interesting piece wherever it can be found and not be timid about going after it.

Thousands of visitors to an area where palms grow, as well as residents, may daily pass by piles of trimmings from private grounds or parks. These trash piles at times are gold-mines for the assiduous seeker. A well-known artist from the Middle West combs trash piles whenever she visits Florida, sends home cartons of material culled from them and wins many blue ribbons. She wisely carries a pair of strong clippers and some work gloves in her car. Most home owners would be pleased and flattered to be asked for permission to look through a trash-pile on their curb or property, and might even offer other bits and pieces if enough enthusiasm is generated by the collector.

Curio and gift shops may stock a few items in their natural state. One that is known and patronized by many serious arrangers is The Palm Spathe, at Fairchild Tropical Garden, Miami 56, Florida, a non-profit botanical garden. Wholesale florist suppliers carry some dried palm articles. There most probably are other sources of which the writer does not know.

Uses of palm parts in arrangements are only in their beginning, and an alert person can find beautiful, interesting, and previously untried elements even in some of our most common palms, that will contribute to unique and pleasing arrangements.

Huntington Botanical Gardens

WILLIAM HERTRICH

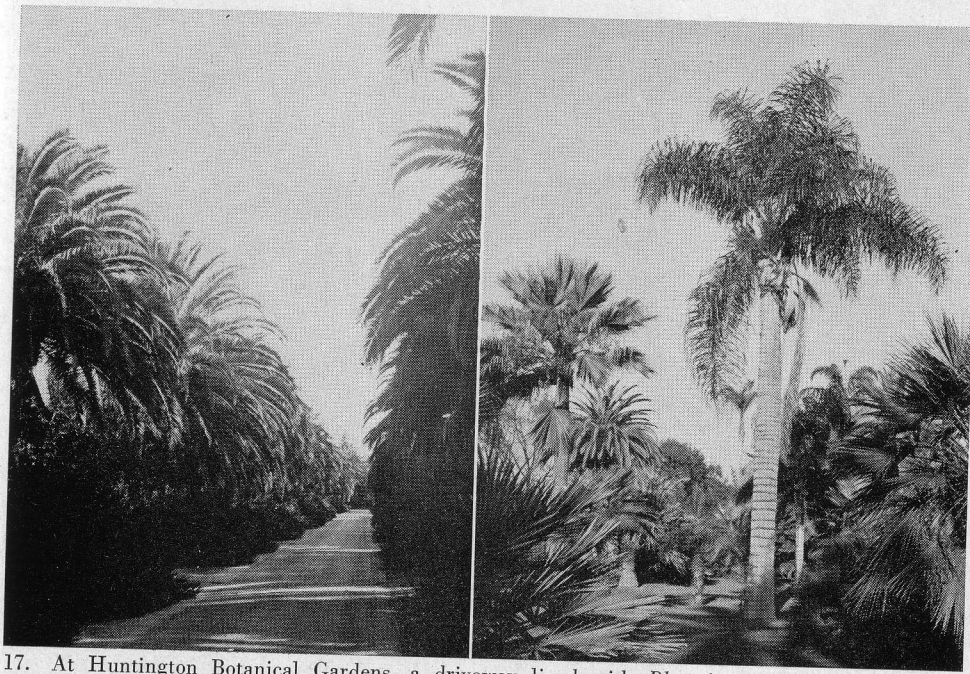
The Henry E. Huntington Botanical Gardens are located in the city of San Marino, about ten miles east of Los Angeles. The Gardens embrace two hundred and seven acres surrounding two large buildings. One building houses the famous eighteenth century art collection, the other the equally famous private library.

The late Henry E. Huntington acquired the property, known as the San Marino Ranch (embracing over five hundred acres) in 1903. At the time of the purchase, approximately a hundred and fifty acres of the land were planted to citrus trees; twenty acres to figs, peaches, walnuts, apricots and olives; seventy-five acres were allowed to stand as nature endowed them with native oak trees, chiefly *Quercus agrifolia* and *Quercus Engelmanii;* the remaining acreage was devoted to farm crops.

