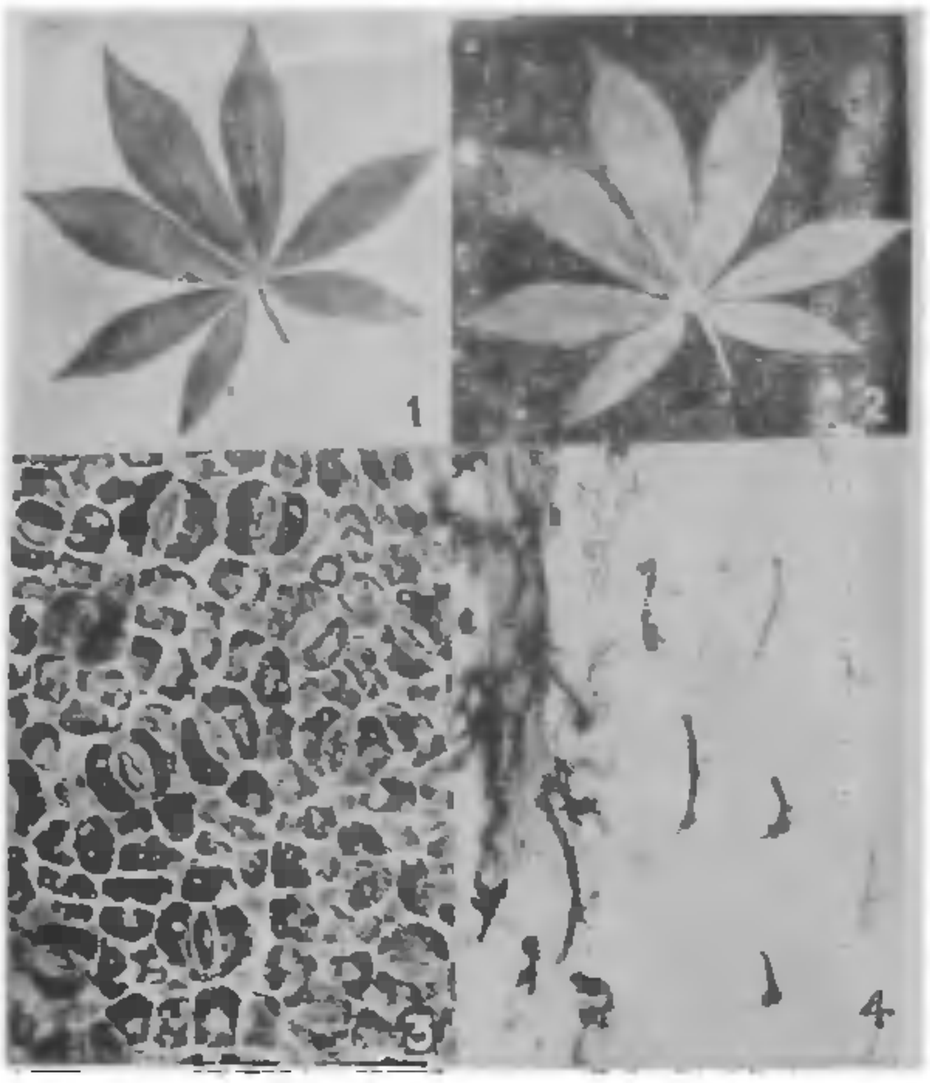

FIGS. 1–4. Fig. 1. Normal leaf. Fig. 2. Fevicol impression of the leaf. Fig. 3. Stomatal distribution from Fevicol impression, × 300. Fig. 4. Hairiness recorded from the impression, × 75.

epidermal peelings. The casting of leaf impressions in silicon rubber, followed by replicas cast with cellulose acetate film[3], is more time consuming and also reported to be unsuitable for plants with small stomata[4].

By adopting the adhesive peeling technique, 64 genetic stocks have been studied. A wide variation of stomatal distribution ranging from 30·3 to 73·7 per unit area (278·2 to 676·8 per mm²) in different clones has been established (Fig. 3). The adhesive peelings further revealed the presence of hairs in varying degrees on the leaf surface (Fig. 4). The occurrence of varieties with dense hairs may also indicate drought resistance and possible pest resistant characteristics.

While it may be possible to determine the stomatal distribution in two or three clones per day through conventional epidermal peelings, as much as 20 clones can easily be screened by adopting the present technique. The possibility of achieving the impressions of stomata simultaneously and that too without affecting the leaf environment and without detaching the leaf from the plant further help in the physiological studies on the behaviour of stomata under different field conditions. The adhesive peelings can be indefinitely stored in an album for future reference.

