

THE EBONY TRADE OF  
ANCIENT EGYPT.

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## SYNOPSIS.

This study of the hbny ('ebony') trade of ancient Egypt, though complete in itself, forms but part of a wider investigation into the identity and geographical distribution in Pharaonic times of the flora and fauna depicted on the Punt reliefs in the temple of Queen Hatshepsut at Deir el Bahri, with a view to determining the location and extent of Punt. The work begins, therefore, with an Introduction in which previous discussions of this subject and the present state of the question are summarized, and the scope of the enquiry defined.

In Chapter I the earliest references to the use of hbny are noted, and the meagre textual and archaeological evidence for its geographical provenance is reviewed.

In Chapter II an attempt is made to determine the botanical origin of this wood, utilizing the textual evidence and the results of the few examinations which have been made of objects thought to be of hbny.

Chapter III gives a general account of the two species of ebony-producing trees at present found in the Sudan and Ethiopia - Dalbergia melanoxylon G. & P. and Diospyros mespiliformis Hochst.

Chapter IV summarizes what is known of their distribution and ecology with reference to the Sudan and Eritrea. Chapters V and VI discuss the evidence for the state in Classical and Pharaonic times of those factors - climatic, edaphic, and biotic - which influence tree distribution within this area, and in Chapter VII an attempt is made to determine the northern limit of the two Sudan ebonies during the Pharaonic period.

Chapter VIII discusses the question whether any of the hbny used in ancient Egypt was obtained from Asia.

The enquiry closes with a Statement of the conclusions reached, a Bibliography, and description of the plates,

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## Introduction

In Egyptian texts reference occurs quite frequently to the Land of Punt (Pwēnet, Pwāne)<sup>1</sup>, from whence the Egyptians, at least as early as the Fifth Dynasty, obtained, among other commodities, a particular kind of aromatic ('ntyw). Throughout their history Egyptian relations with this land seem to have been of a friendly nature.<sup>2</sup> It is noteworthy that 'Punt' is but very rarely written with the determinative for 'foreign people' (|).<sup>2a</sup> As represented on the monuments the inhabitants of Punt are almost identical in appearance and dress with the Egyptians.<sup>2b</sup> It seems clear that the Egyptians entertained some fellow-feeling towards these people<sup>3</sup> and that it had some factual basis, as yet obscure and ill-defined. According to Naville,<sup>4</sup> "the frequent mention of Punt in mythological inscriptions seems to show that the Egyptians considered they were in some way connected with that country. There may have been a vague and ancient tradition that they originally came from the Land of Punt and that it had been their home before they invaded and conquered the lower valley of the Nile." Punt was included in the region, lying to the east of Egypt, known to the Egyptians as God's Land,<sup>5</sup> from whence tradition brought Hathor and the great gods.<sup>6</sup> A curious feature wherein Egyptians and Puntites differ is that the latter wear the long beard turned up at the end,

While it would be premature at this stage of our enquiry to suggest that Punt was not accessible overland from

which is characteristic of the Egyptian gods.<sup>7</sup> Though this beard is never shown worn by mortal men, even Pharaoh, it had been worn by the Egyptians in the period just before and after the First Dynasty.<sup>8</sup>

The interest which this mysterious land has aroused, not only for its own sake but also on account of the possible light the elucidation of its history may throw on the problem of the origins of Pharaonic Egyptian civilization, is reflected in the relatively large number of books and papers on the subject which have appeared over the years. Yet despite repeated analysis of the evidence, the location and extent of the Land of Punt remain uncertain. Indeed, opinion is divided on the question of whether Punt ever was a 'land' in the sense of a political unit under one or more rulers, some preferring to regard the name as a general designation for part of the Red Sea coastal region,<sup>9</sup> which in the course of time was gradually extended to cover a larger area. Whatever the truth of the matter, while the uncertainty which surrounds its location is undoubtedly due in great measure to the paucity of detailed information in the texts, and the complete lack of archaeological evidence,<sup>9a</sup> it is also, it seems, due to the method of approach hitherto adopted in dealing with the problem.

While it would be premature at this stage of our enquiry to suggest that Punt was not accessible overland from



Egypt, assertions to the contrary<sup>10</sup> are obviously based on preconceived ideas regarding its location. Certainly all those expeditions about whose route we are given any information<sup>11</sup> travelled thither by ship from a base on the Egyptian Red Sea coast, which apparently varied with the position of the capital,<sup>12</sup> — and followed a south to south-easterly course down that sea. It is nowhere stated, however, how long the voyage took. Even this information would be of little value unless it were also known how many stops were made en route, how long was generally spent at each, and the average rate at which the vessels travelled. This last point will have depended on their design and construction, which, in turn will have been dictated by the materials available and by the conditions to be encountered in the Red Sea<sup>13</sup> at the time of year the voyages were undertaken.

As a result of the researches of Köster and Faulkner,<sup>14</sup> we are reasonably well informed on the construction and design of the vessels. Speaking of the ships which Queen Hatshepsut sent to Punt,<sup>15</sup> Faulkner<sup>15a</sup> remarks that their lines "are comparable to those of modern racing craft ... and in suitable weather these ships must have been really fast." That emphasis should have been laid more on the speed of the craft than its loading capacity was natural enough when the region

opportunity of exercising this gift on expeditions of war and peace."<sup>18</sup> "It becomes almost a certainty, as we contemplate the forms of the strange fish which filled the

waters of that land, that the queen had sent artists with the expedition to make studies for her edification." On the extent of the Red Sea, the first two are already moored, their sails set, while the other three are coming up with canvas spread. The little village, standing near the water's edge, with palm and other trees of very conventionalized form, possibly goby, consists of a number of beehive-shaped huts, probably of mud-plastered branches and reeds, standing on raised platforms supported by poles, with ladders leading up to them. While this type of dwelling may have been a protection against wild beasts, doubtless the huts on which they were built would also have influenced their design. Above the huts birds flutter in the trees in the shade of which little blue dogs rest. Naville, following Maspero, regards the proximity of the huts and trees to the water as an indication that the landing-place of the Egyptians was not the

to be traversed was as barren, inhospitable and dangerous as the Red Sea. However, the conclusions regarding the geography of this sea which may be drawn from a study of the Egyptian vessels which sailed there are of a purely general character, and would hold equally good for the area to-day. Of the configuration of the coast-line and the position and extent of the coral reefs, of the winds and currents forty centuries ago, we learn nothing. Yet we are certainly justified in assuming that the first-named at least differed from the present time, as the following quotation alone will show:<sup>16</sup> "Farther on lay the rusted wreck of a steamer, on the dry land of the coast. At one time the whole shore here [near Port Sudan] had been under water, the waves flowing right up to the foothills of the ranges. This ten-mile-wide strip of desert had originated in the steadily increasing growth of the coral reefs, which gradually became land. The Red Sea is slowly contracting on both sides..."<sup>17</sup>

Detailed information on the topography of the Red Sea coasts 4,000 years ago does not exist. However, "the pictures of the Red Sea littoral in the temple of Deir el-Bahri prove that the Egyptian artist was capable of exact observation and depiction and was, we gather, given the opportunity of exercising this gift on expeditions of war and peace."<sup>18</sup> "It becomes almost a certainty, as we contemplate the forms of the strange fish which filled the

waters of that land, that the queen had sent artists with the expedition to make studies for her edification."<sup>19</sup>

On the extant reliefs five Egyptian ships are shown arriving at Punt. The first two are already moored, their sails furled, while the other three are coming up with canvas spread.<sup>20</sup> The Puntite village, standing near the water's edge amid palms and other trees of very conventionalized form, possibly hbny, consists of a number of beehive-shaped huts, probably of mud-plastered branches and reeds, standing on raised platforms supported by poles, with ladders leading up to them.<sup>21</sup> While this type of dwelling may have been adopted for protection against wild beasts,<sup>22</sup> doubtless the dampness of the ground on which they were built<sup>23</sup> would also have influenced their design. Above the huts birds flutter to and fro to their nests in the trees in the shade of which cattle and dogs rest. Naville,<sup>24</sup> following Maspero, regards the proximity of the huts and trees to the water as an indication that the landing-place of the Egyptians was not the sea-shore itself, but a creek or river-mouth. Confirmation of this view is at first sight suggested by the circumstance that the Egyptian craft do not seem to have been able to run right up to the landing-place, for a ship's boat, laden with provisions and possibly also trade-goods, is seen pulling away from the first of the moored vessels.<sup>25</sup> On the other hand, their inability to approach very close

to the shore may have been due as much to the presence of reefs and hidden rocks in the inner channel as to the position of the Puntite village up a creek. Inland, at an unknown distance, and not shown in the surviving reliefs, rose the famous 'ntyw-terraces of Punt.

Fascinating and informative, within limits, as these details are, nevertheless they do not assist us in the least in locating the spot where the Egyptians landed, for there may have been a number of places similar to that depicted at Deir el-Bahri at widely separated points on the coast.

The Classical geographers' accounts of the Red Sea are likewise of no assistance, for not only is the identification of many of the places mentioned by them still a matter of debate, but even if it were possible to locate all or most of them, our knowledge would not be extended much beyond the third century B.C., i.e. about 25 centuries later than the time with which we are concerned. From what has been said on the subject of coral formation, it is clear that the situation in the third-second century B.C. cannot be made the basis for conclusions regarding the detailed topography of the area in Pharaonic times.

Examination of the physical features, dress and accoutrements of the inhabitants of Punt affords no clue

to its precise location. Reference has already been made to the marked physical resemblance of the Puntites to the Egyptians, to whom they were clearly related, though the historical details of the relationship remain obscure. There appears, however, to have been considerable variety in the population of Punt, or at any rate in that part known to the sailors of Hatshepsut's expedition. A fragment of relief found at Deir el-Bahri, the position of which could not be determined, shows a negro striding along bearing on one shoulder a log of dark wood blotched with yellow (hbny?) and leading a hound on a leash.<sup>26</sup> On another fragment a lighter-skinned negro is depicted standing before one of the beehive-huts.<sup>27</sup> The relations of the brown-skinned Puntites with these negroes or negroids must for the present remain a matter of conjecture. Whether they were permanently settled in Punt is uncertain. These two fragments constitute almost the only evidence for their presence there and there are no grounds for Kees's assertion<sup>28</sup> that they lived in the coastal region of the country in a state of subjection to the brown-skinned Puntites. It is possible that the landing-place of the Egyptians was an emporium to which the products of the hinterland were brought for barter, in which case the inhabitants of the interior may have erected a temporary encampment for themselves during their stay. Possibly the beehive-huts are to be regarded as

such and connected with the negroes rather than the brown-skinned Puntites. That intermarriage may have taken place between the two is not improbable, though to what extent cannot be determined.

As far as the location of Punt is concerned, the interesting discovery that a number of features discernable among the inhabitants of that land on the monuments can be paralleled at the present day among the Masai of Kenya,<sup>29</sup> is cancelled out by our inability to trace the complex history of ethnic and tribal movements in East Africa continuously over the past thirty-five centuries.<sup>30</sup>

The only means therefore of establishing the approximate location of Punt with the material at present available is by determining the probable area of distribution during the New Kingdom of the fauna and flora depicted in the Deir el-Bahri reliefs. This approach is of course by no means new, but it has yielded less results than it might owing to scholars' failure to take sufficient account of the considerations noted above. Thus nearly all have erred in assuming that the same, or almost the same, conditions prevailed in the Red Sea area three millennia ago as to-day.

Naville says: "The fauna of Punt consists entirely of African animals. ....there can be no doubt that the place where the soldiers of Hatshepsu landed was in Africa.

Schoff identified the richly foliaged *ginkgo*-trees at Deir el-Bahri" as *Boswellia Carteri*, the frankincense tree of Dhufar in Southern Arabia, remarking that "no sculptor could have intended to depict by the rich foliage

The animals represented in the sculptures are exclusively African, as well as part of the population. ...Punt must be considered as being the coast of the Red Sea between Souakin and Massowah, or even further south on the Abyssinian coast, but certainly north of the Straits [of Bab el-Mandeb]."<sup>31</sup> Kees<sup>32</sup> states "Punt ... bedeutet für die Ägypter afrikanisches Küstengebiet, etwa zwischen Massua bis zur Somaliküste jenseits Bab el Mandeb. ...Massgebend für die heute vorherrschende Gleichsetzung von Punt besonders mit der Somaliküste ist die Übereinstimmung der Flora und Fauna mit den Darstellungen im Tempel von Der el Bahri." According to Meyer,<sup>33</sup> "die Erzeugnisse von Punt beweisen, dass es an der afrikanischen Küste gelegen haben muss. ...Trotz dieser sehr anschaulichen Darstellung ist eine genauere Lokalisierung bisher nicht gelungen, und man kann schwanken, ob es bei Suakin oder bei Massua oder jenseits der Strasse Bab el Mandeb am Golf von Tedjura, oder gar noch weiter draussen an der Somaliküste zu suchen ist."<sup>34</sup> Dykmans<sup>35</sup> remarks that "la myrrhe et l'encens sont communs au Yémen et aux régions africaines de la mer Rouge; l'or et l'ébène au contraire attirent plus précisément l'attention sur le continent noir."

Schoff identified the richly foliaged 'ntyw-trees at Deir el-Bahri<sup>36</sup> as Boswellia Carteri, the frankincense-tree of Dhufar in Southern Arabia, remarking that "no sculptor could have intended to depict by the rich foliage

on the reliefs, the bare, thorny, trifoliate but almost leafless myrrh tree, nor yet the almost equally leafless varieties of Somaliland frankincense."<sup>37</sup> The landing-place of the Egyptians must therefore have been in Dhufar, since "this is the only place producing frankincense where the trees can be cultivated on a fertile plain by the shore, in the midst of green fields and cattle" - the conditions depicted, according to Schoff, at Deir el-Bahri. "There is no place on the African coast which meets these conditions. ...To the possible objection that the Darror and Nogal valleys, in the southern part of the Somali peninsula, are fertile and might produce a better foliage than the northern coast, it may be said that the fertility stops far short of the east coast, which is absolutely desert."<sup>38</sup> The 'ntyw-trees, however, are drawn in so conventional a manner that there can be no certainty about their identity.<sup>39</sup> Moreover, Schoff has overlooked the fact that at Deir el-Bahri are also depicted other trees with different foliage.<sup>40</sup> In theory it is possible that these may have represented the almost leafless myrrh tree or Somaliland frankincense tree.<sup>41</sup> However, Schoff has in any case fallen into the same error as <sup>the</sup> other writers quoted in assuming that present-day conditions hold good for the area anciently.

This mistake is also committed by Hilzheimer,<sup>42</sup>



according to whom the Punt expedition brought back baboons and giraffes, both of which were obtained from the same land. Since the only area where both occur together is the Djibouti — Dire Dauah — Djigdjoga — Berbera quadrangle, Punt must be located in that region. It cannot have been on the southern Somali coast, since the Hamadryas baboon does not occur in the Ogaden, Gallaland or Somalia (Italian Somaliland); nor can Punt have lain in southern Arabia, since although the baboon is found here, the giraffe is not.

The fact that the baboon and giraffe both occur on an isolated fragment<sup>43</sup> is no proof at all that they came from the same land, as Hilzheimer claims. Moreover, to the Egyptians these animals were typical of the south as a whole and in this respect therefore the reliefs may be more conventional than factual (see below). However, even if they actually were obtained from the same land, that land may not have been Punt. The original position and context of the fragment in question cannot be determined, but the giraffe shown on pl. 80 of Naville's work certainly came from the Southlands. Again, even if both animals were acquired in Punt, it does not follow they were native to the region where the Egyptians landed; they may have been brought thither to await their arrival. Finally, if the giraffe and baboon were native to Punt, their distribution

at the present time is not necessarily a good guide to their occurrence in the fifteenth century B.C.

