

species and *Sesamum orientale* on the one hand and between this species and *Sesamum prostratum* on the other. Full cytological and cytogenetical details relating to this investigation will be published in due course. In the meantime the chromosome number of *Sesamum laciniatum* has been determined to be $2n = 28$ (Fig. 1). Prochromosomes which were a com-



mon feature in the other species of *Sesamum* are found to be very prominent in this species also. A full account of the prochromosome-chromosome relationship, based on observations on these species, and their correlation to the nucleolar cycle, will form the subject of a separate paper.

Botanical Laboratory,
Annamalai University, T. S. RAGHAVAN.
Annamalainagar, K. V. KRISHNAMURTHY.
March 6, 1945.

1. Hooker, J. D., *Flora of British India* 4, 387. 2. Sreenivasan, A. R., "A contribution to the morphology of *Pedaliium murex* and *Sesamum indicum*," D.C. *Proc. of the Acad. of Sci.*, 1942, 16, 155. 3. Krishnamurthy, K. V., "Cytological and Cytogenetical Investigations in the Genus *Sesamum*" (unpublished). 4. John, C. M., and Narasingha Rao, U., "Chromosome number of *Sesamum radiatum*," *Curr. Sci.*, 1941, 8, 364.

ON THE OCCURRENCE AND DISTRIBUTION OF *POTHOS SCANDENS* LINN.,
VAR. *HELPERIANUS*, ENGL. IN
BENGAL

IN the province of Bengal *Pothos scandens* Linn., an epiphytic climber is found growing upon several kinds of plants. Prain³ in 1903 reported that *Pothos scandens* Linn. occurs in North Bengal and Chittagong but there is no mention of any other variety or species of the same genus from any other part of the province, though other species were reported by Hooker² in 1893 from the whole of India. The latter author also corroborated Prain and stated that the only species of *Pothos*, found in Bengal, is *Pothos scandens* Linn. Prain⁴ further in 1905 in his survey of the flora of 24-Pergannhas, Hoogly and Howrah districts did not mention the occurrence of any species or variety of *Pothos*.

Pothos angustifolius Hook. f. (non-Presl.), as recorded by Hooker,² is according to the latest nomenclature is reduced to a variety of *Pothos scandens* Linn. by Engler¹ and is named *Pothos scandens* Linn., var. *Helperianus* Engl.

In the latter part of December 1944, and in

the beginning of March 1945, the present writer came across in course of excursions in the suburban villages of the city of Dacca (Bengal) and collected *Pothos scandens* Linn. var. *Helperianus* Engl., and found it climbing on the bases of several trees in shady places. Since the first collection, Mr. Murari Prosad Guha, Lecturer in Botany of this College, collected this plant from Jamuria, Tangail (Dist. Mymensingh) in the latter part of January 1945 for the writer's anatomical studies. He also brought the flowering specimens of *Pothos scandens* Linn. Both Mr. Guha and the writer could not procure any flowering specimens of this variety during this period.

Dr. S. K. Mukherjee, Curator of the Herbarium, Royal Botanic Gardens, Sibpore, Calcutta, very kindly informs the writer that the *Helperianus* variety of *Pothos scandens* was collected from Agartalla (Dist. Tipperah) and the neighbourhood of Calcutta. But it is likely that the plant was collected after Prain³ had recorded his observations in his careful survey.

Rendle⁵ wrote that the genus *Pothos* with its fifty species is chiefly Malayan. Hooker² collected *Pothos angustifolius* Hook. f. (non-Presl.) (= *Pothos scandens* Linn. var. *Helperianus* Engl.) from Tennasserim, Burma—a place 950 miles away (coast to coast) from the border of the province of Bengal and where the Malayan vegetation is dominant. From the nature of distribution it becomes evident that the plant had migrated from Tennasserim (Burma) and entered into the province via Chittagong and gradually spread over other districts, e.g., Tipperah, Mymensingh, Dacca, etc., in course of about fifty years. Afterwards it has become naturalised and formed a unit of the local vegetation. The writer also surmises that this plant was brought and introduced as a garden climber in the neighbourhood of Calcutta for its nice small unifoliate leaves and from there it had become an escape and spread over that locality after Prain's³ survey.

Botany Department,
J. I. Colloge, Dacca,
March 7, 1945.

R. M. DATTA.

1. Engler, A., *Das Pflanzenreich.*, 1906, 4, 23B, 26. 2. Hooker, Sir J. D., *The Flora of British India.*, 1894, 6, 551-555. 3. Prain, Sir D., *Bengal Plants*, 1903, 2, 1115. 4. —, "The vegetation of the districts of Hoogly-Howrah and the 24 Pergannahs." *Bot. Survey of India*, 1905, 3, 2, 143-339. 5. Rendle, A. B., *The classification of flowering plants*, 1930, 1, 264.

