



FROM FLOWER TO FRUIT.

THE BREAD-STUFF OF THE DESERT.

BY GRANT ALLEN.

I sit as I write by an open Moorish window on an African hillside, and look out on a little vista of bright green valley with sheer sloping sides, cut deep like a gorge in a minor spur thrown out by the great subsid-ing main range of the Atlas Mountains. I lift my eyes from my paper one moment as I write, and gaze out through the barred and grated framework of the pretty casement, to the hillside opposite. In the foreground the garden is gay with roses; geraniums glow behind the huge stems of the aloes; the luscious perfume of Japanese medlars fills the air; and mandarin oranges gleam gold in the sunshine among their own exquisite dark masses of clear-cut foliage. But behind them all, etched out distinctly against the red soil of the hill at the back, a single date-palm, the glory of the villa, raises its stately head in proud disdain high over the lesser and less beautiful trees towards the cloudless expanse of an African heaven.

It is a lovely sight, that graceful old palm-tree, with its tall stem marked stage after stage by the clipped leaf-stalks of former years, at the angles of whose sheaths bright yellow blossoms grow out luxuriantly from the trunk itself, and clothe the bare bole or the ragged base with half-parasitic verdure and hanging sprays of flowers. At the summit a broad rosette of long feathery branches waves backward and forward with exquisite movement in the desert breeze. Branches we call them in everyday language, because they are so long and large and much subdivided, but in reality they are only very big and deep-cut leaves, what seems the bough being, in fact, the mid-rib, and what look like separate waving masses of foliage being really the minor segments or leaflets of the one great subdivided blade.

If you plant a date-stone in a suitable situation on the borders of the desert—by a stream of water, or at least in damp sand, for denizen of Sahara as it is by nature, your date-palm exacts an abundant water supply—it will soon germinate, under favorable conditions, and send up a shoot of

something the same sort as a blade of wheat, for the palms all belong by origin to the great order of the monocotyledons or one-seed-leaved plants; which includes also the grasses, cereals, orchids, and lilies. But the Arabs do not generally grow their date-palms from seed, and for this reason. The species is bi-sexual; it

has male and female flowers on different trees; and as the male plants produce no fruit but only pollen for impregnating the embryo dates born by their sister trees, they are comparatively useless, save in very small numbers, as I shall explain hereafter in due order. Hence the cultivators of dates usually propagate the palms by suckers taken from the root of a female tree, as such suckers always follow the sex of the mothers, whereas in the case of seedlings the sower can never be sure whether he will get a fruit-bearing or a pollen-bearing individual.

As the palm grows and gathers strength each day from the African sun, it acquires in time its distinctive branch-like and segmented leaves. But its growth, nevertheless, is to the very end extremely lily-like; it produces but a single undivided stem, and never branches out like the true trees—the oaks and the ashes—of the type familiar to us in northern climates. One can best understand its mode of growth by thinking of it as similar in principle to the yucca lilies, or "Adam's needles," so commonly grown in hot-houses.

But the leaves of the date-palm, instead of being long, narrow, and blade-like, as is the case with most lilies and grasses, are divided into numerous beautiful segments, arranged (like the separate barbs of a feather) on each side of the stout mid-rib. This is a common form of leaf in palms, and its origin and use admit, I think, of very little doubt to a careful observer. Low palms, like the common fan-palm, so often seen in conservatories and drawing-rooms, have their leaves united at least as far as the middle of the fan-shaped blade, and fringed or tagged by ribbon-like segments at the border only. But taller palms, which have to stand the brunt of desert winds, like the date-tree, or of sea-breezes, like the cocoa-nut, or of upland tempests, like the mountain-cabbage palm, almost always have their leaves divided into segments.

The suckers which our Arab friends take from the base of the female tree produce fruit in about eight years, but are not in their full bearing prime till about twenty-five years from their first planting. Seedlings, however, take very much longer to attain maturity, as they do not start in life with a rich store of material already laid by for their use by their mother plant as the suckers do. The palm flowers in April; its blossoms are numerous, small, and inconspicuous, lilies in type, but enclosed in a large sheath or spathe (like jonquils or garlic), from which the ripe dates finally protrude. The male flowers have each sepals and three petals, inside which hangs a whorl of stamens with their tiny pollen-bags. The female flowers have also similar petals, but no stamens, their centre being occupied instead by the rudiment or foreshadowing of the unbudded fruit. In order for this to swell and grow into a perfect date the ovary must be fertilized by pollen from the brother blossoms. In the wild state fertilization is, of course, brought

about by bees, flies, and other friendly insects, which visit the flowers in search of food and drink, and carry the pollen unconsciously on their bodies from one plant to the next they visit.

