XXVII.—*The Dragon's Blood Tree of Socotra* (Dracæna Cinnabari, *Balf. fil.*).

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The following remarks on the dragon's blood tree of Socotra are intended to serve as introduction to Dr Dobbie's and Mr Henderson's paper on the red resin obtained from the tree, and to furnish a technical description of the plant which has not hitherto appeared. In my account of the Botany of Socotra, which will shortly be published by the Society, further remarks upon this interesting tree will be found, along with a figure.

Resina draconis (dragon's blood resin), now only used as a varnish, has been known as a commercial product for many centuries. Under the name κιννάβαρι, Dioscorides* mentions a costly pigment brought from Africa, and under the same designation the author of the Periplus of the Erythrean Sea† speaks of a product of the island of Dioscorida, the modern Socotra. This κιννάβαρι is undoubtedly the resin dragon's blood, or rather one of the resins at present in commerce under that name. Pliny‡ also mentions this produce. Various of the early Arabian geographers and European travellers speak of dragon's blood as one of the commodities exported from the region of the incense country about the Gulf of Aden, and we have, in the narratives of explorers of this century, references to the production of the resin both on the Arabian and on the African coasts of that neighbourhood.

But dragon's blood resin has also been long known as a product of other parts of the globe. The fame of the dragon's blood tree of Orotava, in Teneriffe, is world wide, and the resin of the Canary Islands tree was in former times exported in large quantities.

Then from Sumatra and Borneo, and other islands of the Eastern Archipelago, a dragon's blood resin is an article of trade, though no records of its export at an early period are extant.

In the West Indies, and also in Mexico, substances are obtained which bear the name dragon's blood, but, according to Flückiger and Hanbury, they are not met with in European commerce.

The substances from these different regions, though bearing the same name,

* Op. lib. v., cap. cix.

† Voyage of Nearchus and Periplus of the Erythrean Sea, translated by Vincent, Oxford, 1809, 90.

‡ Hist. Nat., xxxiii. 38.1.

are not of the same character, nor are they derived from the same, or in all cases from allied plants.

We may dismiss here the West Indian and the Mexican resins with the remark that the former is the exudation of a leguminous plant,—*Pterocarpus Draco,* Linn.,—and is, according to FLÜCKIGER and HANBURY, of the nature of kino, whilst the latter is got from the euphorbiaceous *Croton Draco,* Schlecht. I have not been able to obtain specimens of the resins of these.

An East Indian resin is at the present day the most common commercial resin of dragon's blood. It is procured from the fruits of a rotang palm, *Calamus Draco,* Willd. The resin which exudes on the fruits is separated by beating these in a sac, and then sifting out the fruit scales and other refuse. The resin is next softened by exposure to the sun, or warming in a vessel plunged in hot water, and then moulded into sticks or balls, which are wrapped in a piece of palm leaf. An inferior kind is obtained by boiling the pounded fruits. Two kinds are exported, "Reed" and "Lump," of which the former is the finer.*

Another East Indian plant, one of the Leguminosæ—*Ecastaphyllum Monetaria*—found in Surinam, is said to yield a resin like dragon's blood, but of it I know nothing.

The dragon's blood resins from Arabia, Africa, Socotra, and the Canary Islands are furnished by species of the liliaceous genus Dracæna; but although it is of these resins that we have the earliest records, yet the specific source of the resin, with the exception of that from the Canary Islands, has until quite a recent date remained unknown. The productive species are branching trees, with large trunks, and form a very marked section of the genus.

The Canary Island tree, *Dracæna Draco,* Linn., has been long known, and frequently and fully described. The large Orotava plant was 60 feet in height and 15 feet in diameter when it was destroyed by a hurricane in 1867. The resin is apparently not largely exported at the present time, but there is evidence that it was formerly an article of much trade, besides being used in early times by the Guanchos for the purposes of embalming.

