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James M'Nab

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leave the valley of the Roja, which turns to the south towards the coast of Verimiglia. The road winds over two of the lateral spurs of the Maritime Alps, and reaches Nice through a hot valley rich with fig trees, pomegranates, vineyards, olive groves, and patches of *Arundo Donax*, 18 feet high, the result of little more than seven months' growth. The herbaceous and bulbous plants have long passed their beauty, but the aspect of the district in September is much more fresh and green than I had anticipated, from the abundance of deciduous and evergreen trees now in full leafy strength. At Nice the market held daily in the streets strikingly exhibited the richness of the district in the extraordinary quantity and variety of fruit—figs, pomegranates, tomatoes, grapes, peaches, capsicums, prickly pears, &c., exposed for sale under the shade of the plane-tree avenues. I have now wandered far away from Mont Cenis and the Maritime Alps, which have been the subject of my paper, and a passing glimpse of the beautiful Mediterranean coast on my homeward route, with its shrubby headlands and blue bays, rich in a flora peculiar to itself, concludes a fortnight's pleasant ramble.

II. *Notice of Sabal umbraclifera in the Palm Stove at Royal Botanic Garden, Edinburgh.* By JAMES M'NAB, Curator. (Plate III.)

An addition has recently been made to the conservatories in the Royal Botanic Garden at Edinburgh, by fitting up in the open space in the centre of the chief range, a temperate house for the growth of cool Palms and tall hard-wooded exotic trees. The extra accommodation thus secured for these plants has permitted the removal of the temporary partition, which for many years separated the eastern octagonal portion (previously used for the cool Palms, &c.) from the present large Palm-house, thus converting the two houses into one for the growth of tropical Palms, &c.

In the centre of the large Palm house, and immediately opposite the chief entrance door, stood a fine specimen of the Bull Palm (*Sabal umbraclifera*). It was in a tub 22 feet in circumference and 4 feet 9 inches in depth. It had

stood in this position for nearly seventeen years, and during that time had made great progress. The lower part of the tub was completely decayed, in consequence of the heat and moisture; and although it was originally raised on bricks three inches from the floor, the bottom had given way, and the whole under-space had become a dense mass of matted roots, resting on the surface of the stone floor. Owing to the decayed condition of the tub, the removal of this tree, in an upright position, became a matter of serious consideration. In the end of October and the early part of November preparations were made for its removal. Two strong planks, 8 feet long and 10 inches broad, were first introduced below it, one at each side; and, by means of strong lever power along the sides of these two outer planks, two strong 8 feet long battens were put further under, alternately on each side, till they nearly reached the centre. This done, the ends of each, beginning with the west side, were raised to such a height as to allow a strong cross plank to be inserted to receive all the ends of the longitudinal ones; the same was also done on the east side. Lever power was then applied under the cross plank, which enabled longitudinal supports, 10 inches long, to be put in, one under each end, but within the line of the cross plank, in two uniform thicknesses, till the mass was raised 5 inches above the floor. The east side of the plant was raised in the same manner six inches. Similar supports were also put under the broad side planks, at regular distances, three on each side. When the plant was resting on the eighteen 5-inch high supports, the cross planks were removed, and long smooth boards, used for flooring purposes, were then pushed under the plant from east to west, and between the temporary 5-inch high supports. Iron rollers, 6 feet 8 inches long, and 3 inches in diameter, were introduced under the planks and battens, but above the flooring boards, from north to south; all the supports were then removed, and the mass rested on the iron rollers. By means of block and tackle, the plant was drawn, over a series of flooring-boards, to its new situation in the centre of the octagon-house.

The distance was 44 feet, so that the Palm now stands exactly 80 feet from the chief entrance door, from which

it presents a very noble appearance, there being a broad open space between it and the door. After removal, by means of the leverage power, the supports were again put under the ends of each of the planks and battens, to such a height as enabled all the iron rollers to be taken out. Numerous porous bricks were then driven below every portion of it, between the battens and flooring-boards, to act as a means of drainage; the old iron hoops and staves of the tub were next removed, when the surface of the ball was found to be covered with a dense mass of matted roots, which had enabled it to stand the strain it had undergone. A box was then erected round it, 7 feet 10 inches square and 5 feet deep, made of well-seasoned red-wood plank, 2½ inches thick, the sides being kept together by iron rods and screw bolts, placed along the two opposite sides. After sufficient drainage materials had been put in the whole box was filled up with old turfy loam, and well watered.

