June 27. 81

Dear Sir

I am sorry to say that we only have female flowers of Cycas revoluta at the present moment

I inclose our printed instructions for collectors

We think your plant from Mossamedes is Pterodiscus aurantiacus a Pedaliinea found by Welwitsch in that locality

Yours faithfully
W. T. Thiselton Dyer

ROYAL GARDENS, KEW.

INSTRUCTIONS FOR COLLECTING PLANTS AND SEEDS FOR THE GARDEN AND THE HERBARIUM, AND THE USEFUL PRODUCTS OF VEGETABLES.

I. HORTICULTURAL DEPARTMENT.

PLANTS for *cultivation* may be introduced,—1. As SEEDS, BULBS, and TUBERS, which are easily collected and transmitted: the *Seeds* to be gathered when quite ripe, and each kind folded in dry paper, then enclosed as a parcel, or placed in a box, and kept in an airy part of the cabin during the voyage. *Bulbs* and *Tubers* to be taken, if possible, when the foliage is withered, and similarly packed.—2. CUTTINGS. Most *succulent* plants, should be severed where there is a constriction or articulation in the stem; and these, when carefully freed from extraneous moisture, will bear a long voyage, packed in a box, with paper wrapped about them, or any dry elastic substance to keep them steady.—3. ROOTED PLANTS: some of these, such as *small Cactuses, Aloes, Tillandsias, Zamias*, and the various epiphytal tropical *orchidaceous* plants will travel safely if placed in a box, like the cuttings just noticed, the larger kinds packed with straw. But others require a Wardian case, forming a small portable greenhouse. In it the young rooted plants should be established, in soil about six inches deep, the surface of the mass secured by a little moss and transverse splints (to confine the roots in the event of the box bring overturned); moderately watered; the glazed lid fastened on with screws and putty. The case must be placed on deck during the voyage, occasionally protected from the too powerful rays of the sun, and the contents will require no watering or attention unless the glass should be broken during the voyage.

II. MUSEUM DEPARTMENT.

THE COMMISSIONERS of HER MAJESTY'S WORKS, &c., having been pleased to form a MUSEUM of ECONOMIC BOTANY within the Royal Gardens, the Director solicits the co-operation of Her Majesty's Ministers and Consuls in foreign countries, of the Governors of Her Majesty's Colonies, of Officers in the Army and Navy, Merchants and Travellers generally, to aid in contributing specimens towards so desirable an object.—The design is to bring together in one spot and to exhibit such interesting vegetable products from all parts of the world, as cannot be shewn in the *living* plants of a garden, nor in the preserved ones of an *Herbarium*. The public may indeed see in our stoves the rare *Lace Tree* of Jamaica,

the still rarer *Ivory Palm-Nut* of the Magdalena, the *Bread Fruit Tree* from the Friendly Islands, &c.; but the interest of these is greatly enhanced, if, within the walls of the same Establishment, the curious and beautiful Lace of the first, the fruit and ivory-like seeds of the second, and the celebrated bread-fruit of the third, can also be inspected.—Among the objects, therefore, which are to be collected and deposited, arranged and named in the Museum, are—1. FRUITS and SEEDS, especially those which are of *large* size, or possess any peculiarity of form or structure entitling them to notice. Many of these are naturally dry and require little care (except to be freed from moisture) previous to packing. Those that, when ripe, burst open into valves, or separate by their scales, as *Pine-cones*, &c., should be bound round with pack-thread. The soft and fleshy fruits can only be preserved in wide mouthed bottles, or jars, or casks, (according to size,) in alcohol, as rum, arrack, or in diluted pyroligneous acid or strong brine.—2. ENTIRE PLANTS, or parts of them. Many have a very *fleshy* character, and ought to be preserved entire, in alcohol; or portions of the stem and branches (according to their size) with flowers and fruit; such as those of *Palms*, *Stapelia*, *Rafflesia*, and others of a similar kind.—3. TRUNKS of TREES, portions and sections of them, especially when they exhibit any remarkable structure: as *Palms*, and many other *Monocotyledonous* plants, and *Tree Ferns*. Specimens of Wood should be in sections, a foot or more long, and about the average diameter of the tree. The kinds used in commerce for veneering, cabinet-work, or other useful purposes, or such as recommend themselves by their beauty, hardness, or any other valuable quality, are particularly desired *The scientific or other names should be attached, and specimens of the leaves and flowers to identify them.*—4. GUMS AND RESINS, VEGETABLE WAXES, especially those employed in the Arts or in Domestic Economy.—5. DYE STUFFS of various kinds.—6. MEDICINAL SUBSTANCES. These latter are of vast importance, and merit the attention of Travellers in every country. Of many it is not yet known, except to the natives who collect and prepare them, what are the particular plants that afford them, nor how they are prepared.—7. GENERAL PRODUCTS of VEGETABLES; *in the state of the raw material, and manufactured.* It would be extremely difficult, not to say impossible, to enumerate all of these which a Museum ought to contain; but the enlightened Traveller can form a pretty correct judgment. Such as are *useful to mankind* cannot fail to be interesting. It would be idle to send every *well-known* object of this kind, *Tea, Sugar, Coffee, Cocoa, Chocolate, Paper, Textiles, Platting, Basketwork, Clothing, &c.*; but there are states even of these familiar articles, which will prove both useful and instructive. Paper, for example, is made from an infinite variety of vegetable substances, and the different sorts are well worth collecting; from that afforded by the *Papyrus* of the ancients (which gives the name) to what is manufactured out of the inner bark of an East Indian *Daphne* (or Spurge-laurel), and another from the pith of a little known plant in China (the so-called *Rice-Paper*), or the leaves of a *Palm* in India, or *Straw* in North America. Of all such, the several states of preparation should be collected and exhibited, not only as objects of curiosity, but as exemplifying the progress of Art and Science.