The authors are grateful to Shri P. K. Thomas, Director, for encouragement. The help rendered by Shri C. S. Antonisamy is gratefully acknowledged.

April 24, 1981.

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LITTLE KNOWN FEATURES IN THE EPIDERMOLOGY OF *CISSUS QUADRANGULARIS* L.

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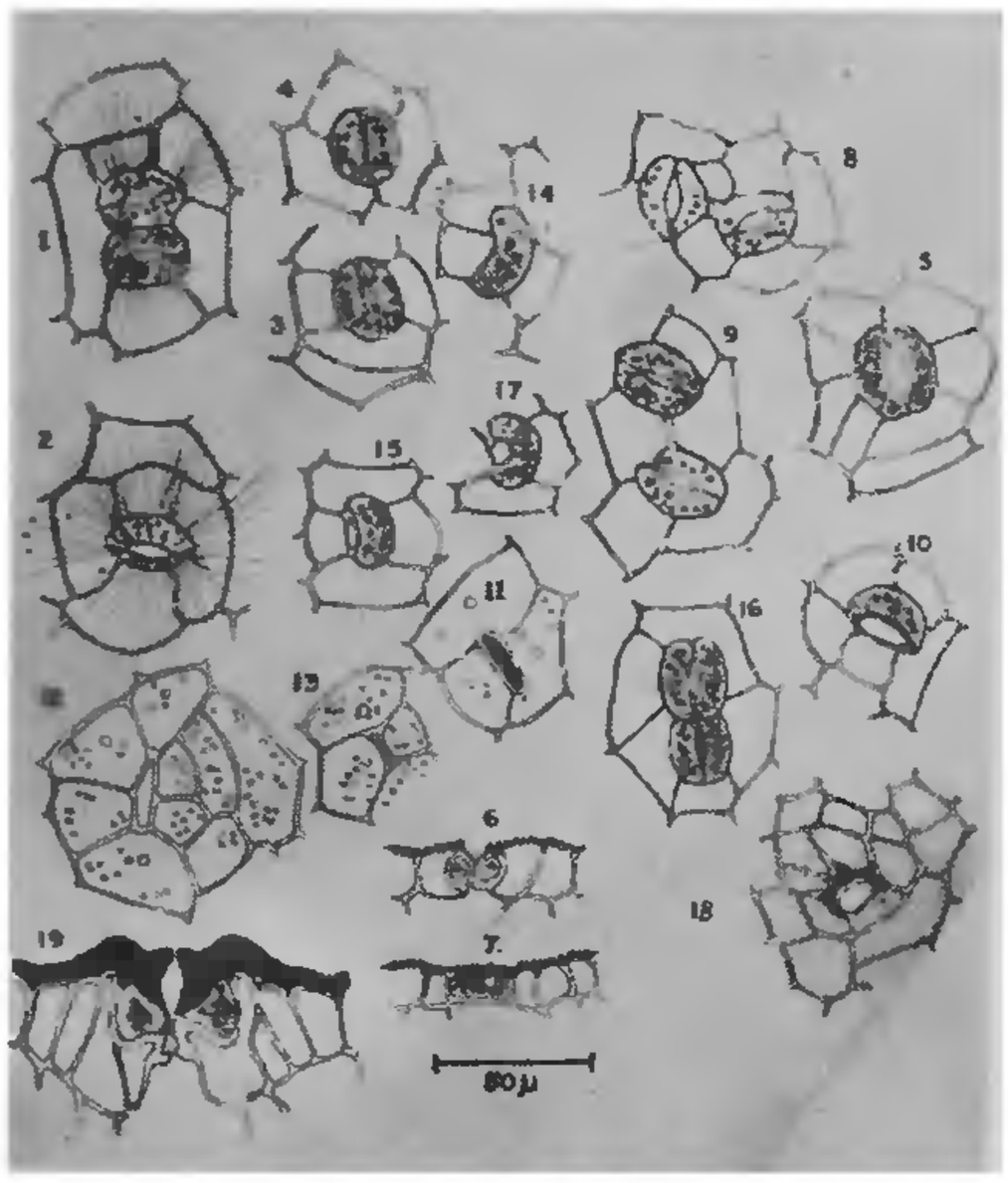
WHILE investigating the structure and histochemistry of epidermis of 23 succulent species belonging to diverse plant groups, several interesting features of epidermis, especially in the organisation of stomata have been observed in *Cissus quadrangularis* L. (Vitaceae). A survey of the literature[1–8] shows that the abnormal stomata, reported here, have not been reported in any member of Vitaceae.

Stained permanent epidermal peels of stem and leaf were obtained following the method of Mohan Ram and Vijay Laxmi-Nayyar[3]. In addition, paradermal, transverse and longitudinal sections also were taken. Measurements of stomata were made with the help of a pre-calibrated ocular micrometer.

