

seilles to the eastern extremity of the Islands of Hyères. No ship within a radius of from 30 to 40 kilometres could have escaped observation. With a cable of silk, the balloon could rise in calm weather to a height of 400 metres.

It is evident from the success of these experiments that captive balloons may be a most important aid to those who hereafter make use of them in naval warfare. The subject has attracted the attention of the naval authorities in Germany, and at Wilhelmshaven a captive balloon was sent up recently from the *Mars*. We are glad to learn that the English Admiralty has taken up the question.

#### THE COCO-DE-MER IN CULTIVATION.

WITH only one exception, the palms of the Seychelles have long since proved amenable to cultivation in our tropical plant-houses. The genera *Stevensonia*, *Verschaffeltia*, *Roscheria*, *Latania*, *Dicyosperma*, *Acanthophoenix*, *Hyophorbe*, and *Chrysalidocarpus*, which are peculiar to this small group of islands, and which rank amongst the noblest of a noble family, are all well known in European collections of palms, their cultivation presenting no more difficulty than that of tropical plants generally. The coco-de-mer or double cocoa-nut (*Lodoicea seychellarum*) has, however, so far proved unmanageable under artificial treatment, notwithstanding that many attempts have been made to establish it at Kew and elsewhere. So long ago as the year 1827, Sir William Hooker published a series of figures and a description of the coco-de-mer in the *Botanical Magazine*, and recorded the arrival of living nuts of it at Kew, where, he says, "we cannot doubt of soon seeing them flourishing in our stoves." But they failed to grow, and although dozens of nuts have since been tried at Kew, not one ever got beyond the first stage of germination.

The absence from our collections of living examples of this most remarkable palm is most disappointing to all students of the order. At Kew we have lately been successful in establishing living plants of the Ita (*Mauritia flexuosa*) and Bussu (*Manicaria saccifera*) palms of the Demerara swamps, and the Doum (*Hyphaene thebaica*) and Palmyra (*Borassus flabelliformis*) palms of Africa. These successes stimulated the desire once more to obtain a living plant of the coco-de-mer.

Application was therefore made in January last year, through the Secretary of State for the Colonies, for a supply of fresh nuts from the Seychelles, and at the same time directions for packing and forwarding the nuts were sent to Mr. C. Button, the Conservator of Forests at those islands. The Administrator, Mr. T. Risely Griffith, took a warm interest in the matter, and through his kind exertions several consignments of nuts were received, of which four germinated. Two of these are probably too weak to live, but the other two are in a most promising condition. The strongest has a radicle 3 feet 8 inches long, and 12 inches in circumference at the end where the plumule is developed. This is now a foot long, and is pushing a perfect leaf.

In a note by the late General Gordon on the germination of the double cocoa-nut, it is stated that the nut is planted horizontally, without the husk, when it sends out a sprout some 12 feet long, which pushes up the young plant at a distance of 12 feet from the nut. The longest "sprout" we have had at Kew has not exceeded 4 feet. Nor can it be made to grow horizontally, the point turning down perpendicularly however often its position may be altered. At Kew the nuts were planted in a bed of cocoa-nut fibre, and kept at a temperature of 80°-85° F. They were planted in June 1889.

Mr. Button had kindly undertaken to plant a nut in a Wardian case, and treat it according to our instructions until it had germinated and developed the plumule before

despatching it to Kew. A nut thus treated arrived in July last in the most promising condition. The radicle is 1 foot 10 inches long, and the plumule is 7 inches in circumference at the base. It has a stout sheath-leaf, and a normal leaf 3 feet 2 inches long, 3 feet wide, with thirty-six folds. The midrib is curved, and the blade at present folded double. The texture is exceptionally firm, and the colour a deep green.

Full-sized trees of the coco-de-mer attain as much as 150 feet in height, with a smooth trunk about a foot in diameter. The leaves form an immense crown on the top, and each leaf is 20 feet long and 10 or 12 feet wide. The male and female flowers are on separate plants: the male inflorescence is shaped like a huge willow catkin, its length being 5 to 6 feet by 4 inches in diameter; the female is from 2 to 4 feet long, and it bears from six to ten fruits, each of which weighs from 25 to 30 pounds. They take seven years to mature, and sometimes hang two years on the tree after they are ripe. The process of germination extends over about two years. According to General Gordon, the trees begin to fruit when about forty years old, and attain maturity in 120 years.

Royal Gardens, Kew.

WILLIAM WATSON.

[The coco-de-mer is at present confined to Praslin and Curieuse, two of the islands of the northern group of the Seychelles Archipelago. It undoubtedly runs some risk of extinction from the long period which the nuts take to germinate, and from the fact that, the trees being of different sexes, isolated females may easily escape fertilization. Its cultivation in the Botanic Gardens of the tropics is therefore of considerable importance.

Plants have long flourished in the Royal Botanic Gardens at Peradeniya, and the following extract from a letter from the Director, Dr. Trimen, F.R.S., to Kew, records the interesting circumstance of a male plant having flowered:—

"Peradeniya, August 12, 1890.

"You will be interested to hear that one of our Lodoicea palms put out a ♂ inflorescence last month. The tree is thirty-nine years old. To my great disgust, when the spike was about 6 inches long, some visitor cut it off with a blunt knife, and I found it on the ground. The flowers were all formed, and the structure exactly as described by Sir W. Hooker in the *Botanical Magazine*. I hope my other tree will prove ♀, but that is much younger."

Sir John Kirk also succeeded in establishing the palm in his garden at Zanzibar.

The Government of the Seychelles has long watched with care the preservation of the existing groves of the palm, and pains are now taken to fertilize the female plants artificially, and to plant the seeds.—W. T. T. D.]

#### NOTES.

WE have to announce the death of Pierre de Tchihatchef, which took place at Florence on the 13th ultimo. This gentleman was perhaps best known as a botanist, though his principal literary work, "Asie Mineure : Description Physique, Statistique, et Archéologique de cette Contrée," took a much wider range. Prior to 1857, he travelled ten years in Asia Minor and Armenia, and, besides the work named, he published a large number of separate papers on a variety of subjects, chiefly however on botany and geology, commencing in 1840. Like so many Russians, he appears to have been an accomplished linguist, and wrote German and French with equal facility. He resided some years in France, and was one of the original members of the Botanical Society of France, founded in 1854. His "Botany of Asia Minor" forms the third part of the work named above, and consists of two volumes of letterpress, and a volume of plates by Riocreux. Pierre de Tchihatchef was also the author of an