Mr. Huntington erected his pretentious residence during 1909 and 1910 and soon after began collecting his outstanding English paintings and other art objects. Then in 1919 he erected the large Library building to house his extensive private library. In that same year, Mr. Huntington established a trust to include the two above mentioned buildings with their contents and two hundred and seven acres of ground surrounding the buildings; the entire unit to be known as the Henry E. Huntington Library and Art Gallery. He also endowed the institution with sufficient funds, administered by a board of trustees, to maintain it in perpetuity.

The writer was engaged in January 1905 to develop part of the ground into a private park for the enjoyment of the Huntington family and, being very much interested in palms, proposed the assembly of a collection of such plants as early as 1906. Mr. Huntington was very much in sympathy

16. Palms at the Huntington Botanical Gardens. *Livistona australis* in the foreground and two *Jubaea chilensis* with thick trunks (top left); *Livistona decipiens* (top right); *Butia capitata* (bottom left); *Butia Yatay* (bottom right). Photographs by William Hertrich.



17. At Huntington Botanical Gardens, a driveway lined with *Phoenix canariensis* (left) and *Arecastrum Romanzoffianum* (right). Photograph by William Hertrich.

with the idea and a favorable location of about five acres in area, sloping slightly towards the south-east and adjacent to the ten acre tract reserved for the collection of cacti and other succulent plants, was set aside for the Palm Section. Since Mr. Huntington was anxious to create an immediate effect, some large specimens of *Phoenix, Washingtonia, Livistona,* and *Arecastrum* were moved in from Los Angeles and other nearby towns. Moreover, two large *Phoenix canariensis,* originally planted on the grounds of the Collis P. Huntington estate on Nob Hill in San Francisco, having survived the earthquake and fire, were moved to San Marino and now stand as part of the above mentioned Palm Collection. However, the bulk of the collection was subsequently assembled in the form of small plants obtained from horticultural establishments in California and other parts of the United States and Europe.

Most of the plants grew very well for some years until the winter of 1913, when low temperatures of twenty and twenty-two degrees Fahrenheit killed most of the tender types. Some replacements were planted in subsequent years in more favorable locations but another severe test of the semitropical palms occurred in 1922 when a limited number of newly introduced species was likewise a total loss. By the time the freeze of 1937 was headline news, proportionately less damage was to be noted. This was largely true because the palms had become well established and were of a mature enough age to withstand such vicissitudes. Some damage from the heavy and protracted low temperature period during January 1949 must be recorded, however, especially with regard to smaller types of palms.

Climatically speaking, the San Marino area is not the most ideal location for the culture of the more tender subtropical palms. In some sections along the coastal belt of Southern California, however, there can be seen some fine specimens of such plants which have been growing for many years. Experience over a fair number of years does show that, despite occasional hazards of unduly cold weather in Southern California, it is possible to maintain an outdoor collection of palms satisfactorily, especially if care is taken to select proper types for the various locations involved.

In the past five or ten years certain genera of palms have shown a noticeable decline, the cause of which is undetermined as yet. Affected mostly are *Arecastrum*, *Butia*, and *Jubaea*. There is a possibility that their life cycle in this area is rather a short one, since the specimens affected were planted forty to fifty years ago.

The following is a list of palms lost or severely damaged by frost during the cold winters mentioned above:

Archontophoenix Alexandrae, Archontophoenix Cunninghamiana, Brahea dulcis, Caryota mitis, Caryota Rumphiana, Caryota urens, Chamaedorea Ernesti-Augusti, Chamaedorea radicalis, Chamaedorea Sartorii, Chamaedorea stolonifera, Chamaedorea Tepejilote, Chrysalidocarpus lutescens, Cocos nucifera, Dictyosperma album, Hedyscepe Canterburyana, Howeia Belmoreana, Howeia Forsteriana, Jubaeopsis caffra, Mascarena lagenicaulis, Mascarena Verschaffeltii, Pritchardia Gaudichaudii, Pritchardia pacifica, Ptychosperma elegans, Rhopalostylis Baueri, Rhopalostylis sapida, Roystonea regia, Syagrus insignis, Syagrus macrocarpa, Syagrus Weddelliana, Wallichia caryotoides.

