Collecting — Palm Style

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Liberty Hyde Bailey defined palms as "the big game of the plant world." Few botanists, however, have either the inclination, the training, or the opportunity to be a big game hunter and so palms remain poorly collected and poorly understood even though they are economically very valuable plants. How little of a large palm can be accommodated on a standard herbarium sheet (about 16 × 11 inches) is all too familiar to those botanists who have collected in the tropics and tried to provide representative specimens of these monsters for the herbarium.

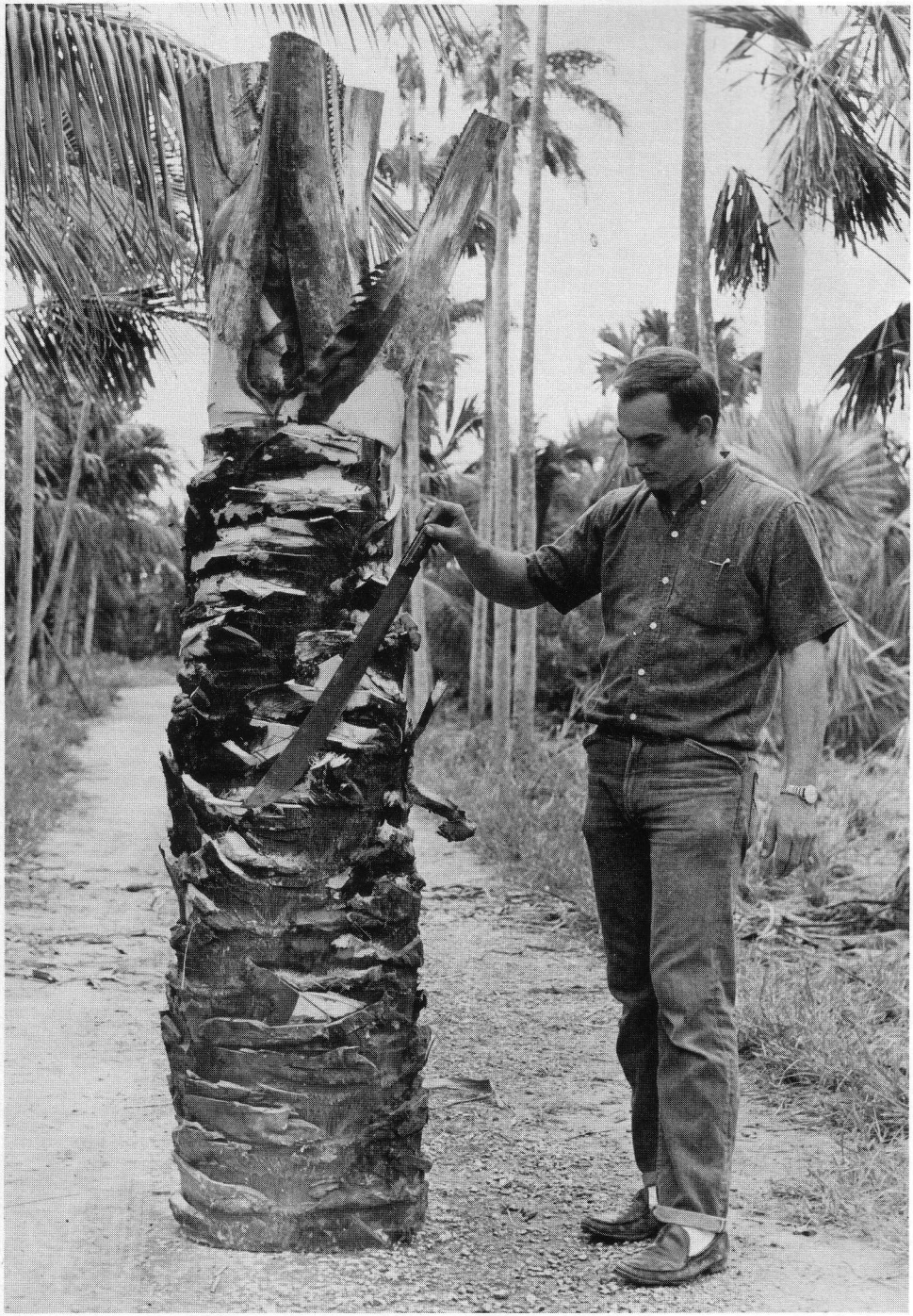
Some indication of the labor involved in preparing palm material for detailed investigation in the laboratory is provided by the photographs which illustrate this article. A similar sort of effort would be involved in making herbarium specimens (Tomlinson, 1965). The photographs were taken during the "dissection" of a large specimen of *Corypha elata* at the Coconut Grove Palmetum, Miami, Florida. This was toppled during Hurricane Betsy in September, 1965, and proved too large to re-erect. It was generously made available for our studies by Mrs. A. R. Jennings.

