

The asymmetry in chromosome size and arms is also an index of this behaviour. The above observations have also brought out that in addition to polyploidy and structural alterations aneuploid change in chromosome number has been an effective factor in the evolution of the genus *Aconitum*.

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### CONTIGUOUS STOMATA IN *DESMODIUM* DESV. (PAPILIONACEAE)

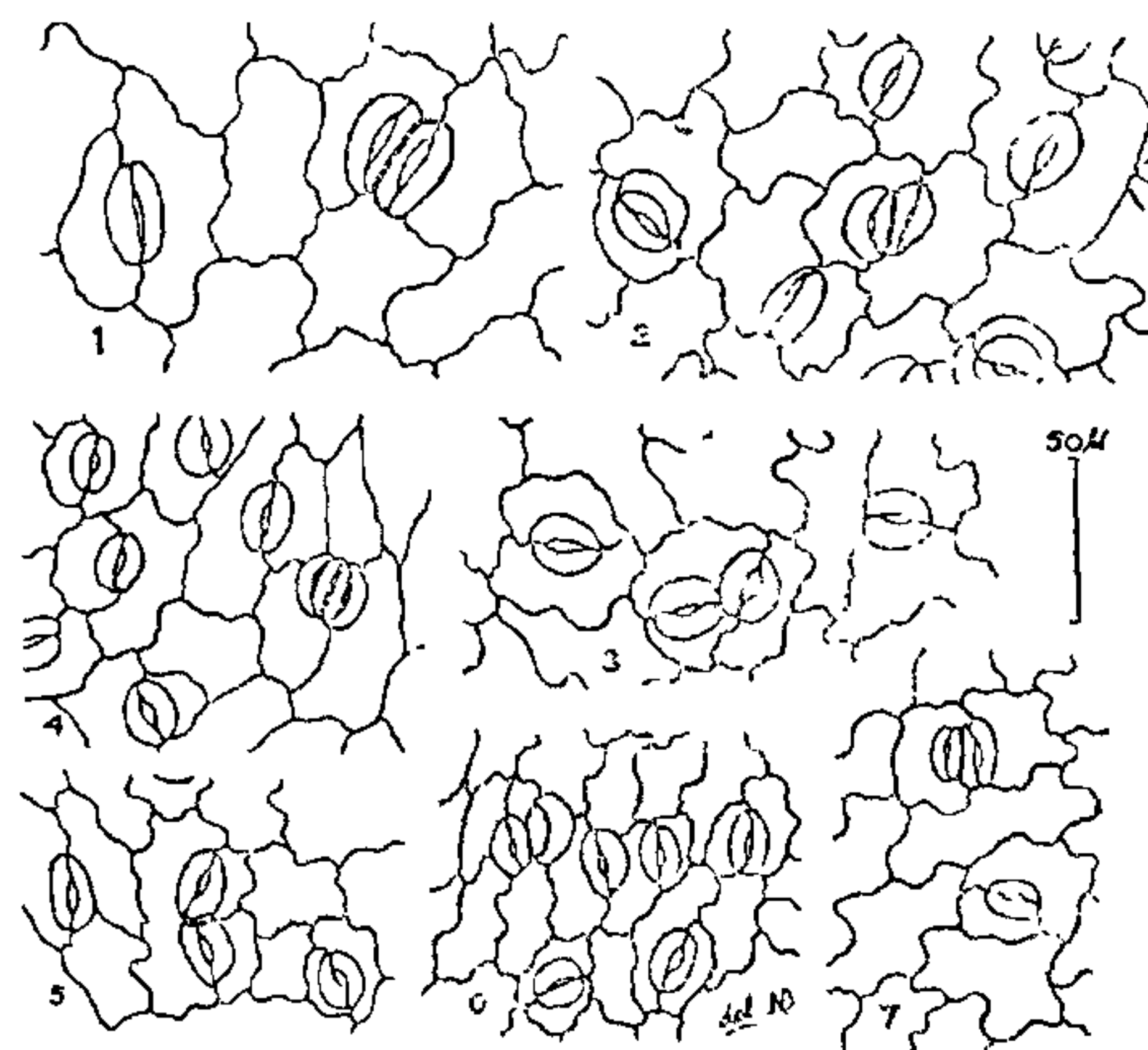
CONTIGUOUS stoma is one among the structures like stomata with single guard cell, degenerated stomatal cells, arrested development of stomata, division of guard cells producing miniature stomata, and others which are so far regarded as stomatal peculiarities in vascular plants. These are seen in literature covering the epidermal study in Pteridophytes<sup>1</sup>, Gymnosperms<sup>2</sup> and more frequently in Angiosperms, both in dicotyledons<sup>3-5</sup> and in monocotyledons<sup>6</sup>. However, in the family Papilionaceae, the occurrence of this structure is rare<sup>7</sup>, although it is frequent in *Lathyrus sativus* L<sup>8</sup>.

While investigating the epidermal morphology of the genus *Desmodium* Desv., as many as five species have been found to occur with contiguous stomata. They are *D. triflorum* DC., *D. heterophyllum* DC., *D. heterocarpon* (L.) DC., *D. gangeticum* DC. and *D. velutinum* (Willd.) DC. Normally, in all these species, the paracytic type of stomata are predominant,

intermingling with a few anisocytic and anomocytic ones.