18. Inflorescence and bract of *Jubaea chilensis*. Photograph by William Hertrich.

The following species of palms have survived the above-mentioned harsh winters and can generally be grown in this area:

Arecastrum Romanzoffianum, Arecastrum Romanzoffianum var. *australe, Arecastrum Romanzoffianum* var. *botryophorum, Arenga Engleri, Butia capitata, Butia eriospatha, Butia Yatay, Chamaerops humilis* (and its many varieties), *Chamaedorea Seifrizii, Chamaedorea elegans, Erythea armata, Erythea Brandegeei, Erythea edulis, Jubaea chilensis, Livistona australis, Livistona chinensis, Livistona decipiens, Livistona Mariae, Paurotis Wrightii, Phoenix canariensis, Phoenix dactylifera, Phoenix humilis, Phoenix paludosa, Phoenix reclinata, Phoenix Roebelenii, Phoenix rupicola, Phoenix sylvestris, Phoenix zeylanica, Rhapidophyllum hystrix, Rhapis excelsa, Rhapis humilis, Sabal causiarum, Sabal mauritiaeformis,*

Sabal mexicana, Sabal minor, Sabal Palmetto, Sabal texana, Sabal umbraculifera, Sabal viatoris, Sabal Yapa, Trachycarpus Fortunei, Trachycarpus Martianus, Trachycarpus, Takil, Trachycarpus Wagnerianus, Trithrinax acanthocoma, Trithrinax campestris, Washingtonia filifera, Washingtonia robusta.

A Method for Germinating Palm Seeds

HARRISON G. YOCUM

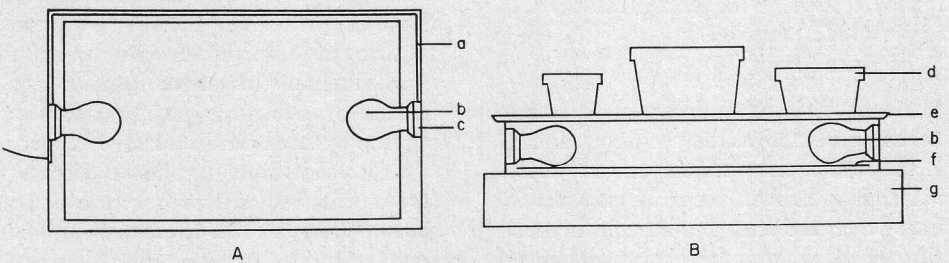
After ten years of importing palm seeds and trying various methods to germinate them, the author wishes to report a method for germinating palm seeds that should be useful and successful for the amateur. It is well adapted for small scale germination when a few seeds are received periodically as the fruits become available.

Previous seed treatments that gave negligible results or even total failure were: (1) Planting the seeds as received with no removal of the outer shell or pericarp when such was present; (2) No artificial heat provided; (3) Planting the seeds too shallow—one-half of the seed exposed above the surface of the sand; (4) Unfamiliarity with location of the micropyle with the seed in question. Many species have the micropyle, through which germination occurs, variously situated.

It is concluded from numerous trials that the most important factor for success in palm seed germination is the provision of artificial heat where the environment is cooler than 80°F. The removal of the pericarp is probably next in importance.

In order to develop a germinator in which bottom heat could be provided simply, a method was improvised to supply artificial heat with incandescent light bulbs. A rectangle box 19″ × 12″ × 3½″ was used as shown in Fig. 19. The size of the box may vary with one's individual needs. A light bulb socket is fastened to one end of the box or, if desired, one may be placed at each end to supply more uniform heat in larger boxes. With the box above, one 75-watt lamp provides sufficient heat. Two bulbs of lower wattage may be used in a larger box, such as a 40-watt lamp for each socket. The important thing is that the lamps provide continuous heat of about 80°F. near the seeds.

The larger the size of the germinator,



19. Layout for a source of bottom heat. Left, box with lamps for heat in top view; right, lateral view of the same on inverted flat with pots on aluminum sheet. a, light cord; b, light bulb; c, socket; d, pot of vermiculite with seeds; e, aluminum sheet; f, thin aluminum strip; g, inverted wire mesh flat.