Alliot<sup>43a</sup> regards Pwn.t as the Egyptian transcription of the native pronunciation of the name. He thinks that 'Punt' has survived as a place-name within the area which comprised the Pharaonic land of <sup>Punt.</sup> ██████. Since the product par excellence of Punt was 'ntyw, which Alliot identifies with frankincense (olibanum) and the Greek libanōtos arrēn, the Punt of the Hatshepsut reliefs must have lain on the Somali coast of Africa. Accordingly it is in this region that survivals of the name are to be sought. He thinks that the Opōnē of the Periplus and Ptolemy (modern Hafun), 160 kms. south of Cape Guadarfui, is derived from an original \* ōpwōnē which later became Pwōnē, Pwānē, written Pwn.t. Moreover, he regards the Arabic Hāfūn ((H)ōfūn, Ofūn) as derived from 'ΟΠΩV, a variant of 'ΟΠΩVη. It is very doubtful, however, whether any reliance may be placed on such philological equations, however sound they may be, unsupported by other evidence (archaeological), as a means for locating Punt.

It is clear that if any progress is to be achieved by examining the probable distribution of the products obtained from Punt, it is necessary to set aside all previous conclusions, based as they are on the faulty application of this method, and re-examine in detail all those commodities

depicted on the monuments which are known to have been native to Punt. It is essential to bear in mind this last point, for though many of the details in the Deir el-Bahri reliefs indicate keen powers of observation and result perhaps from the presence with the expedition of an official artist,<sup>44</sup> we must nevertheless be wary of attributing to these pictures the value of photographs; for in some details they may well be more conventional than exact.<sup>45</sup> For example, some of the items depicted - panthers, giraffes, and baboons - were to the Egyptians typical of southern countries as a whole, since they were more or less regularly imported together with aromatics from Nubia; while others, such as gold, may have been brought, possibly some distance, to the place where the Egyptians landed. In fact, with the probable exception of the cattle, some (though possibly not all) of the hounds and monkeys, and the birds whose nests and eggs<sup>46</sup> are depicted in the trees, we cannot be sure that the fauna shown was to be found in Punt itself.<sup>47</sup>

Of the flora represented, all of it very conventionalized, we may be certain that the shrubs on which the cattle browse, the palm-, hbny-, and 'ntyw-trees actually grew in Punt, or at any rate in that part of it where the Egyptians landed. On fragments of relief (pl. IV)<sup>48</sup> the hewing of hbny is shown, while the 'ntyw-trees were dug up by the Egyptians.<sup>48a</sup> It is therefore on the determination of the identity and the geographical distribution at that

time of the known native products of Punt that emphasis must be placed. With ꜥntyw and other aromatics I shall deal elsewhere;<sup>49</sup> the present study is concerned solely with hbny. In examining this portion of the evidence it has been necessary to consider not only the hbny of Punt, but the whole question of Ancient Egypt's supplies of this wood, from the commencement of the Pharaonic period to the Macedonian conquest.

It will have been noticed that the use of the word 'ebony' with reference to it has been avoided and transliteration employed instead. This seems very necessary if the problems posed are to be approached with an open mind. The ancient Egyptian word 'hbny' having clearly given rise to the modern European forms 'ebony', 'ébène', 'ebano', 'Ebenholz', a tendency has arisen to assume that <sup>the</sup> actual hbny-wood too must necessarily have been derived from one or more of the species at present regarded as ebony-producers. In the minds of some this supposition derives considerable support from the discovery that a few objects thought, probably correctly, to be of hbny are made from the wood of Dalbergia melanoxylon G. et P.,<sup>50</sup> one of the two ebony-producing trees found in the Sudan, Ethiopia and Eritrea at the present time. It is doubtless this almost subconscious identification of hbny with modern ebony spp. that has influenced the opinions of certain scholars regarding the distribution in ancient times of hbny-producing trees.

Thus Dykmans<sup>51</sup> states that "même à l'époque de l'Ancien Empire cependant, il [l'ébénier, Dalbergia melanoxylon] ne venait guère en abondance que plus au sud ... Personne ne conteste ... que l'ébène ait importé sous les Thinites, et probablement depuis l'époque prédynastique ..." Loret, referring to Harkhuf's journeys, remarks that if the three hundred asses loaded with hbny, ivory, etc., with which he returned after his third visit to Yam, had come from the region where the hbny was hewn, they must have travelled from very far south.<sup>52</sup> The basis for this assertion, however, is an article of Schweinfurth's, published in 1868,<sup>53</sup> from which it appears that Dalbergia melanoxylon and Diospyros mespiliformis Hochst. were not found north of a line stretching from Massawa to El-Obeid. No consideration is given to the possibility that hbny may have been derived from other species as well, or that these two may at one time have occurred farther north. Finally, Säve-Söderbergh,<sup>54</sup> referring to the New Kingdom, cautiously remarks that the northern limit of hbny at this time is unknown. While recognizing the possibility that in the Proto-dynastic period the plants which yielded it may have occurred further north, he is nevertheless of the opinion, like Dykmans, that even at this time it was imported from the far south.<sup>55</sup>

Notes

- 1) On the vocalization and transliteration of the name, see M. Alliot, Rev. d'égyptol. 8, 1 ff.
- 2) E. Naville, The Temple of Deir el Bahari III, London 1898, 14-15; H. Kees, Kulturgeschichte des alten Orients. Ägypten, Munich 1933, 124. The fact that the Puntites in Sahurē's temple are shown as bound captives (W. Wreszinski, Atlas zur altaegyptischen Kulturgeschichte II, Leipzig 1935, pl. 5) need not be taken seriously.
- 2a) cf. H. Gauthier, Dictionnaire des Noms géographiques contenus dans les Textes hiéroglyphiques II, Cairo 1925, 45-46.
- 2b) W.M.F. Petrie, A History of Egypt, I, London 1894, 12-13; E. Meyer, Geschichte des Altertums, II, 2nd ed. Stuttgart & Berlin 1928, 119; G. Roeder, art. 'Punt' in M. Ebert (ed.), Reallexikon der Vorgeschichte 10, Berlin 1927/28, 334; H.R. Hall, The Ancient History of the Near East, 9th ed. London 1936, 91; J. Capart, Primitive Art in Egypt, transl. A.S. Griffith, London 1905, 287-88; Wreszinski, Atlas II, pl. 5 (referring to the Puntites depicted in Sahurē's temple at Abusir [wrongly identified by W. as men of the upper Nile valley; so also Säve-Söderbergh, The Navy of the Eighteenth Egyptian Dynasty, Uppsala 1946, 10, n.3]): "Im Grunde sind es nur die Schärpe und die drei Haarsträhnen unter

der Lockenfrisur, die diese Leute von den Ägyptern äusserlich unterscheiden." Id., op. cit. II, pl. 60 (the "great ones of Punt" on the pylon of Horemheb, Karnak): "Die Männer sind im Gesichtsschnitt den Ägyptern so ähnlich wiedergegeben, dass daraus das Gefühl des Künstlers für die nahe Verwandtschaft beider Völker zu erschliessen ist. Nur die lockigen Haare erscheinen als eine Besonderheit."

- 3) Cf. Wreszinski, Atlas II, pl. 60. Alliot's statement (Rev. d'égyptol., 8, 2) that "il est certain que le pays de Pount a toujours été tenu par les Égyptiens pour une contrée étrangère, éloignée, habitée par des populations au type ethnique différent du type égyptien" is contradicted by the evidence.
- 4) Op. cit. III, 11.
- 5) Naville, op. cit., 11; Kees, op. cit., 122; C. Kuentz, BIFAO 17, 178 ff.; Capart, loc. cit.
- 6) Hall, op. cit., 91 and the references there given; Capart, loc. cit.; Erman (Ägypten und ägyptisches Leben im Altertum, Tübingen 1923, 611) would derive Bes from Punt; but see in the last instance A. Ber, Endrokrynologia w sztuce. Doniesienie 2. Bozek staroegipski Bes, Endrokrynologia Polska, Warszawa 7 (1956), 270-75. Ber supposes Bes was created on the coasts of Asia Minor. [I know this article only from Janssen's notice in Annual Egyptological Bibliography 1957 (Leiden 1958),

9, No. 57041.]

- 7) Cf. e.g. Atlas II, pl. 60 ("der lange, unten umgebogene Kinnbart gleicht völlig dem der ägyptischen Götter, auch darin, dass er nicht der Ausläufer eines Backenbartes ist."); Naville, op. cit., pls. 69, 74, 76.
- 8) Cf. British Museum. General Guide to the Egyptian Collections, London 1930, 20-21, fig. 5.
- 9) Cf. Naville, op. cit., 11: "I believe it an error to consider the name of Punt as applying to a territory with definite boundaries, to a state or kingdom, or to a group of states. It is a vague geographical designation, covering a region of vast extent, situated to the east of Egypt, the resort of several nations belonging to different races." Cf. Erman, op. cit., 599: "mit beiden Namen [Punt and God's Land] verbanden sie [the Egyptians] ... schwerlich ganz klare Vorstellungen; es waren allgemeine Ausdrücke, wie sie der Handel hervorbringt, Ausdrücke etwa wie "Levante" und Aehnliches bei uns."; G. Dykmans, Histoire économique et sociale de l'ancienne Égypte, II, Paris 1936, 275-76; "Le pays de Pount, dans l'esprit des vieux Égyptiens, n'avait guère de signification précise. C'étaient les régions merveilleuses que l'on rencontrait en voguant sur la mer Rouge vers le midi, et d'où provenaient spécialement les sèves et les résines sacrées qui manquaient aux Deux-Terres". Following Erman, Dykmans



compares the name 'Punt' with 'Levant', 'the Indies' and 'the Orient' in modern parlance. "Il ne faudrait donc pas reconstruire à l'actif des vieux Egyptiens des précisions dont ils n'avaient souci. Tout ce que nous pouvons affirmer eu égard aux convenances pratiques, c'est que le pays de Pount était contenu dans cette aire qui comprend les côtes érythréennes et somaliennes d'une part, les rivages de l'Arabie Heureuse d'autre part".

- 9a) At Nakuru, Kenya, a well-preserved short faience cylinder-bead (colour not stated) was found near a body (which Leakey considered to be that of a chief) buried in an ultra-crouched position and daubed with red ochre. The burial belonged to the Gumban B culture which Leakey dates to the period of the Nakuran wet phase, c.1000-850 B.C. (L.S.B. Leakey, The Stone Age Cultures of Kenya Colony, Cambridge 1931, 200 ff. (esp. 201-202), 243-44; pl. 30 (the skeleton) ). The origin of this bead is uncertain. Strings of beads are represented in the Deir el-Bahri reliefs among the items taken to Punt for barter by Hatshepsut's expedition (Navielle, Deir el Bahari III, pl. 69, bottom register; cf. G.A. Wainright, Man 47, 144). Beck, however, who examined the Nakuru bead (Leakey, op. cit. Appendix F, p.282), did not think it was Egyptian, though Leakey himself in a later paper ('The Sequence of Stone Age Cultures in East Africa', Essays presented to C.G. Seligman, 1934, 145) wrote: "Beads found in direct association with Gumban industries show that trade

- connections with the civilizations of the period (such as the Egyptian) existed". According to Piggott (Man 48, 24), "the importance of the Nakuru faience bead lies in its relationship to what can now be recognized as a widespread trade from the Eastern Mediterranean c.1400 B.C., which included among its objects of barter the strings of beads, represented ..... among the exports taken by Hatshepsut's trading expedition to the Land of Pwenet". The presence of a single bead, however, is very little to go on. [Beck does not "stress the virtual certainty of the faience example being an actual import either from Egypt or at least from the Eastern Mediterranean", as Piggott states, loc. cit., 23].
- 10) E.g. Hall, op. cit., 137, 147; A.J. Arkell, History of the Sudan, London 1955, 87; Capart, op. cit., 288.
- 11) For the main facts see T. Säve-Söderbergh, Navy of the Eighteenth Egyptian Dynasty, 8 ff. and the literature there cited.
- 12) Säve-Söderbergh, op. cit., 13; Kees, op. cit., 122-23. According to Yoyotte (Rev. d'égyptol. 9, 133 ff.), three fragmentary inscriptions found at Serabit el-Khadim indicate that voyages were undertaken from Sinai to Punt and back.

- 13) On these points see the Red Sea and Gulf of Aden Pilot, 9th ed. 1944 (the Admiralty, London), Chapter I; cf. A. Köster, 'Zur Seefahrt der alten Ägypter', ZAS 58, 126-29.
- 14) 'Egyptian Seagoing Ships', JEA 26, 3-9 & pls. 2-4.
- 15) They are called kpn.wt (lit. 'Byblos-ships'). On the interpretation of the term kpn-ship, see Säve-Söderbergh, Navy of the Eighteenth Eg. Dynasty, 12, 47 ff. and the literature there cited.
- 15a) *loc. cit.*, 8.
- 16) H. Hass, Under the Red Sea, London 1952, 77. On the structure and growth of coral reefs, see C. Crossland, Desert and Water Gardens of the Red Sea, Cambridge 1913, Chaps. VII-IX.
- 17) It would therefore be futile to explore the creeks and coves of the Red Sea in a small boat in the hope of finding traces of Punt. Apart from the fact that the Puntites, as far as we know, do not appear to have been possessed of any enduring material features of civilization, the places where the Egyptians landed, and indeed the whole coastline at that time, in all likelihood now lie some distance inland, probably deeply embedded in the coralline

formations.

It appears to have been the practice of the Pharaohs to leave some form of monument in Punt. The expedition sent by Hatshepsut erected a granite group of the queen and Amen (Urk. IV, 319), while in an inscription found at Wadi Gasûs dated to year 1 of Sesostris II, the Treasurer of the God Khnumhotep refers to the erection of a monument in God's Land (Breasted, Ancient Records of Egypt I, § 617; Erman, ZAS 20, 204). Strabo (XVI, 4, 4) mentions a "pillar (στηλη) of Sesostris the Egyptian", at Deirê (= Azzah?) on the African coast, which "tells in hieroglyphs of his passage across the gulf". But by Classical times 'Sesostris' was a composite legendary figure (Herodotus. Book II, ed. W.G. Waddell, London 1939, §§ 102-110; pp. 214, 216, 288).

Even if some fortunate chance should result in the discovery of Hatshepsut's statue, or that of any other monarch, convincing evidence would be required that they were still in situ and had

presented to P.L. Griffith, London 1932, 446-53.

As Frankfort remarks (*loc. cit.*, 450, n. 2): "There is no need to explore Nubia-land for the reason that

- not been moved some distance at a later date.
- 18) Davies, The Metropolitan Museum of Art. The Egyptian Expedition 1923-1924, 44.
  - 19) Id., MMA. The Egyptian Expedition 1929-1930, 34.
  - 20) Naville, Deir el Bahari III, pls. 72, 73.
  - 21) Naville, Deir el Bahari III, pls. 69-71. According to the anonymous reviewer of C. Soelver's book Puntlandets Genopdagelse c. 1500 f. C. (Chron. d'Ég. No. 21 Jan. 1936, 96), the huts were not built on piles ('pilotis'): "Le facsimile ... Naville III, pl. LXXI montrent clairement qu'il s'agit de la membrure ligneuse de huttes coniques dont les parois étaient formées de nattes. L'habitation était surmontée d'un grenier auquel on accédait par une échelle."
  - 22) Naville, op. cit., 12.
  - 23) Cf. Meyer, Gesch. d. Alt. II, 119.
  - 24) Op. cit., 12.
  - 25) Naville, op. cit., pl. 72.
  - 26) Deir el Bahari III, pl. 71
  - 27) Ibid.
  - 28) Kees, Kulturgeschichte, 124, 350.
  - 29) H. Frankfort, 'Modern Survivors from Punt', in Studies presented to F.Ll. Griffith, London 1932, 445-53.
  - 30) As Frankfort remarks (loc. cit., 450, n. 2): "There is no need to explore Masai-land for the rose-granite

group of Hatshepsut and Amon which ... the queen set up in Punt. Native tradition and modern research agree in asserting that the Masai reached their present habitat from the north."