For the present study, both fresh and preserved (in FAA), mature leaves from plants collected from different localities of Assam have been used. Observations are based on preparations made by simple peeling method or by clearing with sodium hypochlorite<sup>9</sup>, where hand peeling does not suffice.

Contiguous stomata are frequent in *D. heterocarpon* (15%), while in other four species their frequency is rather less (5% in *D. triflorum* and *D. heterophyllum*; 4% in *D. gangeticum* and 10% in *D. velutinum*). They are found on upper surface of leaf in *D. triflorum* and *D. velutinum*, on the lower surface in *D. heterophyllum* and *D. gangeticum* and on both the surfaces in *D. heterocarpon*. Here, these structures are invariably juxtaposed i.e., the sides of the constituent stomata are parallel with longer axis of the stomatal pore, although the superposed contiguity, i.e., contiguous at their polar end, is also found in *D. gangeticum*. However, the third type, where the two juxtaposed stomata do not have their pores arranged parallel to each other, is also seen in the case of *D. heterocarpon* in addition to the juxtaposed type.



FIGS. 1-7. Contiguous stomata in foliar epidermis of *Desmodium* spp. Fig 1. *D. velutinum* (upper); Figs. 2-3. *D. heterocarpon* (upper and lower respectively); Fig. 4. *D. heterophyllum* (lower); Figs. 5-6. *D. gangeticum* (lower); Fig. 7. *D. triflorum* (upper).

Ontogenetic studies of the contiguous stomata showed that they result either from two adjacently placed meristemoids or from spatial readjustment during maturation<sup>5</sup>. Also, either, one meristemoid divides to form two initials which give rise to two contiguous stomata<sup>3</sup> or the mesogene subsidiary cell

(in a meso-perigenous stomata) becomes secondarily active to behave as stomatal initial and together with the nearby original initial results in the contiguity<sup>2</sup>. In the formation of contiguous stomata by budding method<sup>3</sup>, one of the guard cells gives out a protuberance towards one end which in turn behaves like a meristemoid and forms a stoma in the normal way. However, in the present study, the ontogeny of this peculiarity has not been traced as yet.

Although, the occurrence of stomatal aberrations is a natural phenomenon, artificial induction of these structures are also not uncommon. Kropfitch<sup>10</sup> observed as many as six stomata placed together in the seedling of *Vicia faba* grown in an atmosphere of ethylene gas given off by the ripening apples. Patel *et al*<sup>5</sup> very clearly showed in *Aganostoma dichotoma* (Roth.) K. Schum. how incision, made on marring leaves, could cause different types of stomatal aberrations. They could be considered to arise due to a momentary disturbance in the factors controlling the normal stomatal development<sup>11</sup>. In the present study, it is probable that this aberration is not induced by ecological or physiological factors, as the same species collected from different localities and also in natural condition, show the same peculiarity.

The occurrence of contiguous stomata is an yet to be ascertained expression whether this is due to intrinsic instability<sup>12</sup>, or an other cause. As this structure is morphologically significant, studies are in progress to see if this character can be focussed taxonomically in *Desmodium* and its allied genera.

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#### INTERCEPTION OF A NEW BROWN SPOT STRAIN OF PVX IN INDIA

DURING the course of screening of genotypes/hybrids of potato against viruses, a number of virus isolates were collected. A hitherto unreported strain of PVX was met in Kufri Kuber which has been dealt with in this note.

The virus was isolated from single lesion on *Nicotiana rustica* and cultured in *Lycopersicon esculentum* plants. The inoculum was prepared in 0.2M, pH 7.0 phosphate buffer by taking 1:1 (w/v) leaves and buffer. Inoculated plants were kept under observation for 45 days, and then indexed for latent infection on *N. rustica* leaves. Physical properties were determined using *Capsicum pendulum* test plants. Aphid transmission tests were carried out in the routine manner. Chloroplast agglutination tests were carried out with the PVX, TMV and CMV antisera.

The virus isolate was transmitted to 18 plant species out of 25 tested (Table I) and produced necrotic and/or systemic reactions. *Brassica oleracea*, *Crotalaria juncea*, *Dolichos lablab*, *Phaseolus vulgaris*, *Scopolia sinensis*, *Vicia faba* and *Vigna sinensis* plants did not get infection.

Dilution end point ranged between 10<sup>5</sup>–10<sup>6</sup> thermal inactivation between 70–75° C and longevity *in vitro* was between 50–60 days. The ophid (*Myzus persicae* Sulzer) failed to transmit the virus in repeated trials.

Since it causes necrotic lesions and severe systemic mottling in potato plants and some other hosts and on basis of the properties, non-transmissibility by aphid and positive serological relationship with PVX and not with CMV, and TMV, the isolate has been regarded as a necrotic type strain of PVX (Smith, 1972). It is distinct from all other necrotic strains of PVX<sup>1,3-7,10</sup> either in its physical properties or host reactions.

The strain has close resemblance with the brown spot strain (Ladeburg *et al.*, 1950; Hansen and Larson, 1957) both in physical properties and symptomatology on *N. rustica* (Fig. 1) and other hosts but it does not spread through veins to cause systemic infections in *N. rustica* and produces different symptoms on potato, *D. stramonium*, White Burely tobacco, etc. PVX strains<sup>1-6</sup> and a potato brown ring spot strain (PVX<sup>7</sup>) have already been reported (Varma *et al.*,