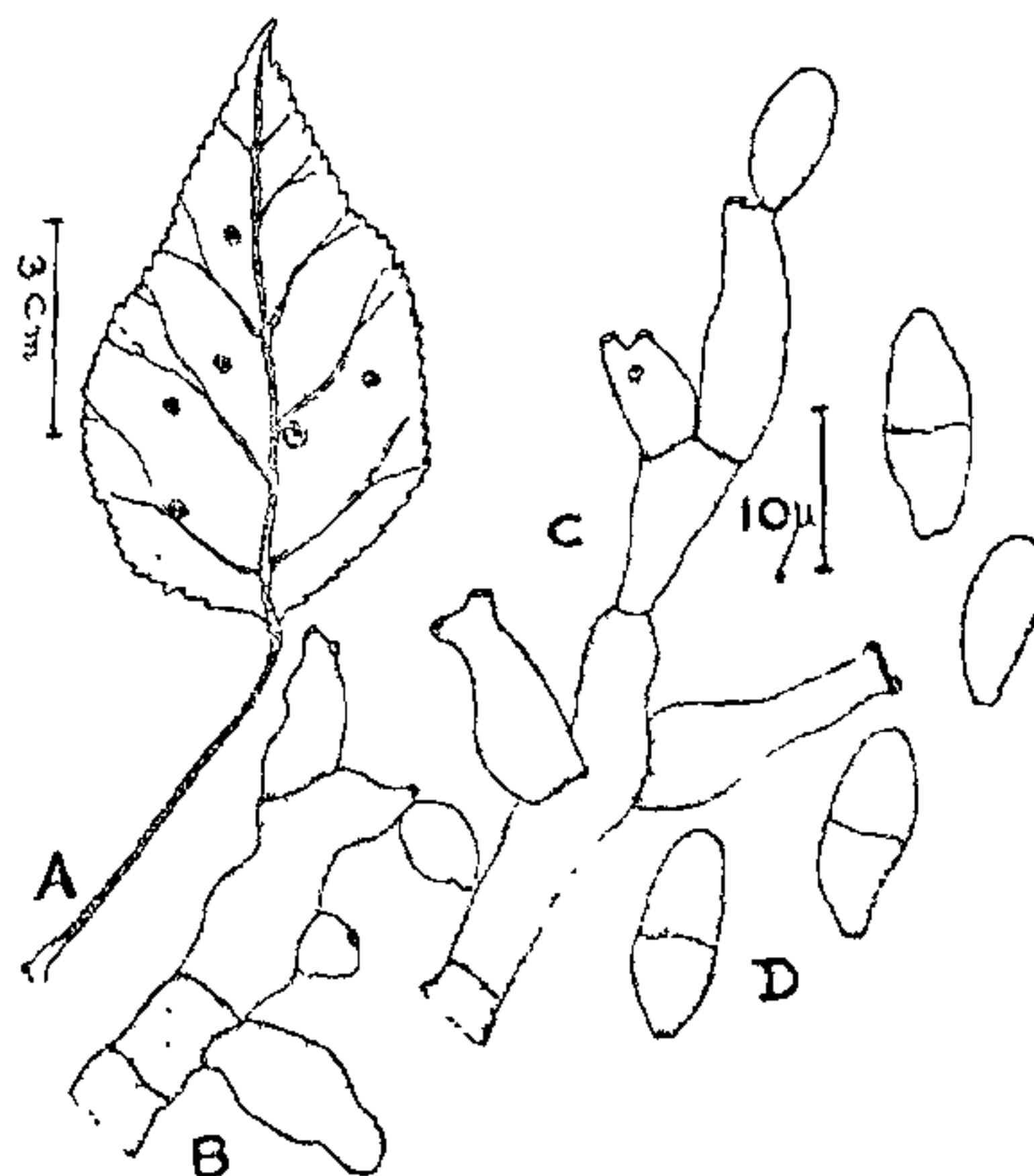


FIG. 1. A-D. *Cladosporium martianoffianum* Thüm. A. The undersurface of *Populus alba* leaf showing the fungal spots. B and C conidiophores and Conidia. D. Conidia.

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