The Arabs, however, do not trust to the casual mercies of insects alone for setting and fructifying their precious date-crop. It is to them a matter of too much moment to be thus left to chance or to the caprice of a beetle. When

they plant a grove, they take care to include in it one or two male palms (if there are no wild ones already growing in the neighborhood), and when the flowering season comes, they send a boy up these male trees, to cut off the entire spatheful of pollen-bearing flowers. They then swarm up the fertile trees by the aid of the bases of the old leaf-stalks, and hang a portion of the male blossoming branches within each of the expectant fruit-bearing spathes. The wind and the insects do the rest. The young dates, fructified by the pollen, begin at once to swell, and hang out at last in a big bunch, not unlike the pendant bunches of bananas one sees so often at home, though of course on a very much smaller scale. The long clusters weigh from twenty to forty pounds each, and a single palm produces in a season as much as two hundred weight of good fruit.

The date-palm has been evolved, apparently, in and for the Sahara alone. It never thrives far away from the desert. And yet, by a strange contradiction in nature, it absolutely requires an abundant water-supply. It stands, the Arab proverb truly says, "with its feet in the water and its head in the scorching fires of heaven." Without it the desert would be quite uninhabitable, and the oases themselves would have no existence. Syria and Algeria are the most northerly points at which it will ripen its fruit to perfection; and even here on the Mediterranean slope of Africa, it grows with difficulty anywhere north of the Atlas range. But in the desert itself it lives and thrives and prospers wonderfully. The great peculiarity which fits it so well for Saharan life lies in the fact that it can grow in pure sand alone, and content itself with water so briny and alkaline as to destroy all other form of vegetation.

In the Souf, just beyond the blue mountains on the horizon yonder, the oases are for the most part artificially produced. The water there lies close below the surface, but a bed of gypsum overspreads the moist sandy stratum, and forms a wide waste of crystalline desert. When the industrious Arabs of that curious district wish to plant a date-grove, therefore, they remove the entire crust of gleaming white sulphate, and plant their palms in a hollow of the water-bearing bed beneath. The green tops of the trees rise, as they grow, some yards above the level, thus forming excavated orchards like ants' nests, with a dome of green as their sole visible symptom in the surrounding country.

Dates for home consumption are both dirty and poor; those for exportation are better-preserved and pickled specimens. The desert as we know it—oases, caravans, Arabs, and everything—is all rendered possible only by the existence of that patient, sand-loving, brine-enduring tree. What the camel is among beasts of burden, that in fact the date-palm is in the vegetable world.

It is not only for the dates, however, that the date-palm is valued; it acts, so to speak, as the "universal provider" for all the wants, good, bad, or indifferent, of the Arabs of the desert who live upon its produce. The stately trunks, rising forty-five feet into the sweltering air, and bending but not breaking before the fierce cyclones that sweep in full force across the level reaches of the Sahara, are planted so close together in the groves that they afford a very dense shade; and in the sub-tropical garden thus formed, wherever irrigation with fresh water is possible, other kinds of fruits and vegetables can be cultivated with success in the better oases. The natural life of the palm is a couple of centuries; but as soon as it has about attained its hundredth year it ceases to bear so well as before, and it is then shortly cut down for the sake of the timber. For a while, however, before this last act of its life, its juice is tapped to make palm-wine, from which, again, a spirit can be distilled by those degenerate Arabs who are not over-strict in

their faithful observance of the Prophet's prohibition of alcoholic stimulant. And, indeed, you cannot live long among Mohammedans without seeing that the sons of Islam do; frequently, as a matter of fact, indulge in something rather stronger than their proper coffee. The "cabbage" or growing-bud of the tree is also eaten as a fresh vegetable; and the wood forms the only sort of timber known to the oases. The trunk is necessarily so pliable, to endure the winds of the desert, that the beams made of it can bear very little weight; so the Arab cabins are unavoidably both very small and very low; the short scantling of the native wood, indeed, even on the seaboard hills, determined long since the smallness of the rooms in Moorish houses throughout all North Africa. Finally, the roots of the palm are used for making fences, the leaves are employed as a thatch for the huts, and the fibres supply the children of the desert with mats, baskets, ropes, and sacking. The very dates on their way to market are packed in bales of their own fibre.

In short, the Arab of Sahara lives upon the date-palm. I have called it his bread-stuff, but it is far more than that alone. He eats it, he drinks from it, he lives under it, he burns it, he buys with it whatever he needs from other regions. It is his all, his estate, his heritage, his banker. He invests his money by planting a date-grove; he provides for his children by leaving them the good-will of the well and the palm-trees. No more wonderful case of adaptation exists in the world. The date-tree lives where nothing else would live, and cannot live itself where everything else can. The salamander of trees, it requires the burning heat of the desert; and even there it drinks by preference water which no other tree would so much as tolerate. "Adaptation to the environment" can go no farther.—Good Words.



PALM-LEAF.