Amongst the botanical results of Miss TINNE'S expedition to Bahr-el-Ghazal river and its affluents in Nubia, was the discovery in the vicinity of Suakim of a tree about 24 feet high, which yields a dragon's blood. KOTSCHY and PEYRITSCH† describe the plant under the name *Dracæna Ombet,*—"ombet" meaning Mother of Earth, being the native name for it. A figure of the plant is given in a landscape heading to the letterpress. Both description and figure leave much to be desired. Fortunately SCHWEINFURTH, in his Abyssinian tour, found the same plant at an elevation of 2000 feet, growing over a few square

* See *Pharmacographia,* FLÜCKIGER and HANBURY, 2nd edition (1879), p. 672.

† *Plantæ Tinneanæ,* p. 47.

miles of country near Suakim, and he gives a representation of the tree in one of the woodcut illustrations of his travels.* The leaf specimens sent by him to Kew with KOTSCHY and PEYRITSCH'S description and figure were not sufficient to permit Mr BAKER, in his revision of "Asparageæ,"† to take up the species, and of it he merely remarks, under the species *D. Draco*, "e montibus Indiæ et verisimiliter Socotræ insulæ incola ex datis notis non potui segregare." But recently Dr SCHWEINFURTH has sent to Kew a portion of the panicle of this tree, which enables me to form a more decided opinion regarding it, and shows that the Nubian plant is a distinct species. Fruits are still wanted, and of the resin I have seen no account, nor have I succeeded in obtaining any of it.

In 1877 HILDEBRANDT found on the hills of Somali Land a tree attaining a height of 24 feet, and known to the inhabitants as "moli," which is said to supply a dragon's blood resin. It is a Dracæna, and specimens sent to Kew, though imperfect, there being only portions of flower panicles, showing specific differences from others before known, Mr BAKER described it‡ as *D. Schizantha*. Regarding it we have as yet but little information, and of its resin nothing is known.

Our expedition in the spring of 1880 to Socotra has cleared up all doubts as to the source and character of the dragon's blood of that island. As I have noted above, the tree has been previously supposed to be identical with the Nubian plant. But though very nearly allied to it, there are differences between them which have led me to regard the Socotran plant as distinct from it.

On Socotra, the dragon's blood tree to which I, for obvious reasons, have given the name *Dracæna Cinnabari*, forms a small tree, attaining sometimes a height of about 30 feet. The trunk reaches considerable dimensions. One I measured on the Haghier hills, near the Adona Pass, at an elevation of 4000 feet, was 5 feet 3 inches in circumference at 3 feet from the ground; another near it was 6 feet 5 inches at 2 feet; whilst at Homhill, near the eastern end of the island, I found one at an elevation of 1100 feet, which had a circumference of 9 feet at 3 feet from the ground, and a spread of branches 29 feet 6 inches in diameter. The tree grows only on the higher regions of the island. Nowhere did we see it below 1000 feet elevation. It grows frequently in small groves, and the trees branch freely and form when well grown a dome-shaped crown, exhibiting the feature so characteristic of screw pines. There is but one species on the island. It has been hinted that there are two. HUNTER§ records that the inhabitants recognise two distinct forms, which they speak of as being of

* *Heart of Africa*, Eng. trans., i. p. 22.
† In *Jour. Linn. Soc. Lond.*, xiv. (1875), p. 527.
‡ In *Trim. Jour. Bot.*, vi. (1877), p. 71.
§ *Manuscript Journal of a Visit to Socotra in* 1876.

different sexes. But all the forms assumed by the tree—and it does vary much both with habitat and with age—are referable, we consider, to the one species. The young plant has always much longer and broader leaves than the older plants, and in these latter the inflorescences are shorter and more compact. In unsheltered localities, too, as might be expected, the tree is frequently of a more dwarfed size than when well protected.

The resin exudes naturally through cracks and rents in the stem, and these are increased in size by the collector. The amount of resin produced varies with their situation. The mode of collection is very simple. Holding below the seat of exudation a small piece of goatskin about a foot square, the gatherer chips with a knife the resin from the stem, and catches it on the skin. The time for collecting is immediately after the rains, and there are therefore two gatherings in the year, and the resin is exported immediately after collecting to Makullah, the Persian Gulf, and elsewhere, the Sultan taking tithe of all export. The trees over the island are, I understand, farmed out to the inhabitants, but the Sultan retains for himself a certain district.

