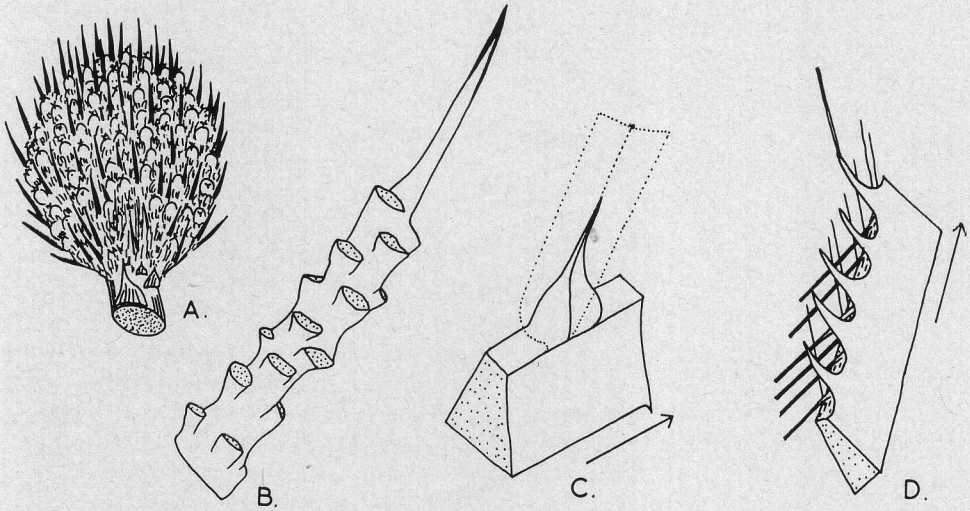

Fig. 27. Spines in the oil palm. Diagrams of A, fruit bunch with spiny branch tips; B, single branch of inflorescence with fruit removed; C, midrib spine, leaflet shown by dotted outline; D, fiber spines viewed from abaxial side. The arrows in C and D points to the leaf tip.

home of the oil palm, the only large animal which successfully attacks the plant is the elephant, as described, for example, by Onyioha (1962) for an estate in Eastern Nigeria. The crowns of young palms are trampled to expose the cabbage which is then eaten. Small rodents, squirrels and monkeys are not deterred by the spines from eating the fruit, and aid in disseminating the seeds. The spines on the basal parts of the petioles are put to other defensive uses; in Onitsha Province it is frequently observed that the mud walls surrounding the family compound in rural areas are topped with two to three foot lengths of petiole laid across at right angles to the length of the wall to deter unwanted human intruders who might climb into the compound.

Tomlinson (personal communication) wonders why the young oil palms are not more efficiently protected, as these are attacked and killed by rodents, particularly the quaintly named "cutting-grass" *Thryonomys swinderianus* and the giant rat *Cricetomys gambianus*. Monkeys are also known to damage palms planted in the field; they systematically uproot plants row by row. When establishing a plantation it is standard practice to fence in the nursery area to exclude rodents, and on planting out into the field to enclose each palm with a wire-netting 'collar.'

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MALAYAN ORNAMENTAL PALMS

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If a nurseryman in Malaya were asked to name the ornamental palms of Malayan origin he would shake his head in confusion. The reason is that palms are generally bulky for small Malayan gardens, or so untidy as to provide

shelter for insects and other pests, or they require shade or other conditions which are not easily produced about homes in the well developed lowlands of Malaya.

Such an economic palm as the dwarf coconut is a thing of beauty which could be grown in small compounds in Singapore and elsewhere, but since it attracts the cupidity of wandering street urchins, a superstition has grown around it that it brings misfortunes and miseries on the person who cultivates it.

The result has been that the palms commonly found in Malayan gardens are from India, Siam, Indochina, New Guinea, Java, Borneo and other places, except the widely cultivated *Areca Catechu* which provides the astringent material for the chewing of betel.

However, in the mild Mediterranean climates of the Italian Riviera, Monaco, or even of Portugal, I have seen several Malayan palms grown for indoor decoration, among them species of *Calamus, Daemonorops, Nenga, Caryota.* The temperate climate permits the growing of these plants but prevents their exuberant development, enabling the growers to use them in their dining rooms, on stages, and in other places of an extremely limited space. This suggests that perhaps in a warmer climate the Malayan species of *Areca, Nenga, Pinanga, Licuala, Iguanura, Ptychoraphis, Actinorhytis, Caryota* and *Phoenix* could easily be grown in gardens in the open where many would flower and seed. The beautiful palm *Johannesteijsmannia altifrons* (*Teysmannia altifrons*) from Malaya and Borneo requires shade, a reason why it has not become popular in Malaya, though it is admirably suited for pots. *Orania sylvicola* (*O. Macrocladus*), which has a tall solitary stem would produce a bottle-shaped stem if kept dwarf by growing in pots — but in Malaya the American *Roystonea* is more popular because the leaves are more attractive and the seeds are easily obtained. *Cyrtostachys Lakka,* which produces very beautiful scarlet leaf sheaths hence its common name "sealing wax palm," unfortunately grows very slowly and requires a couple of years or more before it can produce a stem of sufficient size to command admiration.

Another reason why Malayan palms are not found in the local gardens is that the availability of good ornamental palms from other parts of the world has discouraged local growers from acclimatizing and "training" local palms for the garden. Recently, botanical institutions and nurserymen in America, Japan, Australia and other places have shown interest in growing palms from Malaya, but they have experienced considerable difficulty in obtaining seeds, for even in the government gardens, sufficiently large varieties of Malayan palms are not available, and due to the restricted space in the Botanic Gardens, Singapore, there have been difficulties in maintaining the palm collection that was made by the previous directors of the gardens. In view of this, I suggest that foreign institutions interested in Malayan palms (as well as from regions in Sumatra and Borneo) should keep in contact with institutions which organize expeditions to collect herbarium material (e.g. Forest Departments and botanic institutions) so that they might collect seeds to meet the needs. When grown for some generations in semi-temperate regions, the Malayan palms may be "domesticated" and become suitable to the needs of the Malayan home. The cultivation of Malayan palms outside Malaya may also help to save some species from extermination owing to the ever expanding encroachment on the forests of Malaya.