"Dissection" is something of an euphemism, since the palm was cut up with a chain-saw, but a chain-saw is undoubtedly the best tool for dissembling such a large plant (Fig. 2). All but the base of the leaves were first trimmed with a machete and a saw-cut was made to isolate the crown, well below the stem apex

2. Stem of *Corypha elata* before sampling.

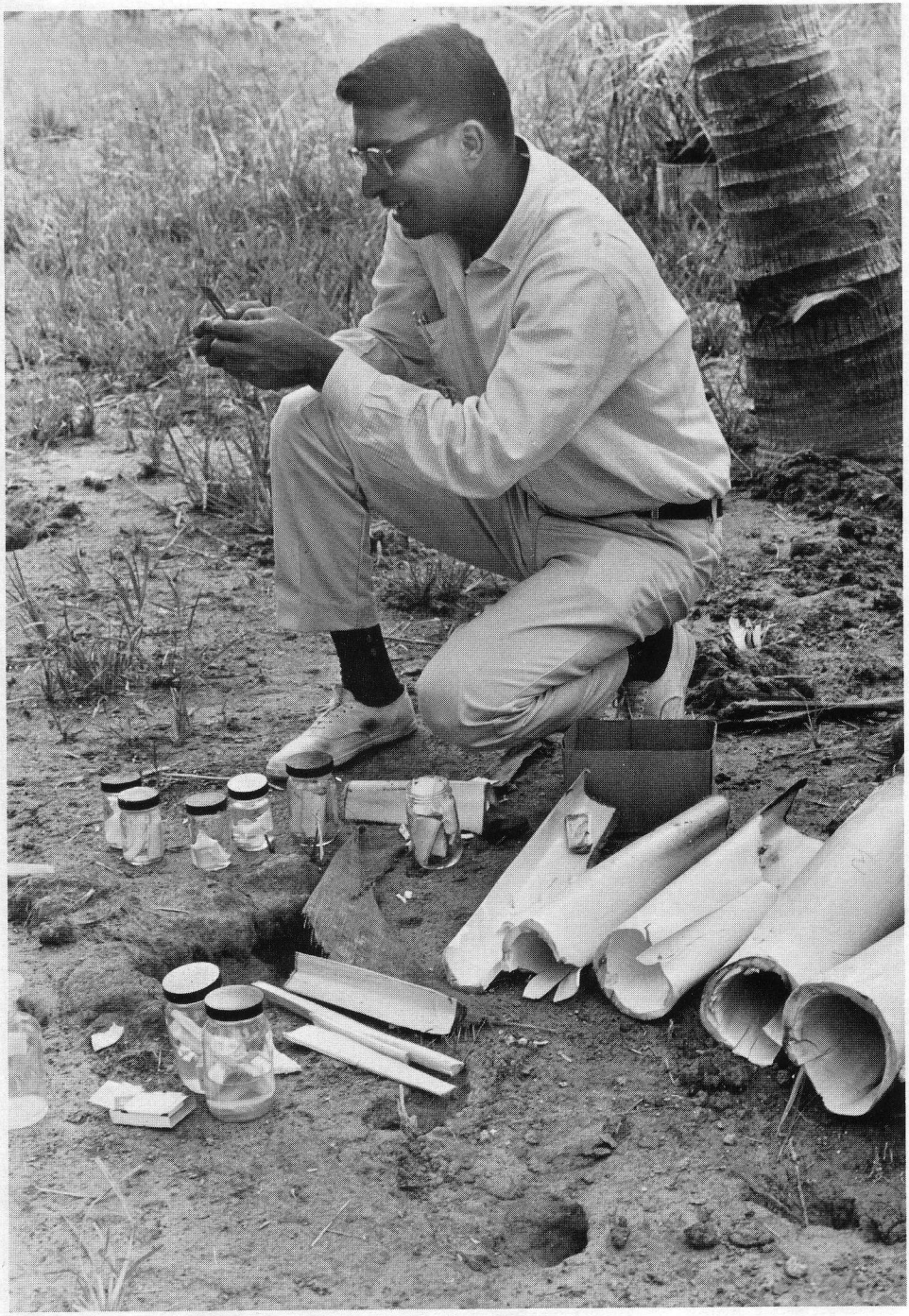
3. Sawn surface of stem of *Corypha elata* showing frayed broken ends of innumerable vascular strands.

