

of hundreds of small rootlets, each no thicker than a lead pencil, which spread through the ground immediately below the surface. The sap flows from roots to crown in the porous heart of the tree. It is this characteristic of the tree that enables it to survive even when the bark—if the outer covering of the trunk may be called bark—is blackened with char.

Why does a person, presumably in his right mind, spend his weekends for many years hunting for palm trees? I can only answer that by suggesting other questions: Why do men and women climb mountains, or run the treacherous rapids of the Colorado River in wooden boats?

To active-minded human beings life would be meaningless without goals. They cannot all set out as did Christopher Columbus in quest of a new world, or Admiral Byrd in search for the South Pole. Most of us have to be content with more modest projects. But in nearly every member of the human species there is the built-in urge for conquest—for exploration. This is especially true of youth. And so we embark on whatever form of adventure our environment

will suggest and our circumstances will permit.

Oh, I know, the psychologists have a more scientific—and incomprehensible—explanation for human impulses than I am suggesting. But the basic urges in human nature really are not as complicated as some of the minds in the ivory towers would have us believe. If parents and teachers and law-makers better understood the basic emotions which are the dynamo of human conduct I am sure there would be less alcoholism, fewer love triangles, and certainly less crime and juvenile delinquency than plague our society today.

I am sure no winner of the Indianapolis Sweepstakes or the Open Golf championship or the Kentucky Derby ever experienced a deeper sense of achievement or a more lasting satisfaction than came to me the day, after six fruitless weekends spent scaling the rocks and plodding up the sand canyons of the Inkopah Mountains of Southern California, I finally got my first glimpse of the pretty palm oasis near the fantastic rock formation known as Dos Cabezas.

Landscape Grouping of Palm Species*

H. F. LOOMIS

Palms have been used in landscaping for many years in countries fortunate enough to be able to grow them outdoors. Several methods have been followed, the most usual being the planting of a single specimen in an open space where it might be seen to the best advantage or placing it to lend a special accent adjacent to shrubs, trees, a doorway, corner of a building or to break an expanse of wall. Thus single plants of several or more species may be seen scattered in yards, gardens and parks or along streets, with little artistic relation to each other.

A somewhat more studied effect has been achieved by placing several individuals of the same species in loose or close group arrangement. This is more commonly done with single-trunked kinds than with those that form natural clumps and occasionally may be an attempt to simulate a clumping species without running the danger of having the group expand greatly, as with some multiple-trunked palms.

A third common landscape use of palms is the planting of many of the same kind, usually a single-trunked one, in a row at the side or front of a door-

yard, around a plaza, or along one or both sides of a pathway, drive or street.

Everyone has seen, or knows through pictures, magnificent avenues in the tropics or subtropics of such giant species as the Royal, Washingtonia, Canary Island Date, and Palmyra palm, to name a few, but intermediate and small species with one or many trunks also have been displayed extensively in row plantings. A somewhat more utilitarian row use has been made of certain suckering palms of such genera as *Phoenix*, *Bactris*, *Chamaedorea*, *Astrocaryum*, or *Rhapis* by close planting in hedges to provide screens or dividers along property lines or between areas, the spiny-trunked ones effectively barring passage.

Departures from the single-species row are seldom observed, but a delightful exception appeared several years ago when the streets in the business section of Coral Gables, Florida, were decorated with a combination of herbaceous plants and palms, the latter practically in a curbside or central parkway row of a half dozen species intermixed, one or two with multiple trunks, included among the other plants.

A rarely seen arrangement of palms, but one that deserves widespread exploitation by landscape architects and palm lovers in general may be termed "species grouping." In essence it can be described as the planting of several or many palm species in a compact clump or group to give a coordinated mass that will keep a pleasing shape for many years without pruning or special training.

Such a group is shown in the accompanying photograph, which illustrates remarkably well the several features involved in this type of planting. Obviously it is an old group, as attested by the size of the larger palms, with the royals near the center furnishing the principal high-light and surrounded by a very closely

spaced mixture of species of decreasing size to the low-growing ones that fill segments of the outer margin. It can be seen that much thought went into the original selection and disposition of members of the group, which unquestionably has been a thing of beauty for many years with more remaining for it.

An interesting point shown by the photograph, exemplifying an often advantageous use of palms as contrasted with shrubs or trees in such a mass planting, is that the group still remains almost within its original bounds, nearly all the growth having been upward with hardly any outward expansion.

In planning a palm species group, the size and shape of the area and the approximate height and numbers of species and individuals to be used can be varied endlessly. For a group to be dramatically effective, however, the requirements and characteristics of the different species must be known to insure maintaining the proper relationship between its elements over a long period.

Much can be learned of the dimensions, general shape and appearance, rate of growth, and light requirements of various palm species by studying those in established collections. Fortunately, there are several current books devoted entirely to palms as well as the quarterly journal *PRINCIPES* and numerous botanical papers published by the Bailey Hortorium, Cornell University, which provide information on most aspects of the palm family. Also many plant nurseries in the palm-growing regions, of the United States at least, can supply greater numbers of species, with descriptive details and cultural suggestions, than ever before. Thus the stumbling blocks of getting information and of finding suitable palms for planting have been largely removed.

While the group in the photograph is



8. Large species-group of palms in Botanic Garden, Dominica, B. W. I. Easily recognized are *Roystonia oleracea*, *Pritchardia pacifica*, *Chrysalidocarpus madagascariensis*, *C. lutescens*, *Phoenix reclinata*, *Thrinax parviflora*, *Licuala spinosa* and *Rhapis excelsa*. Photograph by H. F. Loomis, courtesy U.S. Department of Agriculture.

too grandiose for any but large grounds, the principle of planting can be carried through smaller clumps to relatively tiny arrangements in patios, courtyards, or even indoor planter boxes where the smaller shade palms would be required. Undoubtedly the greatest use to be made of grouping is in the intermediate-size range, perhaps with no more than three or four species represented by a total of six to a dozen palms in such locations as mentioned for the first two landscape types of palm planting.