The Sabal stands 36 feet high from the surface of the floor. It has a clean upright stem, 14 feet in height. The circumference at the base is 5 feet 4 inches, and 3 feet at the top, where the leaves begin. At present the leaves are forty in number. The side ones, including the leaf-stalk, are about 16 feet long, the leaf-stalk being 10 feet and the frond 6 feet long by 5 feet 6 inches broad. The head of the Palm is somewhat globular, and is 22 feet in diameter. All the leaves and stalks are naturally curved, otherwise the diameter would be nearly 32 feet. It is now covered with large clusters of fruit.

When the Sabal stood in its old situation, it could not be seen to advantage, as the leaves were intermixed with those of adjoining Palms; now that it stands alone it has a magnificent effect, and proves that Palms, of all plants, ought to stand perfectly free, otherwise their noble outlines are almost entirely lost. Since its removal, the other Palms in line have a more commanding appearance, their straight stems nearly forming an avenue, their tops filling up, but not interfering with, the outline of the Sabal.

This tree cannot be less than sixty years old. It was removed from the stove in the old Botanic Garden, at Leith Walk, in 1822, and was kept in a lean-to house

in the present garden for thirteen years. This house being only 18 feet high at the back and 7 feet high in front, it was greatly hampered. During 1834 a new house, 42 feet in height, was erected for Palms and other tropical plants. The *Sabal* was removed into it during 1835, where it succeeded well, and was thence transferred to the new large structure in 1858. The plant was then 30 feet high, chiefly composed of long and heavy leaves, proceeding from a thick and massive rustic-looking stem, about 6 feet in height, made up externally of the lower portions of the old leaf-stalks, thickly intermixed with long fibrous network or "reticulum." The leaf-stalks were all divided in the middle, and the two ends firmly attached to the opposite sides of the stem. About twelve years ago the whole of the old leaf-stalks and reticulum came off, and exposed the bare stem; since then it has increased rapidly, but the leaves and leaf-stalks are smaller in size, and the fibrous material less abundantly produced. This hemp-like substance seems to be required most while the plants are comparatively stemless, the leaves being then more or less in an upright position. This substance, which is produced along each edge of the lower portion of the leaf-stalk, is at first like strong woven cloth, closely attached, and as it encircles the base of the other leaves, and is aided by the overlapping of the foot-stalks of neighbouring leaves, it greatly assists their upright position; otherwise, their weight would probably bring them to the ground. After a time, the network, particularly at the lower part of the stem, appeared as if teased out into a bundle of rough hemp among all the lower leaf-stalks. This was particularly noticeable before their removal from the plant in 1862. After the formation of the stem, the upper leaves become more pendent, and the reticulum in consequence does not appear to be so much required, as less seems to be produced. When a leaf is first formed, the centre portion of the stem at that place must be small, and the base of each leaf-stalk must be united. As the stem thickens by age the base of the leaf-stalk begins to divide in the middle; as it goes on enlarging the division increases, till the two ends of the leaf-stalk are found to be fixed, one on each side of the stem as above

described. Since the stem has become bare about 150 ring markings have become visible. On the lowest part, for about 4 or 5 inches, they are close together. Above this they vary in breadth from 1 to 2 inches; and the upper ones are from an inch to half an inch apart. The rings or circles are of unequal breadth, and each has the rudiments of two scars, some being more prominent than others, which indicate the attachment of each half of the leaf to the stem, one exactly on each side of a ring. No regular system is observable, although the existing leaves show something like a spiral arrangement. It is evident from the scars that each ring indicates the number of leaves which the plant has produced.

The peculiar structure at the base of each leaf-stalk enables the leaves better to withstand a gale of wind in its native condition.

[The plate of *Sabal umbraculifera* is reproduced from the *Gardeners' Chronicle*.]

III. *Extracts from Letters from W. H. Gilbert, Esq., Rangoon, to P. Neill Fraser, Esq.*

The scenery in the interior of Burmah is wondrously beautiful, and its botanical stores but poorly described, though I should say that an insular position would eclipse it in the variety and persistency of ferns and other shade-loving plants.

The filmy ferns of Burmah die down more or less in the dry season, when alone it is pleasant, and in some parts practicable, to search for plants, and thus many lovely varieties remain undiscovered. Those which retain their foliage are only, as a general rule, found on the tops of the highest hills, and fade quickly when brought to the plains.

I am obliged to you for the notes on the distinctions between *Platyserium grande* and *Wallichii*. Unless memory fails me, I have seen four or five distinct varieties of *Platyserium*, differing much in mode of growth, shape, &c. I hope to visit the Moulmein jungles ere long, and will try to obtain some plants. I know where a variety is found, in which the fertile fronds are said to be 15 to 18 feet long.