4. Base leaves of *Corypha elata* sawn across. Three leaf-contact spirals (parastichies) are conspicuous as also are saw-like margins of petioles.



5. Terminal part of axis divested of most of its leaves; parastichies very evident.

6. Tubular base of young leaf.



7. Fragments of developing leaves going into fixative.

which was required intact for our investigation (Fig. 1). A shorter length of stem was cut out to provide material for the close investigation of the anatomy of the palm stem being carried out at Fairchild Tropical Garden. The complexity of the vascular system revealed by this cross-cut is evident in Fig. 3, although, as has been described earlier, some advance in unravelling it has come from studying diminutive palms like *Rhapis* which can be regarded as models for more massive plants (Zimmermann and Tomlinson, 1965).

Leaf bases had then to be cut one by one from the stem, in order to reveal parts of further interest to us. *Corypha* does not succumb willingly, being armed with saw-like teeth along the margin of the petiole (Fig. 4). These teeth inflicted many a wound before the axis was divested of most of its leaves and could be erected as a stubby totem (Fig. 5). In this position there was least danger of tender young leaves fragmenting as they were cut out. Soon we were within the crown, the woody parts of older leaves discarded, and at last the machete could be laid aside in favor of a sharp scalpel used to cut through the soft bases of immature leaves (Fig. 6). Parts of these successively younger leaves went into fixative for a future examination in the laboratory of the development of their conducting tissues (Fig 7). Finally the youngest developing leaves were revealed (see cover) and they and the shoot apex in turn went into preservative. A whole morning had passed, but from the material we had preserved we hoped soon we could better appreciate how *Corypha* develops and is constructed.

Modern biology is making such great advances at the sub-microscopic and molecular level, using tools of every-increasing refinement, that it seems ludicrous that research needs to be carried out using a chain-saw. Nevertheless investigations on this monster scale are needed so that no imbalance of understanding develops in the science of biology as a whole.

Literature Cited

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Palm Hunting Around the World

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IV Lord Howe Island

The last palm stop in Australia was, in many ways, the most exciting. Lord Howe Island, from which come the kentias of commerce — *Howeia Belmoreana* and *H. Forsteriana* — has long intrigued me because of two other palms whose relationships are not perfectly clear. Thus I had begun making plans to visit the island many months before. The island is reached today by flying-boat from Sydney and during the summer season is a favored vacation spot for Australians. Reservations often need to be made much in advance; flights depend on the tides and weather and are at intervals of days not hours. As plans to visit Indonesia were changed during the trip, there was much correspondence attempting to arrange a visit to Lord Howe. Finally plans were completed to leave from Sydney on Monday