- 31) Deir el Bahari III, 12-13.
- 32) Op. cit., 123 and note 1.
- 33) Gesch. Alt. II, 118-119.
- 34) Meyer goes on to say that "für eine nördlicher Lage spricht, dass die Expedition [of Hatshepsut] auch Häuptlinger und Produkte afrikanischer Negerstämme, wie der Nemaju und Arem, mitgebracht hat, die in anderen Texten zu Kusch gerechnet werden." But as Säve-Söderbergh points out, the chiefs of <sup>Nemyu</sup> [redacted] and <sup>Irem</sup> [redacted] were not brought to Egypt by the Punt expedition (Navy of the Eighteenth Eg. Dyn., 9, n. 2).
- 35) Hist. écon. soc. II, 276.
- 36) Naville, Deir el Bahari III, pls. 74, 78, 79.
- 37) W.H. Schoff, The Periplus of the Erythraean Sea, London, Bombay & Calcutta 1912, 218.
- 38) Id., op. cit., 219.
- 39) This is true not only of those at Deir el-Bahri but elsewhere also, e.g. Davies, Paintings from the Tomb of <sup>Rekh-mi-Rē</sup> [redacted], pl. 1; Petrie, Athribis, 8, 17-19; pl. 19 (walls of the so-called 'Punt Chamber' in the temple of Ptolemy Auletes [80-52 B.C.]. Cf. the inscriptions accompanying these trees, pls. 17, 18.)

- 40) Deir el Bahari III, pls. 69-72.
- 41) So Lucas, Ancient Egyptian Materials and Industries, 3rd ed. London 1948, 113, though the coloured plate (Deir el Bahari III, pl. 71) shows that these were not "quite bare" as Lucas says. It is unlikely that the two forms depict the same tree at different seasons of the year, as Lucas suggests (loc. cit.), for they are both shown being carried in baskets by the expedition (Deir el Bahari III, pls. 69, 70, 74). On the other hand, whereas the 'bare' trees are ████████ depicted being carried in baskets (probably filled with earth) onto the ships at Punt (pls. 69, 70, 74, bottom), the richly foliated ones are shown being carried on arrival at Thebes (pl. 74, top row). Possibly, therefore, they may, after all, be of the same variety as the preceding and have come into leaf during the voyage, if this took some time. However, this is not a point I wish to press.
- 42) M. Hilzheimer, 'Zur geographischen Lokalisierung von Punt', ZAS 68, 112-14.
- 43) Deir el Bahari III, pl. 70, bottom left.
- 43a) Rév. d'Égyptol., 8, 1 ff.
- 44) Davies, BMMA. The Eg. Exped. 1929-30, 34.
- 45) Säve-Söderbergh, Navy of the 18. Eg. Dyn., 9, 13.
- 46) Naville, op. cit., III, 14, claims that the hests are

an indication that the expedition landed at Punt in the spring. Such an assertion, however, depends in the first place on identifying the particular species of bird, and, as N. himself admits, this is far from easy, if indeed possible; and then on determining at what time (or times) of year they breed (and bred) in the area within which Punt may have lain. But since this involves the determination of at least the approximate location of Punt, we find ourselves going round in a circle.

- 47) There is no evidence, and little probability, that the fish depicted (assuming for the moment the identity of each could be established) were confined to a particular part of the Red Sea coastal waters.
- 48) Naville, op. cit., pl. 70.
- 48a) Cf. too, Gardiner, Peet, Černý, Inscriptions of Sinai I, pl. 67, No. 238; II, 173: "I cut .....tí-šps (-trees) .....[Pun]t, gums in Ud[enet] (?)".
- 49) See my The Aromatics Trade of Ancient Egypt (in preparation).
- 50) G. Beauvisage, 'Le Bois d'Ébène', RT 19 (1897), 77-83.
- 51) Hist. écon. soc. II, 196-97.
- 52) La Résine de Térébinthe (Sonter) chez les anciens Égyptiens, Cairo 1949, 18.
- 53) G. Schweinfurth, 'Pflanzengeographische Skizze des gesammten Nil-Gebiets und der Uferländer des Rothen Meeres,' Pettermanns Geographische Mitteilungen, 1868, 162.



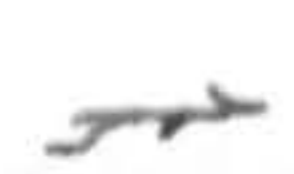



54) Säve-Söderbergh, Ägypten und Nubien, Lund 1941, 219.


55) Op. cit., 5, 22.

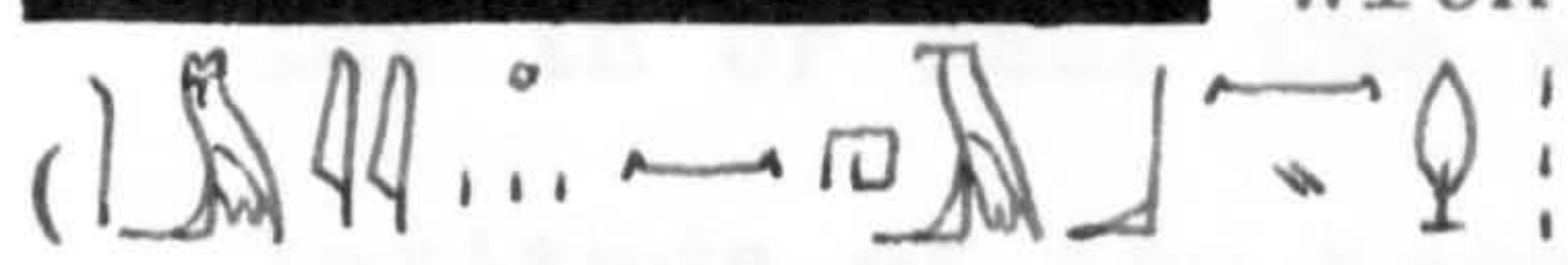
The earliest certain reference to hbny that can be traced in the texts occurs in the Third Dynasty tomb of Kha'bauser at Saqqara where are listed various items made of this wood, including furniture (e.g. hndw, 'stool') and a pen and ink container (hrt-().<sup>1</sup> By the Fifth and Sixth Dynasties it was in use for larger objects,<sup>2</sup> though this does not mean that they were each made from a single piece of wood. Whenever the geographical provenance of hbny is mentioned in the Egyptian records, it is nearly always included among the items received from Nubia or Punt. As in the case of many of the other commodities obtained from the south and south-east, however, it is difficult to form any estimate of the quantity imported, since the monuments either give no figures at all or merely refer vaguely to "ships [size and capacity not indicated] loaded with ivory and hbny,"<sup>3</sup> or to man-loads. In a rock-inscription of Amenophis II's vizier Weser-Satet at Kasr Ibrim "1000 men loaded with hbny" are mentioned,<sup>4</sup> but no indication is given how many logs of what size each man carried. On the Verso of Papyrus Leningrad 1116B, dating from the reign of Tuthmosis III, which deals with the issue to artisans of supplies of hbny and ivory in connexion with shipbuilding, reference occurs to various quantities of hbny logs, but here again their dimensions are not recorded.<sup>4a</sup> A rough indication, however, of the average size of the logs received in Egypt is afforded by the tomb-paintings.<sup>4b</sup> There the length of the logs in proportion to the height of the bearers suggests that they ranged from about 2½ to 3½ feet in length. In the Papyrus Harris I, 497 containers or receptacles of mry-wood and hbny are listed among the items which Ramesses III presented to the

gods.<sup>5</sup>

In addition to the wood, other parts of hbny-trees seem to have been imported. It is doubtful, however, whether much significance can be attached to the form of the determinative of the word in deciding whether the wood and/or other parts of the plant are meant in cases where there is no accompanying representation. Broadly speaking,  seems to be used when it is a question of the wood or objects made thereof, while  may denote other parts of the tree, but even if this distinction be correct, it is by no means rigid; for  occurs in cases where parts of the tree other than the wood may possibly be meant<sup>6</sup> and vice-versa;<sup>7</sup> and sometimes both determinatives are found in the same word, separately<sup>8</sup> or in combination.<sup>9</sup> The use of the hp<sub>3</sub> of the hbny-tree in <sup>the</sup> treatment of certain eye-diseases is attested from the New Kingdom.<sup>10</sup>

In the Ritual of Embalming certain objects were to be fixed 

 with "water of gum of the hbny-tree"

().<sup>11</sup> Dioscorides refers to the

agreeable odour given off by 'Ethiopian' 'ebony' when burnt.<sup>12</sup>

Whether hbny possessed this property is not known, but since there is no mention of it in the records, and since, if it did produce an aromatic smell, it seems very unlikely that the Egyptians could have handled the wood for three millennia without noticing it, the question arises whether Dioscorides' 'ebony' may have been a different species to that which yielded the hbny-wood of Pharaonic Egypt.

Hbny is mentioned, however, in a Ptolemaic text as an ingredient in the composition of a particular kind of incense.<sup>13</sup>



Of the hbny objects shown on the monuments, some were imported ready-made, for example, 'wands' (tīsw)<sup>14</sup> [Pl. I]. [redacted] and possibly items of furniture<sup>15</sup>, but it is likely that the majority of the finished objects depicted were made in Egypt, where the working of hbny, commonly practised in conjunction with that of ivory, was one of the skilled crafts.<sup>16</sup> [Pl. II] [redacted]

The earliest indication of the area from whence hbny was derived dates from the Sixth Dynasty when it is listed among the commodities with which Harkhuf returned after his third journey to Yam,<sup>17</sup> which probably lay in or near the Nile Valley no further south than the latitude of the Second Cataract.<sup>18</sup> However, it is not stated to have grown there or even to have been obtained from thence.

In the New Kingdom such indications are more numerous, but unfortunately all very vague. A hbny panel found in Hatshepsut's temple at Deir el-Bahri, which originally formed one of the sides of a large shrine over six feet high, is inscribed: "---- she made as her monument for her father Amen-Rē' the making for him of an excellent

shrine of hbny of the best of the highlands" (or 'deserts'),<sup>19</sup>  
 [pl. III], but there is no indication which  
 highlands or desert is meant, whether hbny-trees actually  
 grew there, or whether the wood merely passed through on  
 its way to Egypt.

On his statue from Medamûd, Minmose (temps. Tuthmosis III)  
 states that he taxed the chiefs of Ta-Neḥesy with electrum,  
 gold, ivory, and hbny.<sup>20</sup> In the inscription of Neḥy at  
 Ellesiyeh hbny is listed amongst the tribute of the 'South  
 lands',<sup>21</sup> and again in that of the Viceroy Weser-Satet  
 (temps. Amenophis II) at Kasr Ibrim.<sup>22</sup> In an inscription  
 in his tomb at Draḥ Abu'l Nega, Teḥuti (temps. Ḥatshepsut)  
 refers to a 'great shrine of hbny of Ta-Sety'.<sup>23</sup> On the  
 Jebel Barkal stela of Tuthmosis III it forms part of the  
 tribute brought by the Setyu<sup>24</sup>, and on a Nineteenth  
 Dynasty funerary stela it is delivered by the Iuntyu Sety.<sup>25</sup>  
 Ta-Sety, however, like Ta-Neḥes, covered a vast area which  
 had no sharply defined southern boundary, but appears to  
 have been extended upstream as the Egyptians advanced.<sup>26</sup>  
 Even when the provinces of Kush<sup>27</sup> or Wawat<sup>28</sup> are  
 mentioned, the area covered by each of these, too, was very  
 considerable and in theory hbny-trees might have grown in  
 some parts of them, but not in others.<sup>29</sup>

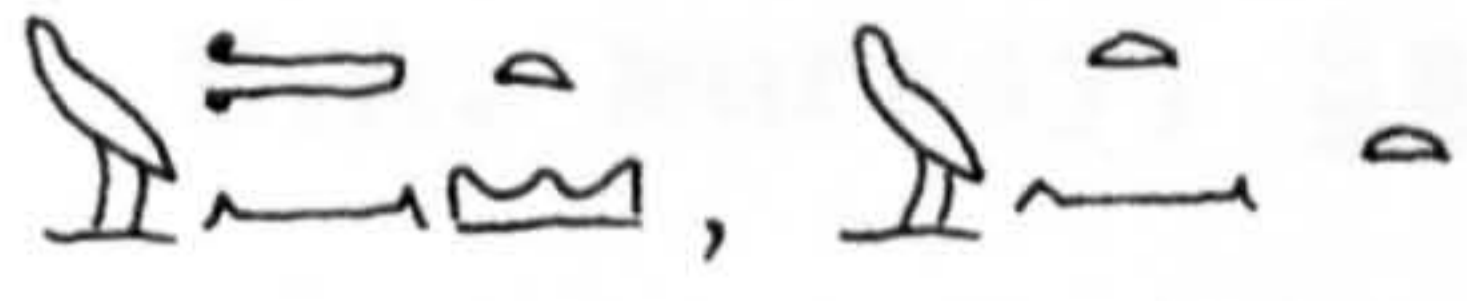
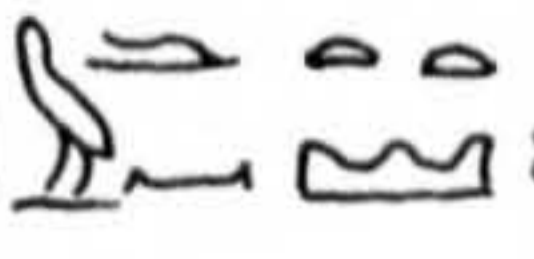
Again, even when more restricted areas are named, these cannot be closely located. Such is the case, for example, with two lands,  Yetr and  Miu, both lying within Kush, whose inhabitants are depicted in the tomb of Amunedjeh at Thebes delivering int. al. logs of hbny<sup>30</sup> [pl. I]. Even if it were possible to determine the location of these lands,<sup>31</sup> in none of the above instances is any indication afforded that hbny actually grew in the areas by the inhabitants of which it was delivered. Such legends as "the arrival of [the chieftains] of Yetr, their tribute upon their backs", accompanying the tribute-bearers in Amunedjeh's tomb<sup>32</sup> are of course of no significance at all, composed as they are from the standpoint of an Egyptian official to whom it probably mattered little whether the commodities in question were actually the produce of the lands mentioned or not. Finally, the fact that in a fragmentary scene in the tomb of Ineni at Thebes, showing the arrival of Nubian tribute, a man<sup>who</sup> bears on one shoulder what is probably a log (or logs?) of hbny also carries an axe<sup>33</sup> need indicate no more than that he himself had possibly hewn the wood where it grew. But there would be no necessity to assume that this took place in his native country, for he could well have travelled to the place where it grew to

cut it. In any case, the accompanying inscription merely designates the scene, somewhat vaguely, as the arrival of the Nehesyu prisoners captured after the overthrow of 'vile Kush'.<sup>34</sup> The hbny-bearer himself is a brown-skinned, rather Egyptian-looking figure, clad in a kilt, who might have been at home in any part of the northern Sudan.<sup>35</sup>

Occasionally hbny is shown in New Kingdom tomb-paintings in the possession of negroes or men showing strong negro admixture.<sup>36</sup> It is doubtful, however, whether this circumstance is of any significance for the determination of the habitat of hbny-producing trees, and in particular their northern limits. For though Junker<sup>37</sup> has shown that the northern limit of true negroes at this time was much the same as now, viz. south of the Fourth Cataract, there is nothing to suggest that that of hbny-producing trees coincided with it.<sup>38</sup>