In case of samples of timber, of various fibres, dye-stuffs, drugs, or any other vegetable product, it is of the first importance that there should be sent along with each example a dried specimen of the leaves and flowers of the tree or plant affording the same, marked distinctly with a corresponding number, so that the source of the product may be scientifically determined. Through want of such dried specimens accompanying the timbers, drugs, fibres, &c., which have been sent to the Royal Gardens, and to the International Exhibition, a large number are absolutely useless.

III. HERBARIUM DEPARTMENT.

In preserving *Plants* for the Herbarium, or Hortus Siccus, the object is to prepare specimens in such a manner that they may be thoroughly dried, the colours as far as possible retained, and such a degree of pressure given that they do not curl up in drying. For this purpose provide a quantity of paper of a common folio size, brown, or stout grey, moderately absorbent; [redacted]; 16 inches by 10, folded; [redacted]

[redacted] Two boards are requisite, of the size of the paper, one for the top, the other for the bottom, of each mass of papers. Pieces of paste-or mill-board placed between the papers, if the specimens are numerous or particularly thick or woody, are very useful. For pressure, nothing is better than a heavy weight on the topmost board, or, while travelling, three leathern straps and buckles; two to bind the boards and papers transversely, and one longitudinally. Thus provided, gather your specimens, if small, root and stem—if large, cut off portions of the branches, a foot or rather more in length, always selecting those in flower and in a more or less advanced state of fruit. Long, slender plants, as *Grasses*, *Sedges* and many *Ferns*, may be doubled once or twice. Place them, before they wither, side by side, but never one upon the other on the same sheet, taking care that one part is not materially thicker than the other, and lay over the specimens one, two, three, or more sheets of paper, according to its thickness or the thickness of your plants; and so on, layer above layer of paper and specimens, subjecting them then to pressure. In a day or two, according to the more or less succulent nature of the plants, or to the nature of the climate, remove them successively into fresh papers till the moisture is absorbed, and dry the spare papers in the sun or by a fire for future use.

A tin box or *Vasculum* is essential, made to shut close, to prevent evaporation, in which the plants will, if required, remain uninjured a day and night, especially if the box is well filled. Some very succulent plants, and those of the Heath and Pine tribe, are the better for being plunged into boiling water for an instant before they are pressed. A portfolio slung over the shoulder and containing a few quires of drying paper to receive the plant as gathered, is employed by many collectors.

When sufficiently dry, the specimens should be put into papers; one sheet or folio (more if the specimens be thick) between each layer of plants; aud thus a great many may be safely arranged in a small compass: and are ready for transport covered with oil-cloth or packed in boxes. *Mosses* and other *Cryptogamic* plants may be generally dried in the common way, those which grow in tufts being separated by the hand, so as to form neat specimens. Most *sea-weeds* require a slight washing in fresh water, and common blotting paper is the best for removing the moisture from this tribe of plants.

Parcels or Packages which may come by Her Majesty's Ships, or by any of the ROYAL MAIL, or PENINSULAR and ORIENTAL COMPANY'S STEAMERS, should be addressed:

"On *Her Majesty's Service.* ~~For the Royal Gardens, Kew.~~

~~To the Secretary of the Admiralty, London.~~"

~~If by Merchant Vessels, or by private hands, to~~ Joseph

"Sir ~~William Jackson~~ Hooker, Director;

Royal Gardens, Kew,

London."