Filarial Infections in Mosquitoes

Mosquitoes which on dissection show infective filarial forms are often regarded as vectors of human filariasis in a particular area where mosquito collections are made. As mosquitoes of the same species may also play the part of vectors of animal filarial infections, findings in any given area have to be interpreted carefully. A short account of conditions pertaining in a small village in Sakhigopal, Orissa State, India, where *Wuchereria bancrofti* is the known cause of filarial infection in man, is given below.

Of 3,307 *Culex fatigans* and 1,928 *Mansonioides annulifera* dissected locally, 55 of the former and 41 of the latter were found with infective larval forms in the head/proboscis. In addition, some *M. annulifera* showed microfilariæ or their developing forms in the Malphigian tubes. In view of the fact that *M. annulifera* are not suitable for transmission of *W. bancrofti* and that *Wuchereria* develop in thoracic muscles[1], the possibility of filariæ of other origins existing in the same area was explored. Infective larvæ dissected out from *C. fatigans* were longer than those noted in *M. annulifera*. The former had more than one caudal protuberance, indicating that they were probably *Wuchereria*.

Precipitin tests of blood-meals of mosquitoes were carried out to determine the sources of blood. They showed a higher predilection of *C. fatigans* for human blood than *M. annulifera*, which fed mainly on domestic animals and birds.

Four out of forty dogs examined were found positive for microfilariæ, morphologically similar to *Dirofilaria repens*.

Separate batches of clean *C. fatigans* and *M. annulifera* were allowed to feed on dogs showing *D. repens* infection, and on human cases with *W. bancrofti*. Results showed that a high percentage of *M. annulifera* became infective with *D. repens* but were refractory to infections with *W. bancrofti*. On the other hand, *C. fatigans* showed high susceptibility to infections with *W. bancrofti* and definite refractoriness to development of *D. repens* in them. These points serve to bring out the importance of correct diagnosis of infective forms of filarial infections in mosquitoes.

M. annulifera has been incriminated as a vector for *D. repens*.

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[1] Iyengar, M. O. T., *Ind. Med. Res. Memoir*, **30** (1938).

Abnormal Leaves of *Cycas revoluta* Thunb.

During the course of an investigation on the disposition of xylem in the rachises of cycads, I came across a peculiar abnormality in *Cycas revoluta* Thunb. In some female specimens, several leaves possessed a subsidiary rachis which bore subsidiary pinnæ in a spiral fashion. This was noted in several successive whorls.

Each subsidiary rachis appeared to originate by a conspicuous fold of the main rachis. It was filled mainly by parenchyma. The sides were composed of a lignified epidermis and one to two layers of thick-walled hypodermal cells. The epidermis was heavily cutinized, but was interrupted by sunken stomata

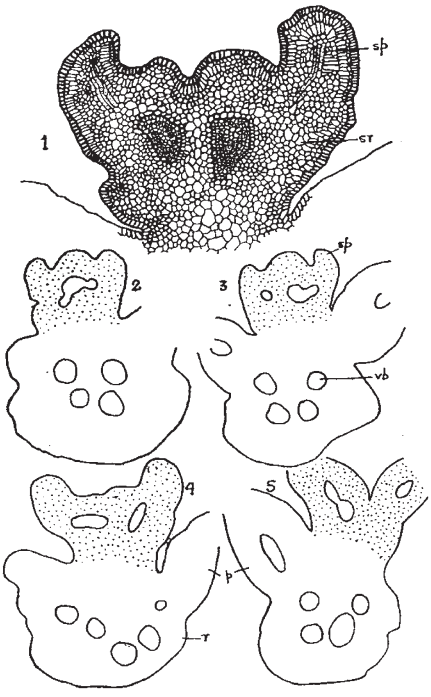

Fig. 1. A part of the transverse section of rachis showing the vascular bundle of subsidiary rachis in division. (× 44)

Figs. 2–5. Changes in the outline of the rachis during the emergence of subsidiary pinnæ. (× 12)
p, Normal pinnæ; *r*, principal rachis; *sp*, subsidiary pinnæ; *sr*, subsidiary rachis; *vb*, vascular bundles

of the normal type. There was a layer of palisade tissue immediately below the epidermis at several places; but its disposition was not uniform (Fig. 1). The vascular bundle was mesarch and included in the inner margin of the rachis. The subsidiary rachis was observed only in the distal half of the leaf, and did not exceed 7 cm. in length.

The subsidiary leaflets were formed by lateral elongation of the rachis and the constriction of the newly formed parts. Each leaflet had the normal structure; but the vascular tissue was very scanty. The transfusion tissue was formed by gradual thickening and elongation, from a mass of loose cells in the rachis which appeared while the leaflet primordium was yet being formed. The vascular bundle of the subsidiary pinna was diffuse at the origin but gradually assumed concentric and then mesarch structure[1].

In an examination of the successive stages of the origin of the subsidiary pinnæ (Figs. 2–5), it was found that the subsidiary rachis lost its identity as the pinnæ matured. The normal structure of the principal rachis was regained by a gradual suppression of the subsidiary rachis and disappearance of its vascular bundle.

Such a feature is unknown in other cycads and has not been reported hitherto as a normal occurrence in *Cycas*.

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[1] Srivastava, R. K., *Proc. Nat. Acad. Sci. (India)*, (in the press).