Only in the case of the hbny from Punt can we be reasonably sure that it grew in the land from whence it was obtained. On fragments of reliefs from Deir el-Bahri illustrating Hatshepsut's expedition the hewing of the wood is depicted.<sup>39</sup> [Pl. IV] On a fragment of a New Kingdom stela from Serâbit el-Khâdim, Sinai, an official is said to have "travelled through the mountains of Punt in order to bring ..... [hb]ny from (or 'in'?) Utjenet .....".<sup>40</sup>

## NOTES

 occur in Tuthmosis III's list of southern countries at Karnak,<sup>41</sup> and Gauthier<sup>42</sup> cites a land  as occurring at Edfu in connexion with Punt and God's Land.<sup>43</sup> Despite the break in the Sinai fragment, it seems that in order to reach Utjenet one had first to cross the 'mountains of Punt', whence it would seem reasonable to suppose that Utjenet lay in the same direction from Egypt as Punt, and apparently further afield. If the restoration [hb]ny be correct, as it probably is, in view of the known occurrence of hbny-trees in Punt, it is not improbable that they may also have been native to Utjenet.<sup>44</sup>

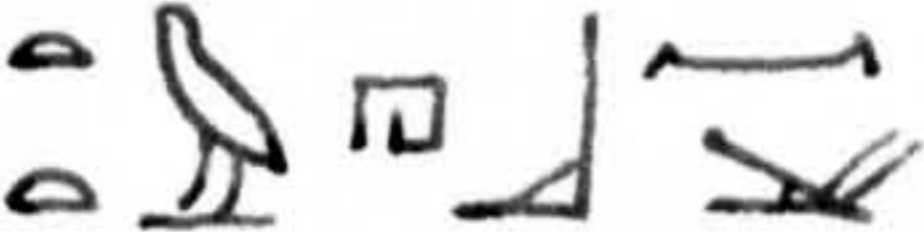




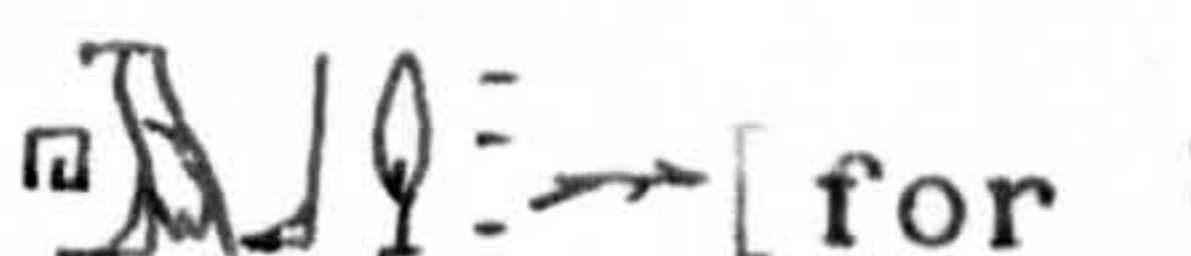


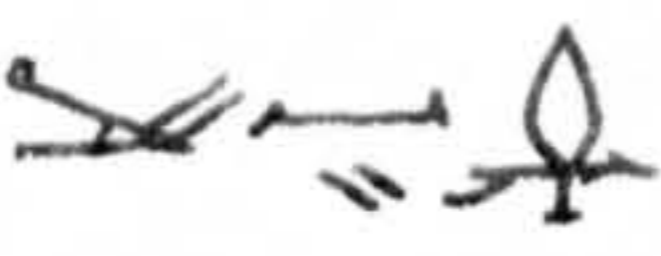
certain, it probably has no connexion with hbny-trees. It would in any case be difficult to account for the name of the wood on jar-standings. It is not the word hbny 'plough' as Griffith suggests (*Journal of Egyptology* II, 64); elsewhere (*Journal of Egyptology*, II, 69) he says: "In these (inscriptions) the word hbny 'plough' occurs probably as a proper name." Well's loc. cit., also regards hbny as a proper name. It is not listed in W. Budge, *The Egyptian Hieroglyphs*, Berlin 1930-1932, although hbny does occur as the name of a god in the Eleventh Dynasty (p. 75, n. 389).

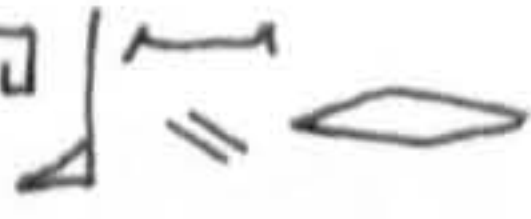



Notes


- 1) M.A. Murray, Saqqara Mastabas I, pl. 2; R. Weill, Les IIe et IIIe Dynasties Égyptiennes. Paris 1908, 253-54.

The group hbn, written in the same way as the name of the wood in the tomb of Kha'bauser, also occurs on fragments of Second Dynasty jar-sealings from Abydos and Hierakonpolis (W.M.F. Petrie, Royal Tombs of the Earliest Dynasties II, London 1901, pl. 24, 207, 208, 213 = Weill, op. cit., 191-92; Petrie Abydos II, London 1902, pl. 16, 8 = Weill, op. cit., 197; Abydos III, pl. 10, 24 = Weill, op. cit., 202; J.E. Quibell & F.W. Green, Hierakonpolis II, London 1902, pl. 70, 14-16 = Weill, op. cit., 203-204). Though its significance here is far from certain, it probably has no connexion with hbn(y)-wood. It would in any case be difficult to account for the name of the wood on jar-sealings. It is not the word hb 'plough', as Griffith suggests (Royal Tombs II, 54); elsewhere (Hierakonpolis, II, 55) he says: "in these [sealings] the word hbn 'ebony' occurs probably as a proper name." Weill, loc. cit., also regards hbn as a proper name. It is not listed in H. Ranke, Die ägyptischen Personennamen, Berlin 1935-1952, though Hbn(y) does occur as the name of a dog in the Eighteenth Dynasty (p.75, n.58a).

- 2) E.g. G. Steindorff, Das Grab des Ti II, pls. 66, 70: statue labelled  ; pl. 133: bed described in the accompanying inscription as  [sic]; K. Sethe, Pyramidentexte II, p. 462, 1906c: a hndw, 'throne' or 'seat' of hbny; Urk. I, 43; further examples, Wb. II, 467.
- 3) Urk. IV, 695, 702, 709, 715, 720, 728, 734.
- 4) Säve-Söderbergh, op. cit., 207; Urk. IV, 1346.
- 4a) W. Golenischeff, Les Papyrus hiératiques No.No. 1115, 1116A et 1116B de l'Ermitage Impérial à St.-Petersbourg, 1913, pls. 26-28.
- 4b) Cf., for example, Wreszinski, Atlas I, pls. 247 [Tomb of Horemheb], 270 [Amunedjeh], 285 [Amenmose], 293 [Tomb 91], 334-337 [Rekhemirē]; Nina M. Davies, Ancient Egyptian Paintings I, pl. 16 [Rekhemirē].
- 5) P. Harris, I, 71a, 5. Cf. 34a, 13.
- 6) E.g. P. Ram. III A, 14-15: hp<sup>2</sup> of the hbny; elsewhere determined by  (P. Ebers, 62, 18-21; 57, 2-4; 62, 6.)
- 7) E.g. Gardiner, Admonitions of an Egyptian Sage (Leipzig 1909), 32; pl. 3, 5: boxes (hnw) of  ; P. Westcar, 5, 8: paddles (wśrw) of  (Sethe, Aegyptische Lesestücke, 26, 1.20).
- 8) P. Koller, 3, 8:  [for  ].
- 9) Urk. IV, 1375:  ; P. Westcar, 7, 12: Palanquin (knīw) of  ; Pap. B.M. 10068, recto, pp. 3, 8; 26, 6, 7: hbny coffin-lids (Peet, The Great Tomb Robberies of the Twentieth Egyptian Dynasty, II (plates), pls. 10, 12.

Note also the determinatives in Davies, Tomb of Ken-Amūn, I, pl. 13, statue of  : and Pyramid Texts 1906c: .

10) pp. 49ff.

11) Mariette, Les Papyrus égyptiens du Musée de Boulaq, I, Paris 1871, Pap. No. 3, <sup>9</sup> , 17.; Loret RT 6, <sup>9</sup> 12<sup>9</sup>; Sauneron, Rituel de l'Embaumement, Pap. Boulaq, III. Pap. Louvre 5.158, Cairo 1952, <sup>35-36 [P. Boulaq, III, 9, 17].</sup> Gum has been identified on mummy bandages (Lucas, Anc. Eg. Materials, 3rd. ed., 11), but probably the greater part of that used was obtained from species of acacia. In P. Sallier IV, Verso 1, 9, occurs a reference to "Thoēris of the hbny-tree" (Caminos, Late-Egyptian Miscellanies, 333, 340-41). This particular form of the hippopotamus goddess does not seem to occur elsewhere; nor can I suggest any explanation for her association with hbny.

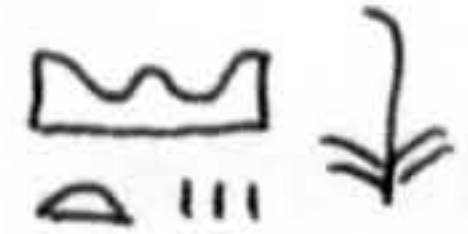
12) I, 129: "The Aethiopick Ebenus. . . being layed upon coales & burning like incense yields a sweet

smell, and without smoake." (R.T. Gunther, The Greek Herbal of Dioscorides, Oxford 1934, 68).

As used by the Classical writers the term 'Ethiopia' was not confined to the area forming the modern country of this name, sometimes known as Abyssinia, but designated a rather vague region comprising North-east Africa south of Egypt (cf. Dunham, SNR. 28, 1-2; id. El Kurru, 1).<sup>XI</sup> When used in this latter sense, it is, except in quotations from the Classical authors, here always enclosed in inverted commas. For other views see Yoyotte,

- 13) Loret, RT 6, 130. *Ebel in G. Pirchow (ed.)*,
- 14) Davies, JEA 28, 51; pl. 5. Cf. id., Tomb of Ken-Amūn I, Pl. 18. *Hist. Sudan, 42-44, 175-76.*
- 15) Cf. Davies, Rock Tombs of El-Amarna III, pl. 15; p. 11: among the tribute brought by the Nubians are tusks and "chairs (of ebony, no doubt)". Among the choice examples of Nubian tribute shown in the tomb of Huy is a model chariot of gold "supported by an attendant negro, perhaps of ebony, on a gold pedestal." (Gardiner-Davies, The Tomb of Huy, 22; pl. 23 = 24). Possibly some of the black furniture shown - stools, beds, armchairs - may also be of hbny. The model chariot is very similar to that in which the Nubian princess arrives (op. cit., pl. 28). *Winski, Atlas I, pl. 333: logs of what is*
- 16) Cf. e.g., Steindorff, Das Grab des Ti, II, pl. 133; Davies, Rock Tombs of Deir el-Gebrawi, II, pl. 10; p. 11; id., The Tomb of Rekh-mi-Rē, pl.

53; and the oft-quoted boast of the M.K. artist-sculptor Irtysen of his <sup>son's</sup> skill in all materials "from silver and gold to ivory and hbny". (Louvre stela C14, II. 14-15. M. A. Murray, Anc. Eg. 1925 (2), fig. 1 & pp. 33 ff; H. Sottas 'Étude sur la Stèle C14 du Louvre', RT 36 (1914), 164-65.).

- 17) Urk. I, 127.
- 18) Dixon, JEA 44, 40 ff; for other views see Yoyotte, BIFAO 52, 173 ff; Edel in O. Firchow (ed.), Ägyptologische Studien, Berlin 1955, 67 ff.; Arkell, Hist. Sudan, 42-44, 175-76.
- 19) Naville, Deir el Bahari II, 1-4; pls. 25, 27; Urk. IV, 296, 6. Spiegelberg, RT 22, 123: '. . . . von den Höhen (?) der Bergländer'.
- 20) l.11; Rapport sur les Fouilles de Médamoud (1926). Les Inscriptions par E. Drioton, Cairo 1927, 54-55. = Urk. IV, 1442.
- 21)  [for  $\frac{1}{2}$ ]. Urk. IV, 983, 16.
- 22) Säve-Söderbergh, Äg. u. Nub., 207, = Urk. IV 1345-46. Also Naville, Deir el Bahari III, pl. 80. Cf. Davies, Tomb of Rekh-mi-Rē, pl. 18 = Wreszinski, Atlas I, pl. 335: logs of what is almost certainly hbny, though not so named,

among the tribute of the "chiefs of the South-land, the Iuntyu-Sety and Khent-hen-nūfer." In the tomb of Puyemrē<sup>h</sup> hbny from the "Head of the South" (Tp-rsy) is depicted. (Davies, The Tomb of Puyemrē<sup>h</sup>, I, 103; pl. 43.)

- 23) Urk. IV, 423, 17 [the 'Northampton Stela']; Spiegelberg, 'Die Northampton Stele', RT 22, 115-125; the Marquis of Northampton, W. Spiegelberg & P. E. Newberry, Report on some Excavations in the Theban Necropolis during the winter of 1898-9, London 1908, 15-16. Unlike Spiegelberg (RT 22, 123), Sethe (Urk. IV, 423, note b) doubts whether the shrine referred to is the same as that found by Naville at Deir el-Bahri.
- 24) l.29; de Buck, Egyptian Readingbook I, 60, 13 = Urk. IV, 1237.
- 25) Säve-Söderbergh, op. cit., 210.
- 26) Gardiner, ZAS 45, 139 n.1; Posener, Kush 6, 62; Sauneron and Yoyotte, BIFAO 50, 174 n.2.
- 27) Urk. IV, 695, 702, 709, 715, 720, 728, 1375 (= Säve-Söderbergh, op. cit., 208-209). Hbny from Kush is also mentioned in a Ramesside model letter concerning Nubian tribute (P.

Koller 3, 8. Gardiner, Egyptian Hieratic  
Texts: the Papyrus Anastasi I and Papyrus  
Koller, Leipzig 1911, 41<sup>x</sup>, 94; id., Late-  
Egyptian Miscellanies, 119; transl. R.  
 Caminos, L.-Eg. Misc., Oxford 1954, 438.)

Logs of what is probably hbny, though they are  
 not so labelled, are also depicted among the  
 tribute of Kush in the tomb of Horemheb, temps.  
 Tuthmosis IV, at Thebes (Urk. IV, 1592;  
 Wreszinski, Atlas I, pl. 247; [cf. Atlas I,  
 pl. 293 - from Kush?]), and in the temple of  
 Beit el-Wali (Roeder, Der Felsentempel von  
Bet el-Wali, Cairo 1938, pls. 32, 33 = Atlas  
II, pls. 167-68.)

28) Urk. IV, 728, 734.

29) From the circumstance that in the Annals of  
 Tuthmosis III hbny, with but two exceptions  
 (Urk. IV, 728 and, according to Sethe's recon-  
 struction, 734; cf. Säve-Söderbergh, Äg.u.Nub.,  
 219) is not recorded among the tribute of Wawat -  
 the southern boundary of which at this time lay in  
 the vicinity of the Second Cataract (Säve-Söder-  
 bergh, op. cit., 182; Posener, Kush 6, 52) - ,

but of Kush, it would appear that hbny-trees did not occur in Lower Nubia, at least in quantity, possibly due to over-ruthless exploitation at an earlier date. (cf. however, pp. 157-58).