After having decided on the space a species-group will occupy, and the maximum height allowable, the general exposure will dictate whether shade-palms or sun-palms or both should be planted. In a group fully exposed to the sun, some shade-loving species of relatively small to medium size may be located on its north side if shade from the larger inner palms is fairly constant. Placing of shade-species in such a group can be deferred until the larger interior palms are of a size to provide the necessary protection from the sun; in fact, in any group all species, whatever their requirements, need not be set at the same time however desirable this may be. Still, in most cases, fewer complications will ensue if the tallest and intermediate ones are placed concurrently. Where suitable small species for the outer margin are not available, young specimens of some larger but slow-growing palms may be substituted with the intent of eventual replacement or of setting small species at their base when they become too large. Certain suckering palms of small to medium height are adapted to marginal planting if a few suckers are being continually produced to afford a low leaf-cover to hide the older inner stems. In this category, *Licuala spinosa*, *Rhapis excelsa* and *Zombia antillarum* are a few that may be mentioned.

A feature to be considered in any group, especially the larger ones, is the general appearance or texture that may be attained by judicious mixing of fan-leaf and feather-leaf palms with single or multiple trunks, to increase the interest and beauty of the planting. Another opportunity for diversification is in blending colors of foliage, as some palm species characteristically have dark-green leaves, others light-green to almost yellow ones, and a few species silvery-gray to distinctly bluish leaves.

In starting group plantings it is best to use palms that have begun to attain some size, so that a mass effect will be evident from the first. If small seedlings are used more time will be needed for them to grow and fill out the plantings into unified clumps.

Those in South Florida who wish to arrange a species-group may select from the following list of species, most of which are available in the area. Palms in the list are named in classes of descending heights at maturity but considerable over-lapping occurs between the adjacent classes.

VERY TALL SPECIES—*Washingtonia robusta*, *Roystonea elata*, *R. regia*, *Corypha umbraculifera*, *Cocos nucifera*.

TALL SPECIES — *Elaeis guineensis*, *Phoenix dactylifera*, *P. canariensis*, *Sabal Palmetto*, *Pritchardia pacifica*, *P. Thurstonii*, *Latania* (all species).

INTERMEDIATE HEIGHT SPECIES—*Dictyosperma album*, *D. aureum*, *Trachycarpus Fortunei*, *Thrinax microcarpa*, *T. parviflora*, *Coccothrinax* (most available species), *Ptychosperma elegans*, *P. Macarthurii*, *Chrysalidocarpus madagascariensis*, *C. lutescens*.

SMALL SPECIES—*Chamaerops humilis*, *Veitchia Merrillii*, *Thrinax Morrisii*, *T. Ekmanii*, *Phoenix Roebelenii*, *Licuala grandis*, *Chamaedorea erumpens*, *C. Seifrizii*, *C. concolor*.

VERY SMALL OR LOW SPECIES—*Sabal Etonia*, *S. minor*, *Phoenix pusilla*, *Rhapidophyllum hystrix*, *Chamaedorea elegans*, *C. tenella*.

Many more species are growing in this region and locating desirable speci-

mens and including them in diversified group arrangements will be a pleasant experience for anyone, make a worthy contribution to knowledge of the use of palms, and enhance the variety and beauty of landscape plantings.

More about Cold Tolerance

Effects of a Hard Freeze upon Cultivated Palms during
December, 1962, at Daytona Beach, Florida

DENT SMITH

Having already dealt in these pages with the cold tolerance of certain cultivated palms, the writer hardly had expected to return to that frigid subject in just five years. The hard freeze of December, 1962, gave rise to a different set of circumstances, however, and the effects upon the palms were different also. Hence it has seemed advisable to report anew.

Six years ago nearly everybody was convinced that the world was growing warmer. Most of the meteorologists subscribed to the notion and helped to give it wide credence. The ice was said to be melting and the glaciers receding. Certainly in the United States much of the eastern seaboard had been enjoying less rigorous winters for several years. But if the trend was in a warm direction, it was not confirmed by the weather in many states following the 1956-1957 winter, for the very next winter there were several hard freezes extending well down into Florida. Such severe cold, the Floridians thought, might not again invade their peninsula for decades. It would have been against reason to expect that much worse would come within a few years, but come it did in December, 1962.

The delay in publishing this report until January, 1964, thirteen months after the freeze occurred, is owing to

valid reasons. The freeze effects upon the injured palms were not simultaneous with the occurrence of the freeze itself. On the contrary, these effects were in a state of constant change over more or less extended periods of time, with the outcome continuing to be in doubt for from one month to as many as ten months. In some instances it was still impossible to know, by late summer, which palms would survive among all those still ailing but alive at that time; and even somewhat later on, ten months after freeze injury, the issue remained doubtful in a few cases. Not until late November was it possible to tabulate all the facts and to prepare this account for publication in the next issue of PRINCIPES—the current one. Any earlier report would have been inevitably misleading because of inaccuracies. Many palms survived that for a time appeared dead or dying, others in extremely sorry condition with only the slenderest of holds on life managed in time fully to recover, and a number that appeared to be safely mending ultimately died from hidden injuries.

At the time of the freeze there were one thousand planted palms, slightly more or less, under the writer's care at 2514-2518 South Peninsula Drive, Daytona Beach, Florida. This number was substantially larger than in prior years,