To the tree the inhabitants give the name "kharya," and the resin they call "edah." WELLSTED* states that the Arabic name for the resin is "dum khoheil." One also reads that the Arabic name for it is "kätir."

Of the resin there are three kinds—

(*a*) "Edah amsello" (WELLSTED calls it "moselle"), the tears, many of them an inch in diameter, as they exude. $2\frac{1}{2}$ lbs. of this are said to fetch a dollar. It is the purest and most valuable kind.

(*b*) "Edah dukkali" is the second best kind. It consists of the small chips and fragments of the tears which have been broken off in separating them from the tree, or by attrition. The fragments present a dull red powdery aspect. It sells at one dollar for 4 lbs.

(*c*) "Edah mukdehah" is the cheapest kind, is very impure, and brings a dollar for 5 lbs. It is in the form of small flat-sided masses, and consists of fragments of the resin and refuse of the gatherings melted together into a flat cake, which is then broken up into small portions.

We obtained a considerable supply of all these kinds of resin; and as it appeared a matter of some interest to have an analysis made of such authentic specimens, my friend Dr DOBBIE kindly undertook the investigation, in which he has been assisted by Mr HENDERSON. They have extended their research to the comparative analyses of the several kinds of dragon's blood; and through the kindness of Sir JOSEPH HOOKER, and those in authority at Kew, I have been able to obtain samples of most of the resins labelled dragon's blood in the Kew Collection, and Mr E. M. HOLMES, curator of the Pharmaceutical Society's Museum, has kindly supplied samples of like resins in the Society's Museum.

* In *Jour. Roy. Geol. Soc.*, v. (1835) 198.

These have been turned to good account, but much still remains to be cleared up. Certain it is that red resins of different composition, and therefore probably derived from different sources, are in commerce, at least have found their way into our Museums, under the name dragon's blood, and do not appear to be distinguished from one another. But I must leave Dr DOBBIE and Mr HENDERSON to tell their own story, and conclude this brief note with a technical description of the Socotran tree.

Dracæna Cinnabari, *Balf. fil.* Arbor 25-pedalis trunco crassitiem 3 ped. attingente apice copiose ramoso; foliis 1–2 ped. longis 1–1¼ poll. latis ¼–½ poll. crassis sessilibus in apicem ramorum validorum confertis patenti-erectis firmis sed in juvenilibus sæpe subrecurvis basi amplexicaulibus ad similitudinem piscis caudæ expansis ibique 4 poll. latis rubescentibus, versus apicem gradatim attenuatis, supra concavis infra jugo medio prominulo convexo extremitate trigonis obtuse punctatis, ecostatis, glauco-viridibus margine concoloribus; paniculis glabris pseudo-terminalibus multiramosis 1–2½ ped. longis, ramis ramulisque divaricatis strictis, antepenultimis 9–12 poll. longis, penultimis contractis 2–4-floris, pedicellis validis ⅕ poll. longis supra medium articulatis; bracteolis membranaceis longis acuminatis; perianthio sordido ¼ poll. longo, segmentis oblongis vix connatis, apice uncinatis; genitalibus inclusis, filamentis subulatis antheris oblongis duplo-longioribus; ovario oblongo stylum æquanti, stigmate trilobato; baccis aurantiacis ½ poll. diam. nitidis.

NOM. VERN. Arboris—Kharya; Resinæ draconis—Edah.

Socotra, per insulam totam in montibus ultra 1000 ped. alt. crescens. B.C.S. No. 80. Schweinf. No. 550. Perry.

The Nubian *D. Ombet* is separated from the Socotran plant by its less robust habit, more slender and shorter antepenultimate branches of the panicle, longer pedicels, non-acuminate bracteoles, and more delicate perianth, with commonly a stipitate ovary.

D. Schizantha, from Somali Land, is easily diagnosed by its downy panicles.

D. Draco, from the Canary Islands, differs in having compressed ensiform leaves, smaller bracteoles, greenish perianth, the segments of which are not uncinate at the apex, anthers relatively to the filament shorter, ovary commonly stipitate, and stigma capitate.