- 30) Urk, IV, 947-48; Wreszinski, Atlas I, pl. 270 = Davies, JEA 28, pl. 5. To the left of (behind) the three registers of Nubian tribute-bearers stood a large figure of Amunedjeh, now destroyed, accompanied by the legend: "Bringing forward the wondrous products of vile Kush, consisting of gold, ivory, hbny, and [all manner of] precious stones [by the chieftains of every land (?) .....]."
- 31) On Yetr cf. Gauthier, Dictionnaire des Noms géographiques, I, 114-115; on Miu, idem, op.



cit., III, 11. To the references given there add:  
Urk. IV, 1246 (Armant stela, Tuthmosis III), 1560,  
 1736. I shall discuss elsewhere the location of these  
 lands.

- 32) Davies, JEA 28, pl. 5, top register.
- 33) Wreszinski, Atlas I, pl. 265. Sheikh Abd el Gurneh,  
 No. 81 = Mémoires . . . de la Mission archéol. franç.  
 Tome XVIII. Le Tombeau d'Anna, par H. Boussac, Paris  
 1896, pl. 15 (plates not numbered in the publication).
- 34) Urk. IV, 70.
- 35) Cf. Junker JEA 7, 129. Indeed, Wreszinski, loc. cit.,  
 thinks he is not a Nubian at all, but one of the  
 "ägyptischen Begleiter" of the Nubians. However, the  
 scale on which the figure is reproduced, both by  
 Wreszinski and Boussac, does not permit one to be  
 definite on this point.
- 36) E.g. Nina de G. Davies, Egyptian Tomb Paintings [Faber  
 Gallery of Oriental Art], pl. 3 [tomb of Sebekhotep];  
 N. de G. Davies, JEA 26, pls. 23, 24 = Wreszinski, Atlas  
 I, pl. 285 [tomb of Amenmose]; Atlas I, pl. 247 (?) [Horem-  
 heb], [REDACTED], 293  
 [Tomb 91], 337 top register [Rekhmirē'].  
 37) JEA 7, 121 ff.

38) The choice of a hard, black or dark wood, usually termed 'ebony' in the publications, and which is almost certainly hbny (Cf. pp. 55 ff.), for representations of negroes (e.g. J. Capart, Recueil de Monuments égyptiens II, Brussels 1905, pl. 68 = W.M.F. Petrie, 'an Egyptian Ebony statuette of a Negress', Man, 1901, 129, pls. I - J [UC 14210]; H. Carter and A.C. Mace, The Tomb of Tut. Ankh. Amen I, London 1923, Pls. 69, 70b = P. Fox, Tutankhamen's Treasure, Oxford 1951, pl. 14 [ceremonial walking-sticks]; W. Spiegelberg, Ausgewählte Kunst- und Denkmäler der aegyptischen Sammlung der Kaiser Wilhelms-Universität Strassburg, Strassburg, 1909, 14-15 & pl. 11, 19a-b; H. Fechheimer, Kleinplastik der Ägypter, Berlin 1922, pl. 151) [REDACTED]

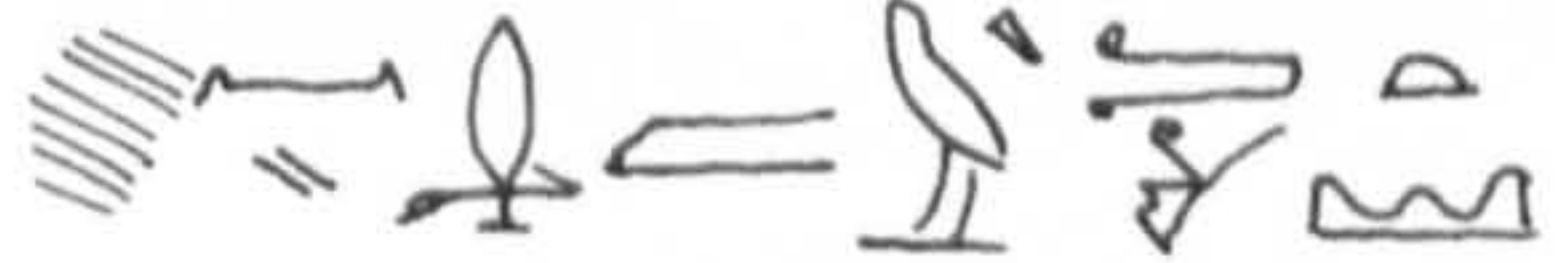

[REDACTED] was probably due to the colour of the wood (cf. Spiegelberg, op. cit., 15) rather than to a belief that it was specially characteristic of, or confined to, the country of the negroes; for other black or dark materials were also used (e.g. Carter, op. cit. II, pl. 50 = Fox, op. cit., pl. 22 [black stone heads of negroes terminating two rectangular cross-bars which form the pedestal of a cylindrical cosmetic jar]; W.C. Hayes, The Scepter of Egypt II, Cambridge, Mass. 1959, 318, fig. 200 [opaque black glass inlay figures, late XVIIIth Dynasty] ). So

also in the Hellenistic period: "the suitability of some material inherently black for representing black skin now occurred to the sculptors and there are instances of basalt, black stone and black marble."

(G.H. Beardsley, The Negro in Greek and Roman Civilization: A Study of the Ethiopian Type [John Hopkins University Studies in Archaeology, No. 4], Baltimore 1929, 101 ff).

- 39) Naville, Deir el Bahari, III, pl. 70, top row. Piles of hbny from Punt are also shown in the tomb of Puyemré' in a scene "distinctly modelled on the scenes in the middle terrace of Deir el Bahri". (Davies, The Tomb of Puyemré', I, 80, 85; pls. 30, 4; 32, 34.) Logs of what is almost certainly hbny are also shown in the tomb of Amenmose (No.89) among the goods obtained from the Puntites (JEA 26, 136; pl. 25 = Wreszinski, Atlas I, pl. 284 [here wrongly interpreted as the produce of Nubia]); and in tomb No. 143 at Thebes (Davies, BMMA. The Egyptian Expedition 1934-35, 48 & fig. 3). It is possible, however, that not all the hbny obtained from Punt grew there. On a fragment from Deir el-Bahri, the position of which cannot be determined and which

appears to be placed with those depicting the hewing of hbny solely on account of its subject-matter, a negro is shown bearing on his shoulder a log of hbny (?) and holding a hound on a leash (Naville, *loc. cit.*). This fragment, and another showing a lighter-skinned negro standing before one of the beehive-huts, constitute almost the only evidence for the presence of Negroes in Punt. It is quite possible that their habitat lay in the interior and that they came to the coast periodically to barter the produce (including hbny ?) of their country (cf. pp. 7 - 8).

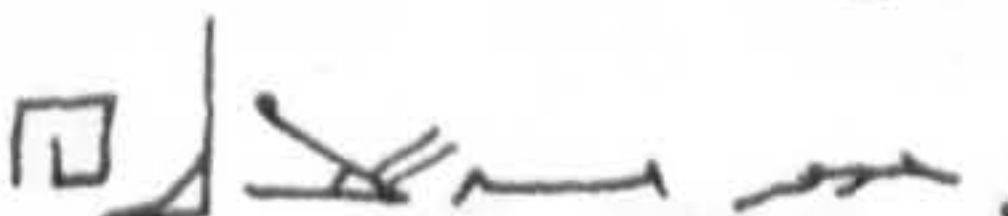
- 40)  Gardiner, Peet, Černý, Inscriptions of Sinai, I, pl. 89, 427; II, 213.
- 41) Urk. IV, 799, No. 64; cf. 803, No. 184.
- 42) Dictionnaire des Noms géographiques, I, 209.
- 43) Chassinat, Edfou I, 429; Cf. perhaps Inscr. Sinai I, pl. 67, 238; II, 213 and note c:  
 ". . . tl-šps . . . [Pun]t (?) gum in  ."  
 (= Ud[enet] ? - so Černý).
- 44) On his departure from the Serpent Isle, envisaged as being somewhere in the Red Sea, the Ship-

It is clear from the foregoing that little assistance  
 wrecked Sailor was presented with various commodities -  
 'ntyw, hknw, iwdnb, hš3y.t, tī-šps, š3's, msdm.t,  
 giraffes' tails, šntr, elephant tusks, hounds  
 monkeys, apes, etc. - which were typical of that  
 part of the world as a whole. (ll.162-165. A. Blackman,  
Middle-Egyptian Stories I [Bibliotheca Aegyptiaca II,  
 Brussels 1932.] 46-47). Although for this reason  
 too much significance cannot be attached to the  
 details of the list, a conspicuous absentee is  
hbny, whence it would appear a fair inference,  
 whether the Island be regarded as mythical or not  
 (see G.A. Wainright, 'Zeberged: The Shipwrecked  
 Sailor's Island', JEA 32, 31-38; id., 'Zeberged:  
 A Correction', JEA 34, 119; O.H. Myers, 'Zeberged',  
JEA 34, 119-20; W. Vycichl, 'Notes on the story of  
 the Shipwrecked Sailor', Kush 5, 70-72) that hbny  
 was not thought of as growing on the islands in  
 the Red Sea.

Under the name (h)ebenu - ἑβένος the Classical writers  
 describe several kinds of wood, African and Indian, though  
 none in such detail that their specific identity can be  
 determined.<sup>3a</sup> Indeed it is not certain what exactly they

## II.

It is clear from the foregoing that little assistance in determining the distribution of hbny-producing trees is to be had from the texts. It is equally clear that no progress in this direction is possible without first knowing which tree or trees they were that produced hbny-wood. The next step in the enquiry must therefore be to establish, as far as the meagre evidence will allow, the botanical identity of hbny.

The name itself affords no help. According to Loret,<sup>1</sup> "la forme primitive du mot Habni est Hab, dont je connais trois exemples (Ti, No. 134; Anast. I, 12, 6; Zeitschr., XXIX, 28); cette racine signifie 'être aigu, pointu', et fait allusion aux épines de l'Ébénier". However, not only does this statement presuppose the identification of hbny with one of the spiny ebony-producing species of the present time, but the examples regarded as exhibiting "la forme primitive" are merely defective or late writings<sup>2</sup>; for the earliest certain occurrence of the word, in the Third Dynasty tomb of <sup>Kha'bauseker</sup> [redacted] at Saqqara,<sup>3</sup> shows the fuller form. 

Under the name (h)ebenus - ἔβενος the Classical writers describe several kinds of wood, African and Indian, though none in such detail that their specific identity can be determined.<sup>3a</sup> Indeed it is not certain what exactly they

understood by the term.<sup>4</sup> Though it seems clear from their descriptions that it included woods which would at the present time be regarded as ebony,<sup>5</sup> it is also possible that the word was used rather loosely to embrace a number of other species not belonging to the same genera, or even families, as modern ebonies.<sup>6</sup> Be that as it may, we should not be misled into assuming, without further evidence, the botanical identity of the plants producing (h)ebenus- *ἔβενος* (whichever they were) and hbny, merely on the ground of the linguistic derivation of the former from the latter. Similarly it does not follow that hbny is to be equated with Dalbergia melanoxylon G. & P. merely because the Arabic derivative of hbny, viz. Babanûs, Abnûs, seems to be confined to this species; though D. melanoxylon was certainly known in ancient Egypt and, as we shall see, almost equally certainly included among the woods termed hbny.<sup>7</sup>

Consideration of the uses, other than in woodwork,<sup>8</sup> to which hbny was put yields equally little information. In the Papyrus Ebers (No. 415 = 62, 20) the hp<sup>3</sup> of the hbny-tree<sup>9</sup> is one of the constituents of a pommade to be used in the treatment of the eye-disease called h<sup>3</sup>ty, identified as ciliary blepharitis.<sup>10</sup> It was to be mixed together with the other ingredients, viz. ht 'w<sup>3</sup>, green eye-paint, flour of coloquinth (k<sup>3</sup>w, or dkw, n d<sup>3</sup>r.t), acacia-leaf, and water of the kbw-plant (?),<sup>11</sup> all present in equal proportions, and made into a paste; left to dry, then beaten in water and applied to the eye-lids.<sup>12</sup> The hp<sup>3</sup> of hbny was also used to contract the

pupil<sup>13</sup> of the eye when it had become dilated as a result of paralysis of the iris (mydriasis).<sup>14</sup> With an equal portion of 'sí3 of Upper Egypt'<sup>15</sup> it was to be beaten in water and applied to the eyes very frequently. Among a number of prescriptions for the treatment of leucoma corneae, or albugines oculorum,<sup>16</sup> listed in the Papyrus Ebers ■ is "another (remedy for dispelling white specks which have arisen in the eyes):<sup>17</sup> hbny-tree,<sup>18</sup> black eye-paint (galena), and water." The hbny and galena are to be finely ground and put in both eyes. The hp3 of the hbny-tree is again mentioned in ■ Papyrus Ramesseum III<sup>19</sup> in a recipe for getting rid of a thm-injury in the eye.<sup>20</sup> It was to be beaten in water (???).

The Wörterbuch<sup>21</sup> does not translate hp3; Loret<sup>22</sup> renders "écorce," Lefebvre<sup>23</sup> "écaille", Ebell<sup>24</sup> "chip", Hermann<sup>24a</sup> "Späne oder Sägemehl," and ■<sup>von Deines</sup><sup>25</sup> merely transliterates, "hp3 - Teil vom Ebenholzbaum." Most of these renderings appear to be little more than guesses. That of Hermann is apparently based on Theophrastus (IX, xx, 4), Pliny (N.H. XXIV, lii, 89), and Dioscorides (I, 129), all of whom refer to the use of dust or scrapings of 'ebony'-wood in the treatment of eye-diseases. Pliny in addition says the root applied in water was employed to dispel white specks on the eyes (cf. Ebers 404 = 62, 6.)

A connexion with hp3 'umbilical cord', 'umbilicus,'<sup>25a</sup> is suggested by identical writings of the two words, but



without knowing which species of hbny-tree is meant, it is not at all clear what part of it might figuratively be referred to as its 'umbilical cord'. The sharp spines of one of the two ebony-producing species of the Sudan, viz. Dalbergia melanoxylon G. & P. would hardly merit this description. A more likely possibility is that hp<sup>3</sup> = 'navel' and denotes the heartwood which, seen in a cross-section of trunk or branch surrounded by lighter coloured sapwood, might have suggested the idea of a navel.<sup>26</sup> The weakness of this suggestion, however, as far as the modern Sudan ebony spp. are concerned, is that the proportion of sapwood to heartwood is not usually such as to suggest the resemblance of the latter to the navel (cf. p<sup>80</sup>). Moreover, hp<sup>3</sup> is also used with reference to 's-<sup>27</sup>, w'n-<sup>27</sup>, and sntr-trees<sup>27</sup>, and probably also green eye-paint (w<sup>3</sup>dw)<sup>28</sup> and h-loaves<sup>29</sup>, and one feels that all these items and hbny-trees should have in common some feature (perhaps not necessarily physical) which would justify the application to it of the one word in every case.<sup>29a</sup> But it is not easy to see what that feature could be. Barns<sup>30</sup>, in his note on P. Ram. III, A15, cites Dawson's suggestion, based on the fact that sntr-, 's-, and w'n-trees are all resinous, that hp<sup>3</sup> means 'resinbead', but this takes no account of the application of the word to hbny-trees, green eye-paint, and h-loaves. Grapow<sup>31</sup> summarizes the discussion, but adds nothing.

So far from the identification of the hp<sub>3</sub> helping to identify the hbny-tree, it would be easier to identify the hp<sub>3</sub> if we knew from what species it came.

Reference has already been made<sup>32</sup> to <sup>the</sup> use of 'gum of the hbny-tree' as an adhesive in the ritual of embalming. On the Gold Coast the dark-coloured gum which exudes from the bark of Diospyros mespiliformis Hochst, the other species of ebony at present found in the Sudan, is used as an adhesive to mend broken pots.<sup>33</sup> It would be premature, however, to conclude, without further evidence, that it was this species which yielded the 'gum of the hbny-tree'.