HAIRINESS OF COTTON LEAVES AND
ANTI-JASSID RESISTANCE

THE evolution of resistant varieties has been regarded as the most effective line of defence against the jassid, *Empoasca devastans* Dist., which is a major pest of cotton in the Punjab, Sind and Madras. It has been generally believed that varieties with hairy leaves are more resistant to jassid attack than those not possessing this character. For this reason cotton breeders have bred for hairiness in evolu-

ing jassid-resistant types. A note of warning was, however, sounded against placing exclusive and excessive reliance on leaf hairiness (Afzal Husain and Lal, 1940). It was suggested that hairiness might be a mere indicator rather than the actual factor of resistance, and that it would be by discovering the real and true cause of resistance; that the work of breeding resistant varieties could proceed on scientific basis.

Recently Afzal and Abbas (1943) have put forward the view that, although hairiness by itself does not confer any resistance on cotton plants against jassids, it is well enough associated with 'resistance' and, being easily recognisable and workable, is a safe character for the breeder to utilise. They, therefore, recommend breeders to select or evolve only very hairy varieties for areas liable to severe jassid attacks. The questions that arise are: Would scientific breeders be justified in accepting the position that they breed for a character, which in itself is of a doubtful value but serves only as an indicator of resistance? And, secondly, to what extent would such an indicator keep true to its role under varying conditions of climate and culture and in the permutations and combinations of genes in breeding?

It was shown by us (Afzal Husain and Lal, 1940) that the resistance of hairy varieties was due not to the inability of the jassids to feed on the hairy types, but to their inability to oviposit on them and, therefore, the jassid-resistant character should be sought for in the leaf veins—the seat of oviposition. Afzal and Abbas (*op. cit.*) state that Verma and Afzal (1940) tentatively conclude that the 'toughness of the cuticle of the leaf vein, which prevented the entry of the ovipositor, was the primary character which made the plant resistant,' but consider that toughness cannot be of much practical help to breeders, who must have a quick and ready means of identifying resistant plants and the determination of the relative toughness of the leaf veins involves laborious and delicate work. Is such an attitude justifiable? Should not greater reliance be placed on future research to solve the question of measuring the toughness of leaf veins quickly and simply if this proves to be chief factor imparting resistance?

If hairiness is closely linked with the jassid-resistant character and toughness of leaf vein is that character, then a very hairy leaf should also have a tough cuticle of its leaf veins. It should be valuable to determine this correlation. Unfortunately Afzal and Abbas carried out no experiments to throw light on this important point. Instead, they felt satisfied by the correlation between hairiness and resistance, observed in pure varieties as well as some hybrid progenies. On this basis they conclude that we were misled into casting doubt on the value of hairiness as an indicator of resistance, because he worked with pure varieties only, and, secondly, that errors (?) in our classification of varieties, in respect of jassid resistance, vitiate our findings. The suggestion, therefore, is that hairiness and

resistance may be independent characters in pure varieties but not under hybridisation. The only evidence for this generalisation is the association of hairiness and resistance observed, in a small number of plants, of only one hybrid progeny; the rest of their observations, as ours, were made on pure varieties. Afzal and Abbas have neither given any genetic explanation as to why and how hairiness and resistance must be invariably associated together in breeding, nor have they tested a sufficiently large number of hybrid progenies, under different climatic and cultural conditions, to warrant their conclusions. In the absence of such explanations or tests or both, of what value is their recommendation to choose only hairy varieties for jassid resistance? We maintain, without fear of contradiction, that the degree of hairiness varies with the age of the plant and of the leaves as well as under different climatic conditions and cultural operations. If such be the case, would not the same variety be more hairy in one area and less in another, without, in any way, altering its resistance to jassid attack?

Regarding our alleged error in classifying 43 F as susceptible, which Afzal and Abbas observed to be resistant, the classification was not due to error but to the erratic behaviour of the variety itself, as was pointed out by Lal (1937). The general statement by Afzal and Abbas (*op. cit.*) that 'in all previous literature on hairiness in relation to jassid, no mention has anywhere been made of the position of the leaf on the plant' is also not justified, since exactly the same and other precautions were taken by us (Lal, *op. cit.*) in choosing leaves for the measurement of their hairiness, as indicated by the authors.

K. B. LAL,

M. AFZAL HUSAIN.

April 9, 1945.

1. Afzal, M., and Abbas, M., *Indian J. Ent.*, 1943, 5, 41.
2. Afzal Husain, M., and Lal, K. B., *Ibid.*, 1940, 2, 123.
3. Lal, K. B., *Curr. Sci.* 1937 6, 88.
4. Verma, P. M., and Afzal, M., *Indian J. Agri. Sci.*, 1946, 10, 911.

ON THE FORMATION OF AUXOSPORES IN BACTERIASTRUM

AUXOSPORE-FORMATION is known only in a few species among the Centrales. Any new case of auxospore-formation in this group is always interesting. This process does not appear to have been recorded so far in the genus *Bacteriastrum*. The author, while working on the marine plankton Diatoms of the Madras Coast, observed the formation of auxospores in *Bacteriastrum varians* Lauder. A brief account of the process is given here.

During auxospore-formation, the valves of the mother-cell move apart and the cell protoplast emerges out surrounded by a delicate membrane, the perizonium [Figs. 1 (a) and