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LETTERS

Dear Editors,

Please find enclosed two photos of *Gronophyllum ramsayi* in the Northern Territory, Australia, that may be of interest. These photos were taken at a stand of palms where abnormal branching occurs in as many as 100 individuals. In photo number 2 you can also see *Livistona humilis* near the base.

Photo number 1 shows vividly the trident-shaped trunk. This palm is by far the most beautiful multiple-trunked specimen in the whole stand. My wife Jo-Anne stands 5'7", at its base. Please note the star steel fence posts in foreground and left of palm. These were used as markers by the Territory Parks & Wildlife Commission. The Commission became aware of these palms when I was in their employ and made it known to them. This resulted in a study

started by the Commission. First, we established fire breaks around the area, marked individual palms and photographed them for later reference. Shortly after this survey, I left the Commission and now run a retail garden center. Unfortunately it seems the study has been abandoned.

Photo number 2 shows a palm which has branched many times (11 times), but not all branches survive. A few others in the stand have branched many times more but with little survival of branches. At first I thought this death of branches was caused by fire damage, but this photo shows that the palm branches are well out of the reach of fire.

Here are some more observations on *Gronophyllum ramsayi*: Seeds do not germinate readily, some germinating up to three years after sowing. Seedlings do not



transplant at all readily. In fact, each year many are killed by people trying to transplant them. The scene is sad to behold sometimes where larger seedlings are half-removed from the ground and then left to die with damaged root systems.

The soil at the locality illustrated apparently consists only of sand, and would seem to have little in the way of nutrients,

and yet the palm grows only on this small, sandy belt.

Man-introduced, annual fires also take toll of the palms, as inspection shows very few young palms.

Yours faithfully,
PIETER J. CLARKE

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PALM LITERATURE

FOR THE NEXT GENERATION: THE COMMITMENT TO RESEARCH AT JOHNSON WAX. Edited by E. D. Kitzke. 272 pp. S. C. Johnson & Son, Inc., Racine, Wisconsin. 1986.

Although they typically contain technical and general information unavailable elsewhere, privately-published corporate histories fall into a gray area of bibliographic resources and are frequently overlooked. I don't want that to be the case with this book.

Palms may not be mentioned in the title, but the carnauba palm and its wax play a part in this comprehensive volume. Ten company scientists contributed chapters detailing the broad contribution of all types of research and development over the first century of Johnson Wax. This brief review can only draw attention to the material concerning the carnauba.

The book recounts the company's beginning as a producer of parquet flooring, along with wax-based polishes with which to care for it. From the very start, carnauba palm leaf wax was a key ingredient of polishes. Early in this century, Johnson Wax gradually got out of the par-

quet flooring business and diversified into other products, among them car polish. Later, in 1935, increasing demand for carnauba wax prompted a remarkably adventurous company expedition to South America by private aircraft to survey and determine the wax resources of wild stands of carnauba. Shortly thereafter, two company research stations were established in Northeast Brazil. *Copernicia* species from Cuba and elsewhere in South America were brought in and successfully cultivated, and a long-term research program mounted to develop an improved, domesticated waxy palm by cross-breeding. Despite initially promising results, however, the deliberateness of sexual palm breeding, along with the synthesis of replacement raw materials in the late 1950s and 1960s which sharply reduced the company's use of carnauba wax, led to eventual termination of this particular project. Nonetheless, Johnson Wax has continued to use carnauba wax in their polishes.

The thread of American entrepreneurialism is woven throughout this interesting, lavishly-illustrated, well-written book. In many ways, it portrays a style of hands-on management, as well as sustained dedication to applied research, that is often absent within contemporary corporations.

DENNIS JOHNSON