The only surviving representations of hbny-trees, namely at Deir el-Bahri [pl. IV] are too fragmentary and conventionalized for identification purposes.<sup>34</sup> We do, however, possess a number of representations of hbny-wood from which some idea may be gained of its appearance and colour. Now "the characters available for distinguishing woods are not numerous, and identification should be based on an examination of features that are known to be reliable, rather than on the more obvious characters, e.g., colour and weight, that tend to be far from consistent."<sup>35</sup> It is therefore not intended to draw any conclusions regarding the possible generic or specific identity of ancient Egyptian hbny-wood from the colouring of these examples. Nevertheless, some points of interest do emerge. In the following list only examples are included which are actually labelled 'hbny' and the colours thereof recorded.<sup>36</sup>

Dyn. V.

(a) Steindorff, Das Grab des Ti, II, pl. 133.

Above two men at work on a bed is the inscription:

"polishing a couch of hb[ny]". The couch is coloured black.

(b) Davies, Rock Tombs of Deir el Gebrâwi, II, pl.

10 (tomb of Dja'uo.) Carpenter working on a palanquin

stated in the accompanying inscription to be of hbn(y).

Its colour is indicated on Davies' plate as y(ellow).<sup>37</sup>

[Pl. V]

Dyn. XI.

Lacau, Sarcophages antérieurs au Nouvel Empire I, 46


(tomb of Harhotep, Deir el-Bahri): scribe's palette,

one half of which is painted yellow veined with black,

the other half is white. Described as 

Dyn. XII.

Id., op. cit. II, 57 (sarcophagus of Amenemhet from

El-Bersheh): scribe's palette of  <sup>sic</sup> ;

bottom part painted white veined with black.

Dyn. XVIII.

(a) Davies, Tomb of Ken-Amūn, I, pl. 18. Three staves, curved at the tip, labelled 'tīsw 30'.

All three are of hbny with gold tips and silver ferrules, the materials being noted at the proper points. Two of the staves are black, the third is red. [Pl. VI]

(b) Id. op. cit., 29; pl. 18 = id., BMMA. The Egyptian Expedition 1916-1917, 20 & fig. 28: Two sets of three charioteer's whips (labelled 'ispr 220') to the right of which are the names of the materials of which the parts thereof are made, viz. 'gold' for the ends and ivory and hbn(y) for the shafts of each alternate whip. The shafts are black and white alternately. [Pl. VI■]

(c) Davies, JEA 28, 50; pl. 5. (tomb of Amunedjeh): tribute of the land of <sup>Yetr</sup> ■■■, logs of black hbny (Cf. the inscription on the left of the scene: "Bringing forward the wondrous products of vile Kush, of gold, ivory, hbny . . .")<sup>38</sup> [Pl. I■]

(d) Davies, Tomb of Puyemré, I, 80, 85; pls. 32 (line) = 34 (colour). Among the products received from Punt are two piles of hbny logs coloured black streaked with golden yellow.

(e) Mond & Emery, 'Excavations at Sheikh Abd el Gurneh 1925-26', LAAA 14 (1927), pl. 24 [= Champollion, Monuments de l'Égypte et de la Nubie. Notices Descriptives I, Paris 1844, 530-31 = Lepsius, Denkmäler III, pl. 122 g. cf. Urk. IV, 1468 (text)]. Tomb of Paḥekmen. Paḥekmen, staff in hand, watches servants bring<sup>ing</sup> forward, int. al., ivory tusks and logs of hbny. Before him is a column of inscription: "Receiving silver, gold, ivory, and hbny from the treasury". According to Lepsius,

Denkmäler aus Ägypten und Äthiopien. Text, Band III, Leipzig 1900, 280, the logs are "Scheite schwarzen Ebenholz."

Noteworthy in these pictures of hbny is the variation in colour. The black examples, of course, arouse no comment since they accord with the equation, by now firmly rooted in Egyptological minds, hbny = ebony = black wood. Thus Newberry<sup>39</sup> says: "The white and black colours used in depicting the sedan-chair of Tehutihotep point to the combination of Ivory and ebony . . . ." Among a number of wooden articles depicted in the tomb of Rekhmirē' is an unlabelled standing royal statue,<sup>40</sup> which Davies says is of "ebony or blackened wood."<sup>41</sup> A log of unnamed wood (the colour of which is indicated as black), which is being lashed to a post in readiness for sawing, is described as 'ebony'.<sup>42</sup> Again, describing the Nubian tribute-scene in the tomb of Amunedjeh, Davies says: "The fifth man . . . carries a wand in the other hand; that it is a wand and once was black is indicated by the legend 'wand (tṯsw) of ebony'.<sup>43</sup> A pile of "jet-black" logs among the Nubian tribute in the tomb of Huy is termed 'ebony', though it has no label.<sup>44</sup> Davies says of a standing royal statue depicted in the tomb of Userhēt at Thebes: "The figure is black; primarily, no doubt, because the cult statue was of ebony."<sup>45</sup> Finally, referring to a naos shown in the tomb of Apy: "except for the white platform with coloured decoration, this naos is entirely black. As the canopied roof is presented as carpenter's work, this un-

usual colour must be meant to indicate ebony." <sup>46</sup>

Now it is very likely that the greater part, if not all, the unnamed black or blackish wood, and objects of this colour, shown in the tombs, and referred to in the publications as 'ebony', does represent hbny. And it is doubtless true that much of the hard black or dark wood employed for some very fine examples of Egyptian wood-work <sup>46a</sup> is also hbny. <sup>46aa</sup> But what of the yellow <sup>46b</sup> and red hbny? How are we to account for these colours? Beyond recording the colour, with perhaps a slight note of scepticism, <sup>47</sup> Davies makes no comment on the yellow specimen at Deir el-Gabrâwi, <sup>48</sup> but it is clear from his description of the tisw-staves in the tomb of Kenamûn that he does not believe that the red specimen is hbny: "Two of these staves are of ebony with tips of gold and ferrules of silver, the materials being noted at the proper points. The third is red." <sup>49</sup> A similar staff or baton of red wood was found in the tomb of Tutankhamûn. <sup>49a</sup> This has not, to my knowledge, been botanically examined, but even if it should prove to be a species not at present regarded as ebony, it would not necessarily follow that the Egyptians did not regard it as hbny. In the meantime, there seems no reason to assume that the labels 'gold', 'hbny', 'silver' do not apply to the parts indicated on all three staves depicted in the tomb of Kenamûn <sup>50</sup>, and it is clear that Davies' only reason

for not regarding the red example as hbny is its colour. It would, of course, be an easy matter to assume that this is due to the carelessness of the artist who has either painted hbny the wrong colour, or has correctly rendered the colour of a certain wood but labelled it wrongly. That the ancient Egyptian painter could be very slap-dash and careless is beyond dispute, but before condemning him too hastily in the present instance, we should pause to ask ourselves why it should have occurred to us to question his colouring in the first place. Surely the reason here stems very largely from the commonly-held belief that hbny must have been one or more of the woods nowadays termed 'ebony' and that such woods are black.<sup>51</sup>

At the present time, it is true, the term 'ebony' is usually applied to black woods of great hardness, heaviness, and closeness of texture, most of which are produced by species belonging to the family Ebenaceae and the genus Diospyros Linn., of which some 300 species are known. Of these, however, scarcely a dozen produce good black ebony. There are, too, black woods that belong to other families and yet vie with ebony in blackness, though differing from it in other characteristics, such as hardness or structure. Among such is African blackwood, Dalbergia melanoxylon G. & P. (fam. <sup>Papilionaceae</sup> ██████████). The name ebony, however, is also applied to woods that are not black.<sup>52</sup> Moreover, woods which are true ebonies, even those from the genus

Diospyros, are not necessarily black.<sup>53</sup> For example, while the more or less black central portion of the wood of a number of Diospyros spp., such as D. ebenum and D. melanoxylon from India and Ceylon, forms a solid central core extending for a considerable distance along the trunk, even in these species the black wood is liable to be arranged in the form of thick strands interrupted by light-coloured wood. In other ebonies ~~the~~ black wood is always interspersed with patches or bands of lighter-coloured wood, for example, the so-called marble-wood (Diospyros kurzii) from the Andaman Islands, which is black and light yellow in patches; and the Calamander wood (D. quaesita) of Ceylon which shows bands or streaks of black and brown. Still further removed from blackness is the wood of Diospyros chloroxylon (India), which is termed 'green ebony', and is yellowish-grey in colour.<sup>54</sup> There is no reason why the hbny-wood of the ancients should not have been equally variable in colour and have even included woods which were not black at all.<sup>55</sup> Davies himself admits, almost certainly correctly, as 'ebony' (hbny) wood not so labelled, which, though black, is streaked in varying degree with light<sup>er</sup>/colours,<sup>56</sup> or even has olive-green streaks and patches;<sup>57</sup> and he does not question the label 'hbny' applied to logs streaked with golden yellow.<sup>58</sup>

It seems, therefore, that though the ancient Egyptian hbny did comprise mostly black or blackish woods,<sup>58a</sup> it probably had a wider range than has been realised and embraced in addition other woods differing widely in colour and probably structure, and possibly belonging to different botanical families.



Which those families and species were cannot at present be ascertained, nor can it be determined what were the criteria whereby certain woods were adjudged to be hbny. Certainly colour does not appear to have been one; hardness, the uses to which they were put, and possibly also geographical <sup>origin</sup> [REDACTED], may have been deciding factors.

The only certain method of identifying the species of a wood is by an expert examination of its structure under a microscope. However, not only is it difficult to be sure of the species from an examination of the dead wood,<sup>59</sup> but "it is not always possible to arrive at the correct specific name from the examination of a single sample. . . , although it is usually possible to narrow down the identification to a group of related species."<sup>60</sup> The examination necessitates the preparation of a small area of wood which can be studied under the lens,<sup>61</sup> and since this inevitably entails a certain amount of damage to the object, it doubtless explains to some extent why so few Ancient Egyptian objects thought to be of hbny have so far been examined,<sup>61a</sup> the only published specimens of Pharaonic date that can be traced being those dealt with by Beauvisage;<sup>62</sup> E. Schiemann,<sup>63</sup> and Wittmack.<sup>64</sup> The last mentioned will best be considered at a later stage. (p.175)

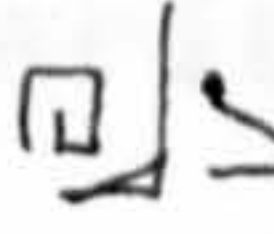
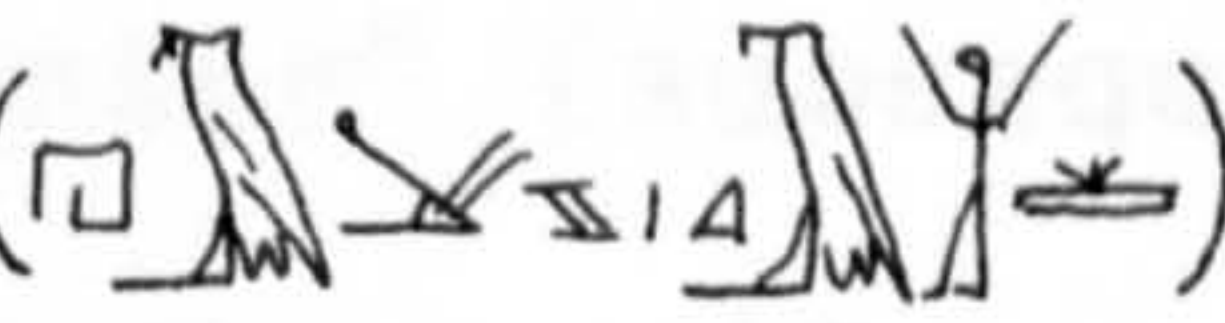

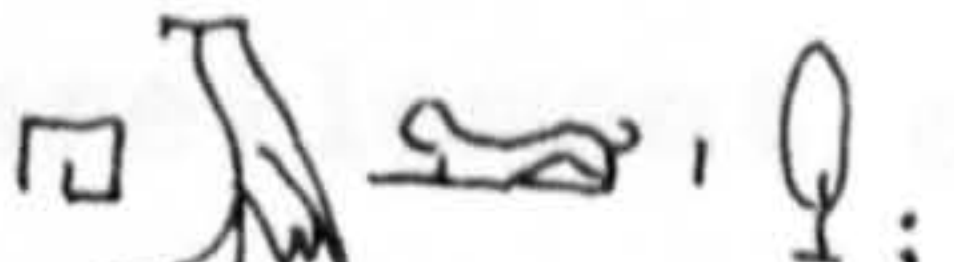
Beauvisage compared samples of Ceylon ebony and Dalbergia melanoxylon and Melanoxylon brauna (both African) with two Ancient Egyptian specimens stated to be 'ebony'. Micrographic examination and chemical tests showed that both the ancient specimens, which in colour resembled the two samples of African


ebony rather than the Ceylonese example, were made of Dalbergia melanoxyton G. & P. Beauvisage accordingly concluded<sup>65</sup> that this species was employed in Ancient Egypt and that it was the wood of this tree that the Egyptians termed 'hbny'.<sup>66</sup> Stone blocks in the temple of Ramesses III at Medinet Habu had been fastened together with wooden dovetails 30-40 cms. long. [REDACTED] This wood, which had survived remarkably well in the dry climate of Egypt, was "apparently Dalbergia melanoxyton, the so-called African granadilla wood or Senegal ebony, according to a sample analysed by Professor Elisabeth Schieman, Berlin-Dahlem." <sup>66a</sup>




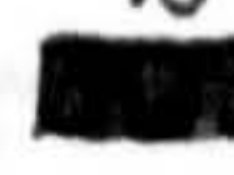
Beauvisage's identification has been accepted by a number of scholars who have assumed, however, that Dalbergia melanoxyton was the only species producing what the Egyptians called hbny. Thus Lucas says:<sup>67</sup> "As, however, the word ebony is derived from the ancient Egyptian hebeny, the original ebony was that known in ancient Egypt, which has been identified as the wood of Dalbergia melanoxyton, a tree that grows in tropical Africa."<sup>68</sup> The material examined, however, viz. a Twentieth Dynasty amulet from Thebes and a mirror-handle (?) of XVIII-XIXth Dynasty date from Qurneh, was clearly far too limited to permit of generalization, and, as we have seen, hbny did almost certainly comprise a larger number of species. Further progress in this matter, however, must await the examination of a much larger number of hbny specimens of known date and provenance.<sup>69</sup>

The discussion so far may be summarised thus: from at

least as early as the Third Dynasty references occur to a wood known as hbny which was employed in Egypt for the manufacture of a variety of objects. In the New Kingdom an unidentified part of the hbny-tree, the hp<sup>3</sup>, is mentioned as a medicament in the treatment of certain eye diseases, and at a later date still the gum of the hbny-tree was used as an adhesive. In colour hbny-wood varied, being mostly black or blackish, sometimes streaked with lighter colours, but also occasionally entirely red or yellow. It was almost certainly derived from more species than one, belonging to different genera and families. So far it has been possible to identify, with reasonable certainty, only one of the plants producing hbny-wood, namely Dalbergia melanoxylon G. et. P. It is further possible that Diospyros mespiliformis Hochst. may have been one of the trees producing 'gum of hbny.' These species are discussed in the next chapter.

1. La Flore pharaonique, 2nd. ed., 1892, 60-61.
2. In an earlier discussion (RT 6, 127) Loret himself regards the form  in the tomb of Ti (H. Brugsch, Die altägyptische Gräberwelt, No. 134) as an error for the fuller writing which occurs elsewhere in this tomb. It is very doubtful whether hbny is mentioned at all in P. Anastas. I, 12, 6. The passage concerns a figurative competition between the two scribes to see which can penetrate farthest into the branches of a lofty tree difficult to climb: "Again thou sayest concerning me: 'A high . . . -tree () is before thee'." (A.H. Gardiner, Egyptian Hieratic Texts. Series I. Literary Texts of the New Kingdom. I. Leipzig 1911, 15\*). In the two versions of the continuation of the text (P. Anastasi and P. Turin 62) the name of the tree appears as  and : "Enter thou into the difficult (?) . . . -tree."