The epidermal cells are polygonal and cutinised. Thin and dense cuticular striations often radiate from convex side or very rarely from all sides of guard cells of stomata and extend to other surrounding epidermal cells (Figs. 1 and 2). Often stem epidermal cells exhibit papillate cuticular projections (Fig. 18). Earlier, the occurrence of cuticular striations on epidermal cells has been reported in many species of *Cestrum*[4], in few members of Asclepiadaceae[5] and in *Bombax ceiba*[6]. The stomata are anomocytic surrounded by 4–7 epidermal cells (Figs. 3 and 5) and the guard cells are subsunken in leaf (Figs. 6 and 7) and sunken in stem (Fig. 19). Nonetheless, frequently the following deviations from normal organisation of stomata have been recorded. (1) Stomata surrounded by 3 epidermal cells (Fig. 4); (2) Stomata with different sizes (stomatal polymorphism) measuring 33 × 27 μm, 30 × 25 μm and 26 × 22 μm (Figs. 5, 3 and 8 respectively); (3) Contiguous stomata (polar contiguous stomata, Fig. 16 and lateral contiguous stomata, Fig. 1);



FIGS. 1–19. Figs. 1–5 and 8 to 17. Leaf epidermal peelings. Fig. 1. Lateral contiguous stomata with radiating cuticular striations from the convex side of the guard cells. Fig. 2. Stomata with radiating cuticular striations on all sides. Note one of the guard cells is degenerating. Fig. 3. Anomocytic stoma surrounded by 4 epidermal cells. Fig. 4. Stoma surrounded by 3 epidermal cells. Fig. 5. Stoma surrounded by 7 epidermal cells. Figs. 6 and 7. Leaf stoma in T.S. and L.S. respectively. Observe cuticular striae as papillae. Figs. 8 and 9. Cytoplasmic connections between adjacent stomata. (In Fig. 9, one stoma has unequal guard cells.) Figs. 10–13. Degenerating stomata. Fig. 10. One guard cell has completely degenerated leaving the aperture. Fig. 11. Stoma where both the guard cells have degenerated and the pore is occluded. Fig. 12. Stoma, where both the guard cells degenerated leaving the pore. Fig. 13. Completely degenerated stoma with reduced pore. Fig. 14. Stoma with a single guard cell without pore. Fig. 15. Stoma with a single guard cell and pore. Fig. 16. Polar contiguous stomata. Fig. 17. Stoma with a single crescent-shaped guard cell bordering the pore. Fig. 18 Stem epidermal peeling showing disintegrating stoma with single crescent-shaped guard cell, giving a stellate appearance. Note the cuticular projections as dots. Fig. 19. T.S. of stem epidermis through the stoma. Figs. 3, 5 and 8 depict stomatal polymorphism.

(4) Cytoplasmic strands connecting the guard cells of adjacent stomata (Figs. 8 and 9); (5) Stomata with unequal guard cells (Fig. 9); (6) Degenerating stomata with complete or partial degeneration of guard cells (Figs. 10 and 2 respectively) and with complete degeneration of both guard cells leaving behind either an occluded pore (Fig. 11) or mere pore (Figs. 12 and 13); and (7) Stomata with a single crescent-shaped guard cell with pore (Fig. 17) or without pore (Fig. 14) or with a single disintegrating crescent-shaped guard cell (Fig. 18) giving a stellate appearance.

Though the occurrence of several abnormal stomata has been reviewed recently[2] in several families of angiosperms, such occurrence is reported for the first time in the family Vitaceae. Pearl-glands known to occur in several members of Vitaceae, including *Cissus*[1], have also been observed on vigorously growing young stems, leaves and tendrils.

One of the authors (V. G.) thanks U.G.C. of India for financial assistance under the Faculty Improvement Programme and the Government of Tamil Nadu for deputation.

May 14, 1981.

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THE DEVELOPMENT OF ENDOSPERM IN *PRIVA CORDIFOLIA* (LINN. F.) DRUCE

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LITERATURE[1] reveals that the information on the endosperm of Verbenaceae is inadequate to permit a generalized picture. Interpretations of ontogeny and structure of the endosperm and the organization of the haustoria in various members of the family vary with the authors[2–8]. The present study deals with the development, structure and behaviour of the endosperm haustoria in *Priva cordifolia* (Linn. f.) Druce.

Following fertilization, the embryo sac elongates and the starch grains begin accumulating at the micropylar region of the ovule. The primary endosperm nucleus, situated in the centre of the embryo sac, divides prior to the zygote (Fig. 1), followed by cytokinesis,