In his critical note Gardiner (op. cit., 43) says: "It seems likely that  (cf. Pap. Turin 1), as lectio difficilis, was the

original version,  being an easy corruption of  due to the influence of h3b "plough" and h(3)bni "ebony"; the absence of a variant with  makes it improbable that h(3)bni was meant." Cf. Wb. II, 486. There is, moreover, no reason why the hbny-tree should have been chosen. According to Loret (RT 6, 130), the discovery in a tomb at Thebes of a few seeds which Kunth (C.S. Kunth, Examen botanique des fruits et des plantes de la collection égyptienne [J. Passalacqua, Catalogue raisonné et historique des antiquités découverts en Egypte, Paris 1826, 227 ff.], 228) described as "Diospyros. Espèce de plaqueminier" (subsequently reported to be Mimusops Kummel Hochst. [Braun, Ascherson, and Magnus, Ueber Pflanzenreste, <sup>15</sup> ; F. Woenig, Die Pflanzen im alten Aegypten, Leipzig 1886, 337]), "nous autorise jusqu' à un certain point à supposer que l'ébénier, à une époque reculée, croissait naturellement en Égypte, ou au moins y était cultivé." Elsewhere he says: "Il est probable que, sous l'Ancien Empire, l'Ébénier croissait naturellement en Egypte". (V. Loret, La Flore pharaonique d'après les documents hiéroglyphiques et les specimens découverts dans les tombes, 2nd ed. Paris, 1892, 60-61; Cf. A. Chevalier Révue de Botanique Appliquée et d'Agriculture tropicale. 14e Année. Juillet 1934, 951: "on le [= Dalbergia melanoxylon G. & P.] cultivait aussi probablement en Égypte; il y était connu

late, - in the so-called 'Fasos' ...  
 dating from the reign of Ptolemy ...  
 Stèle de la Femme, à Sôny, ... (1912, 28)

sous le nom de Habni.") During the last century the  
 ebony species Dalbergia melanoxylon G. & P. was cultivated,  
 though very rarely, in gardens in Cairo and Alexandria  
 (P. Ascherson and G. Schweinfurth, Illustration de la  
 Flore d'Egypte [Mémoires présentés et lus à l'Institut  
 égyptien, Tome II, Le Caire 1889], p. 70) There is,  
 however, no evidence for the existence of hbny-trees  
 in Ancient Egypt, either in the natural state or cul-  
 tivated. It would therefore be much more natural for the  
 author of the passage to choose either a tree found in  
 Egypt or possibly one of the tall trees of Syria. (On the  
h'rw-tree, see Gardiner, The Wilbour Papyrus, Oxford 1948,  
 II, 32; III, 26, 35, 66, 86, 119).

Loret's third example, ZAS 29, 28 ~~⚡~~, is very

(N.B. XII, 20) is stated by Bertram (loc. cit. p. 20

Diospyros ebenus, while Thibaut-Dyer (in Theophrastus'

Enquiry into Plants, LCL. ed. Hort, II, 446-47) gives

this name only to the better of the two kinds of Indian

'ebony' mentioned by Theophrastus (IV, IV, 6).

identifying the inferior variety as Diospyros melanoxylon.

+ again without evidence. Finally, Herwin

(The Commerce between the Roman Empire and India,

Cambridge 1926, 213) refers to a "sucr-

late, - in the so-called 'Famine stela' at Sehêl, dating from the reign of Ptolemy V (P. Barguet, La Stèle de la Famine, à Séhel, Cairo 1953, 30; pl. 6, col.26)

A further example of h3b for h3bny is P. Koller, 3,8.

3) Murray, Saqqara Mastabas I, pl. 2.

3a) A. Hermann (art. 'Ebenholz' in Reallexikon für Antike und Christentum IV, Stuttgart 1958, Col. 479) identifies the 'Ethiopian' 'ebony' as Diospyros mespiliformis Hochst. Chevalier, on the other hand, thinks that the 'ebony'-tree stated by Strabo (XVII, 2, 2) to have been abundant in the Island of Meroë, was probably Dalbergia melanoxylon G. & P. (Revue de Botanique appliquée et d'Agriculture tropicale, 14e Année, Juillet 1934, 951). Neither writer, however, cites any evidence to support his identification. Similarly, the Indian 'ebony' of Virgil (Georgics II, 116-117), Theophrast<sup>U</sup>s (IV, iv, 6), Periplus (§38), and Pliny (N.H.XII, 20) is stated by Hermann (loc. cit.) to be Diospyros ebenum, while Thiselton-Dyer (in Theophrastus' Enquiry into Plants, LCL. ed. Hort, II, 446-47) gives this name only to the better of the two kinds of Indian 'ebony' mentioned by Theophrast<sup>U</sup>s (IV, iv, 6), identifying the inferior variety as Diospyros melanoxylon, - again without evidence. Finally, Warmington (The Commerce between the Roman Empire and India, Cambridge 1928, 213) refers to a "much-


favoured and variegated kind [of ebony] . . . obtained by the Romans from India, perhaps from D[iospyros] quaesita".




4. Pausanias for example seems to have had but the vaguest idea about the plant which yielded ἔβερος. He states (Description of Greece, I, xlii §5): "I have heard a man of Cyprus, who was skilled at sorting herbs for medicinal purposes, say that the ebony does not grow leaves or bear fruit, or even appear in the sunlight at all, but consists of underground roots which are dug up by the Aethiopians, who have men skilled at finding ebony". This passage is evidently to be explained by reference to the practice, still followed by natives, of burying the wood for a time to darken its colour. (Loret, RT 6, 126; Irvine, Plants of the Gold Coast, 162.)
5. Thus Theophrast<sup>us</sup>, followed by Pliny, states that 'ebony' is hard, close-grained (πύκνος), and therefore very heavy. It does not float, lasts a long time, and is proof against natural decay; the heartwood is black. (Theophrast<sup>us</sup>, Hist. Plants, I, v, 4.-5; vi, 1, 2; V, iii, 1; iv, 2; IX, xx, 4; Pliny, N.H., XVI, lxxiii, 186; lxxvi, 204; lxxviii, 212; lxxix, 213; Cf. Aristotle, Meteorologica IV, vii, 16; Idem, On Plants II, ix, 6; Ovid, Metamorphoses XI, 610 ff; Virgil, Georgics II, 116-117.). The fullest description of 'Ethiopian' 'ebony' is that of Dioscorides (I, 129): "The Aethiopick Ebenus is best and black, and not hauing

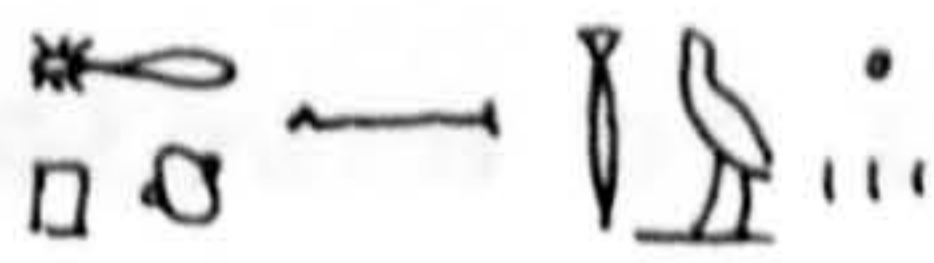



veines, like in smoothnesse to an horne that hath been wrought, which being broken shoves thick [close or compact] being biting in the tast, and gently binding, being laid vpon coales & burning like incense yields a sweet smell, and without smoake. But that which is new, being put vnto ye fire, is quickly kindled by reason of its fatnesse, & it growes somewhat yellow [when rubd] on a whetstone."

(R.T. Gunther, The Greek Herbal of Dioscorides, Oxford 1934, 68).

6. Dioscorides, for example states (I, 129) that "Somme sell ye wood of Sesamon & of Acanthus (because they are somewhat like), for Ebenus."
7. The Hebrew form  $\text{אֶבֶן־שֶׁמֶן}$  occurs for certain only in Ezek. XXVII, 15, and is equally uninformative. For other possible instances see Cheyne in Encyclopaedia Biblica II, London 1901, 1153.
8. For which see Loret, RT 6, 128-29; Lucas, op. cit, 495-96, 514; Aldred in Oxford Hist. Technology I, 684 ff; H. de Morant, 'L'ebénistérie dans l'ancienne Égypte,' La Nature 3018 (1938), 65-9.
9. 
10. So Lefebvre, Essai sur la Médecine égyptienne de l'Époque pharaonique, Paris 1956, 70; von Deines, Grapow and Westendorf, Grundriss der Medizin der alten Ägypter, IV 1. Übersetzung der medizinischen Texte, Berlin 1958, 47: "Verschleierung".  
von Deines et al.
11. So ██████████, loc. cit.,; Lefebvre: "eau froide".

- 12) Lefebvre: "sur le 'dos des yeux' (les paupières)";  
 von Deines et al.  
 [redacted]: "an den Aussenseite der beiden Augen".
- 13) dfd. <sup>von Deines et al.</sup> [redacted], op. cit. IV 1, 59; IV 2, 64, renders  
dfd. "iris".
- 14) P. Ebers, No. 345 = 57, 3.
- 15) See Lefebvre, op. cit., 80; Dawson, JEA 19, 135-36.
- 16) White specks on the eye, shdw nw (or m) irty.
- 17) No. 404 = 62, 6.
- 18) As in the above passages, by 'hbny-tree' here is to be  
 understood ['hp3 of] the hbny-tree.'
- 19) A15. The word is here spelt in full: \*   
 Note the determinative of hbny →
- 20) <sup>von Deines</sup> [redacted], op. cit. IV 1, 53; V, 90 = Barns,  
Five Ramesseum Papyri, Oxford 1956, pl. 10.
- 21) III, 366.
- 22) RT 1, 132; followed by Hartmann, L'Agriculture  
 dans l'Ancienne Égypte, Paris 1923, 34. Loret's  
 earlier suggestion (RT 1, 132) connecting  in Ebers  
 57, 3 and 62, 20 with , rendered by Wb V, 632  
 "Mark?" [core, heart, pith], is refuted by the full  
 writing in P. Ram. III A, [redacted] 15.
- 23) Op. cit., 70, 80, 81.
- 24) The Papyrus Ebers, Copenhagen 1937, 58, 69, 75, 82,  
 92, et passim.
- 24)a Reallexikon für Antike und Christentum, Band 4, Stuttgart

- 1958, Art. 'Ebenholz', Col. 481.
25. Op. cit. IV 1, 47, 59. (Cf. Vorwort, v, no. 4.)
- 25a. Not 'Pudenda', 'genitalia' as Ebbell asserts ('Ein misverstandenes ägyptisches Wort', ZAS 65, 61-63. Cf. Gardiner, 'Hp3 = Umbilical Cord', ZAS 66, 71.)
26. Cf. ὀμφαλός, 'navel', 'umbilicus'; also 1. knob or boss in the centre of a shield (Iliad 11, 34; 13, 192); 2. in the pl., the knobs at each end of the stick round which books were rolled.
27. References in Grapow et al., Grundriss, VI, 412-13.
28. P. Ebers, No. 533 = 71, 8:  Cf. Grapow, op. cit. VI, 413-14.
29. P. Kahun 6, 1, 22:  3h, "thought to be some kind of bread". (Gardiner, Ancient Egyptian Onomastica I, 15; Wb. I, 12.)
- 29a. If hp3 in all these passages is indeed the same word.
30. Op. cit., 18.
31. Grundriss VI, 413.
32. p. 28
33. Irvine, Plants of the Gold Coast, Oxford 1930, 162.
34. Naville, Deir el Bahari III, pl. 70, top centre. I do not agree with Naville (op. cit., 12, 14) that the trees growing near the beehive-huts (pl. 79) are "certainly ebony trees" [Italics mine]. Admittedly, [REDACTED]

[REDACTED]  
 [REDACTED]  
 [REDACTED] the configuration of the branches of the third from the left of these alleged hbny-trees (under which cattle lie) is very similar to that of the branches of the fragmentary hbny-tree shown on pl. 70. But they are really too conventionalized for any reliance to be placed on them.

35. H.E. Desch, Timber, its Structure and Properties, 2nd. ed. London 1947, 53.
36. In a number of cases the colours of the hbny and objects thereof shown are not indicated, e.g. -
- (a) Davies, Tomb of Puyemrê, I, 103; pl. 42 (line): five logs of hbny (so designated in the column to the right) among the commodities from the "Head of the South" (Tp-rsy).
  - (b) Naville Dér el Bahari III, pl. 78: hbny logs from Punt.
  - (c) Lacau, Sarcophages antérieurs au Nouvel Empire, II, 125 (scribe's palette of hbn(y) on IX-X Dyn. sarcophagus from Assiut.)
  - (d) id., op. cit. II, 139: headrest of hbn(y) on sarcophagus of Tehutinekht, El-Bersheh.
  - (e) Davies, Tomb of Ken-Amün I, 29; pl. 20.
  - (f) Säve-Söderbergh, Four Eighteenth Dynasty Tombs, Oxford 1957, 4; pl. 2: fan of 'hbny overlaid with....'

37. Cf. Deir el Gebrâwi I, pl. 14, where a carpenter is shown working on an identical palanquin, also coloured yellow, though here the material is not noted.
38. According to Wreszinski (Atlas I, pl. 265), these logs are "Kostbares Holz der Farbe nach nicht Ebenholz" [italics mine], but he does not mention the colour.
39. Newberry, El-Bersheh I, 30; pl. 18.
40. Davies, The Tomb of Rekh-mi-Rē<sup>c</sup> at Thebes, N. York 1943, pl. 55.
41. Op. cit., 51. Cf. Newberry, The Life of Rekhmara, Westminster 1900, 37: "a beautiful finished statue of Thothmes III (coloured black, and therefore probably of ebony)."
42. Davies, Tomb of Rekh-mi-Rē<sup>c</sup>, 51; pl. 52.
43. JEA 28, 51.
44. Gardiner in Nina de G. Davies and A.H. Gardiner, The Tomb of Huy, 22; pls. 23, 24; Cf. Davies, Bulletin of the Metropolitan Museum of Art. The Egyptian Expedition 1934-35, 48 & fig. 3: unnamed black logs among Puntite 'tribute' in tomb No. 143 at Thebes called 'ebony'.
45. Davies, Two Ramesside Tombs at Thebes, New York 1927, 23; pl. 15.
46. Id., op. cit., 65. Many more instances of the above equation could be cited: Davies, Tomb of Puyemrê,

I, 9, n. 3: "The black colour . . . shows that ebony was intended." ; Cf. G.M.A. Richter, Ancient Furniture, Oxford 1926, 32: "On the charming white pyxis in Boston, . . . a flute-player is sitting on . . . a diphros [backless stool] with a black and white seat-rail (made, perhaps of ebony and ivory)." Davies, Tomb of Ken-Amūn I, 35; pl. 36; Id, The Tomb of Nakht, New York 1917, 68: "Nakht stands in a light papyrus skiff . . . aiming his ebony boomerangs at the necks of the birds." The boomerangs (pl. 24), though coloured black, are not labelled 'hbny'; Mrs. Davies, Egyptian Tomb Paintings [Faber Gallery of Oriental Art], London 1958, 16; pl. 7. Davies, indeed, goes to the extent of terming objects 'ebony' without indicating their colour on his plates or in the text, presumably simply because they are black. (e.g. The Tomb of Antefoker, 17; pl. 13; Tomb of Rekh-mi-Rē<sup>c</sup>, 46; pl. 48 (logs) = Paintings from the Tomb of Rekh-mi-Rē<sup>c</sup> at Thebes, pl. 23; The Tomb of Two Sculptors at Thebes, 55; pls. 5, 6; The Tomb of Nefer-Hotep at Thebes I, New York 1933, 35; pl. 46 (logs; possibly one of the reasons which led Davies to term them 'ebony'<sup>here</sup> is the fact that they are depicted alongside elephant tusks.)

46a. E.g. W.C. Hayes, The Scepter of Egypt II, New York 1959, 192-93, fig. 108, left; 201-201, fig. 115; 241, fig. 146; 266-67, fig. 161; J. Capart, Recueil des Monuments Égyptiens II, pl. 68; W.S. Smith, The Art and

Architecture of Ancient Egypt [Penguin Books, Harmondsworth, Middx.], 1958, pls. 114A, 117; H. Carter, The Tomb of Tut. Ankh. Amen I, London 1923, pls. 59, 69.

Cf. also B. Bruyère, Rapport sur les Fouilles de Deir el Médineh (1934-35), Cairo 1939, 247-49, fig. 127

(fragments of an 'ebony' stela); L. Borchardt in

Studies presented to F. Ll. Griffith, London 1932,

257-62 & pl. 25 ('Eine Holzschachtel mit Darstellung

einer Ländlichen Szene in Nubien'; - "aus dunklem ████████

Holz, das ich nicht habe untersuchen lassen" (p. 257);

G. Roeder, Naos [Cat. Gén. Cairo], Leipzig 1914, 138-39,

pl. 44a (bolt on the door of a shrine of coniferous

wood from Saqqara, "presumably Saïte or later", is of

"Ebenholz (dunkelbraun und hart), das glänzend poliert ist.")

46aa) Thus the natural colour of the wood of the Deir el-Bahri shrine, which is actually stated to be of hbny, varies from dark to light brown (see p.78, n.69).

46b) On the black hbny veined or blotched with yellow or sim. see pp. 183 ff.

47) Deir el Gebrâwi II, 11: "The carpenter . . . who is working on a palanquin, is making it, we are/<sup>here</sup>informed, of ebony,"

48) Neither does Montet, La Vie privée, 308.

49) Davies, Tomb of Ken-Amūn I, 28.

49a) Carter, The Tomb of Tut.Ankh. Amen II, London 1927, 35-36; pl. 8.

50) Wreszinski, Atlas I, pl. 306, seems to regard all three

as hbny: "30 Königsstäbe aus Ebenholz, oben mit Gold, unten mit Silbergold beschlagen." Cf. Helck, Urk. IV, 1393.

51. As instances of how ingrained in the popular, and poetic, mind is the concept of ebony as a black wood the following passages cited in Murray's English Dictionary (A New English Dictionary on Historical Principals ....ed. J.A.H. Murray,

Oxford 1891, s.v. 'ebon', 'ebony') may be quoted:

(a) 'Ebon'.

1846 Lytton Lucretia (1853) 301. 'Dark as ebon'

1633 P. Fletcher, Pisc. Ecl. VII. ██████. <sup>xvii</sup> 'Her eye-brow black, like to an ebon bow.'

1802. Coleridge. Sibyl. Leaves II 196. 'Deep in the air and dark, substantial, black, An ebon mass.'

1588. Shakespeare, L.L.L. I, i, 246. 'The ebon-coloured Inke'.

1601. Death Earl Huntington II, i in Hazl.

Dodsley VIII. 256. 'Pitch-colour'd, ebon-fac'd, blacker than black.'

(b) 'Ebony'.

1608. Norden. Surv. Dial. 'I saw pales made of an Oke ... blacke as Ibony'.

1878 Bosw. Smith. Carthage 434. 'Real downright negroes, half-naked, black as ebony'.



1834. Mrs. Somerville. Connex. Phys. Sc. XXVII  
(1849) 308. 'The different tribes of mankind, from  
the ebony skin of the torrid zone to....'
1850. Mrs. Stowe, Uncle Tom's Cabin vi, 35. 'Black  
Sam.....about three shades blacker than any other  
son of ebony on the place'.
1878. Bosw. Smith, Carthage 39, 'A race of savages...  
the ebony negroes of the Soudan'.
52. Among such perhaps the most familiar in modern commerce  
is the so-called "green ebony" from the West Indies.
53. A.L. Howard, A Manual of the Timbers of the World,  
their Characteristics and Uses, 3rd ed., London 1948,  
182.
54. Em. Perrot, Matières<sup>premières</sup>/usuelles du Règne Végétal, II,  
Paris 1943-44, 1730; A. Chevalier, 'Sur l'Origine  
des Ébènes commerciaux de l'Antiquité, du XVII-XVIII  
siècle et de l'époque contemporaine', Révue de Botanique  
appliquée et d'Agriculture Tropicale 14e Année, Juillet  
1934, 959.
55. In connexion with the red and yellow hbny, it is worth  
noting that a number of Indian representatives of the  
genus Diospyros also have wood of these colours, though  
it is not suggested that these spp. are to be identified  
with the red and yellow hbny of Ancient Egypt. Thus  
Diospyros Tupru (a small tree of the western coast and  
Western Ghâts from the Konkan to Mysore) produces a

hard, reddish-yellow wood with irregular faint concentric wavy lines and occasional black patches. D. Candolleana Wight., a large tree of the evergreen forests of the Western Coast, Konkan and N. Kanara, has a hard, red wood; the wood of D. nilagirica Bedd. is yellowish-brown, moderately hard. D. crumenata Thw. a very large tree found in the evergreen forests of North Kanara, between the Gairsoppah and Dodmune Gháts, and in the moist region of Ceylon at 2-4000 ft., has hard, close-grained, reddish-brown wood. (J.S. Gamble, A Manual of Indian Timbers, London 1902 453, 460, 462-63). None of these spp. is now regarded as ebony (if indeed they ever were), D. Tupru having very little heartwood and the other three none at all.

56. For example, two piles of such logs, depicted among the tribute of the "chiefs of the Southland, the 'Iwntyw-Sti and Hnty-hn-nfr" in the tomb of Rekhmirē' (Tomb of Rekh-mi-Rē, 26; pl. 18 = Nina de G. Davies and A.H. Gardiner, Ancient Egyptian Paintings I, pl. 16, though Gardiner, (Anc. Eg. Paintings III, 36) no doubt still strongly influenced by the hbny = ebony = black wood equation, remarks, quite wrongly, that the light streaks "have no justification in nature".) Cf. Mrs. Davies Eg. Tomb Paintings 8; pl. 3: (tomb of Sebekhotep) unlabelled Log(s) buff and yellowish-green in colour described as 'ebony'. In this instance however, the colour is probably due to the ravages which the scenes have suffered.

57. Davies, Paintings from the Tomb of Rekh-mi-Rē' at Thebes, New York 1935, pl. 6.

58. The Tomb of Puyemrē I, pl. 34.

58a. Note the scene in the tomb of Dauneheh (No. 125) at Thebes

- (temps. Hatshepsut) which shows sitting under his master's chair a little black puppy named 'Hbny', presumably so called because of his colour. (Davies, BMMA 34, No. 12 [Dec. 1939], 284 & fig. 7; Smith, Art and Architect. Anc. Eg., 140 & pl. 100 A).
59. Lucas, Materials, 495.
60. Desch, op. cit., 53.
61. Desch, op. cit., 54 ff.; F.H. Titmus, A Concise Encyclopedia of World Timbers, London 1948, 13 ff.
- 61a. Many of those about which one would like more information, for example the pieces referred to in note 46a, are works of art which museums are understandably reluctant to see mutilated.
62. RT 19, 77 ff.
63. In U. Hölscher, The Excavation of Medinet Habu IV: The Mortuary Temple of Ramses III, Part II, Chicago 1951, 31, n. 21.
64. In L. Borchardt, Das Grabdenkmal des Königs Nefer-ir-ka<sup>2</sup>-rê', 68. A specimen found at Karanis in the Fayum, dating from the 3rd-5th century A.D., is stated by Yeivin to have been identified as Dalbergia melanoxyton (Lucas, op. cit., 496), and "a fragment of an arrow shaft" from a Meroitic grave at Shaheinab, N.81 (10), dating from the period c.100 B.C. - 150 A.D., was identified at the Royal Botanic Gardens, Kew, as "the wood of a species of Dalbergia, in many ways similar to African Blackwood which is derived from the tree Shaheinab, known botanically as Dalbergia melanoxyton". (A.J. Arkell, /

93). Mace (Ancient Egypt 1921 (1), 4) says of one of the jewel boxes of Princess Sit Hat-Hor Yūnet from Lahun: "... the wood had almost entirely disintegrated, but the powdery remains showed that it had consisted of light streaky Sudanese ebony". (Cf. Winlock, The Treasure of El-Lāhūn, 13: the woodwork "appears to have been made of Sudanese ebony"; Hayes, The Scepter of Egypt, I, 245.)

The earliest attempt to determine the botanical identity of Ancient Egyptian hbny seems to be that of A. Bertolini (Miscellanea Botanica, VIII, 1, 18, tome I (1849) who connected it with a Leguminosa of Abyssinia (Ethiopia), which he described under the name Fornasinia ebenifera Bert. and which was subsequently thought to be a Millettia. According to Baker (1929) only one Millettia is at present known in Ethiopia, viz. M. ferruginea Hochst. Chevalier (Rév. Bot. Appliquée 14, 951 & n.2) thinks it is more probable that the Fornasinia is Dalbergia melanoxylon G. & P. (q.v.).

65. RT 19, 78, 83.

66. Admittedly the specimens examined by Beauvisage were not actually labelled or inscribed 'hbny' and there is therefore no absolute proof that the wood is to be included among those which the Egyptians regarded as hbny, but in view of the uses to which hbny was

- put, and its usually dark colour, it would be perverse to deny the name to Beauvisage's specimens.
- 66a. Hölscher, op. cit., 31. fig. 34 and n.21.
67. Op. cit., 495.
68. Cf. 1. Chevalier Rév. Bot. appliquée 14, 951:  
 "C'est au Dr. Beauvisage que revient le mérite d'avoir montré d'une manière indiscutable en 1897 que l'ébène des anciens Égyptiens était bien notre Dalbergia. L'examen de la structure anatomique des ébènes pharaoniques ne laisse aucun doute."  
 2. Säve-Söderbergh, Äg. u. Nub., 5: Unter Ebenholz versteht man jetzt im allgemeinen Holz von dem indischen Baum Diospyros ebenum, aber, wie Loret und Beauvisage gezeigt haben, kommt für das alte Ägypten eigentlich nur Holz von Dalbergia melanoxylon in Frage."
69. Particularly instructive perhaps would be an examination of the wood of the shrine from Deir el-Bahri (p. 29 and, Pl. <sup>III</sup> ■) since this is actually labelled 'hbny'. Roeder (Naos [Cat. Gén. Cairo], Leipzig 1914, 1) following Schweinfurth, describes it as "Äthiopisches Ebenholz; hart und schwer . . . . Die Naturfarbe des Holzes ist dunkelbraun bis hellbraun, schwach gemasert und

stumpf. Wo die unter Hatschepsut bearbeitete Oberfläche unberührt erhalten ist, zeigt sie eine glänzende braunschwarze Farbe mit schwarzer Maserung; gleichzeitig ist sie, wohl durch Öl, poliert. Die verwendeten Holzstifte sind aus Ebenholz; die von aussen unsichtbaren Zapfen jedoch aus hellbraunem minderwertigerem Holz."

The pieces of hbny used were small planks averaging 2.0 - 2.7 cms. in thickness, 50-60 cms in length, occasionally as long as 70 cms., and 6-8, sometimes 10, cms. in breadth.

*Dioscorea* ... (Family Dioscoreaceae) ... known commercially as Yansibar ebony, and in West Africa as ebony ebony, West African ebony, or monkey guava. It is a large tree up to fifty feet in height. The bark is black with small regular scales; the narrow sapwood is white and the heartwood dark brown to black. It takes a fine polish and is used for making ebony.

## III.

Dalbergia melanoxylon Guillem. et Perrott. (family Papilionaceae) [pls. VII, VIII] <sup>1</sup> (known commercially under various names such as African Blackwood, African Ebony, Senegal, Sierra Leone, or Mozambique Ebony, China Blackwood, etc. Arabic: Abnûs) Babanûs, is a much-branched, usually multi-stemmed deciduous tree or shrub from ten to twenty-five feet high, but occasionally as much as fifty feet. The trunk is short, seldom cylindrical, more or less crooked or irregular, and rarely over one foot in diameter. The branchlets are spinose, the sharp, woody spines being the hardened tips of short branches and often bearing leaves and flowers.<sup>2</sup> The bark is pale grey to grey-brown, thin, smooth, and flakes off irregularly. The sapwood is yellow and usually from a quarter to half an inch wide. The heartwood, which is very hard and heavy (up to 78-82 lbs. per cubic foot), is purplish-black.<sup>3</sup> The logs at present exported from Mozambique and West Africa vary in length from 2½ to four feet and in diameter from four to twelve inches.<sup>4</sup> The wood is difficult to work, but takes a beautiful polish, is very durable and resistant to insect pests.<sup>5</sup> The tree is slow-growing.

Diospyros mespiliformis Hochst. ex A.DC. (family Ebenaceae) [pl. IX] (Arabic: Gughan, Jukhan), known commercially as Zanzibar Ebony, and in West Africa as swamp ebony, West African Ebony, or Monkey guava, is a large tree up to fifty feet in height. The bark is black with small regular scales; the narrow sapwood is white and the heartwood dark-brown to black. It takes a fine polish and is used by natives in the Sudan for making clubs.<sup>6</sup>

According to Unwin,<sup>7</sup> it is termite-proof,<sup>8</sup> though Eggeling<sup>9</sup> only says that it is "fairly resistant to fungi, almost termite-proof" [*italics mine*]. Like Dalbergia melanoxylon, this species is very slow-growing.

Dalziel<sup>10</sup> states that "it seems clear that the freshly-cut stem of a tree in sound condition shows no black wood. The wood is, in fact, white or light reddish, or often greyish or greenish-white, and, although darkening to dark brown, it may never, even in a thick stem, develop a black centre."<sup>11</sup> According to Warnecke, the tree in Togo yields a whitish wood, and is therefore called, jeti-jigi, whereas the true ebony tree is called jeti ibo, also ati-ibo, ... which is probably Dalbergia melanoxylon. Metzger describes the heartwood as dark brown to black, giving a fine polish, not the ~~black~~ uniform colour of commercial ebony, but ~~be~~ brown watered markings on a black background---. The darkening occurs not in the fresh state, but after cutting and exposure, as in the case of the redwood Baphia. Chevalier suggests that ebony-black portions in the heartwood are pathological."

Eggeling and Harris<sup>12</sup> give as the general area of distribution of Dalbergia melanoxylon "Sudan and Abyssinia southward through Uganda and Kenya Colony to Mozambique, Rhodesia, and the Northern Transvaal, and westward to Angola. Extends through Northern Nigeria and Togoland to the French Sudan and Senegal." Chevalier states that it also occurs "dans toute la zone sahélienne de l'Afrique Occidentale et du Lac Tchad: région de Kayes, Nord du Mossi, Monts Hombori, Niger français jusqu' au sud de l'Aïr, Baguirmi, et Kanem. --- Nous ne l'avions jamais



vu dans la zone soudanaise proprement dite, mais il croît  
ça et là dans les endroits rocaillieux de la zone des épineux  
comprise entre le Soudan et le Sahara et qui s'étendait  
autrefois bien plus au N[ord] (région sahélienne). La  
plante existe encore en pleine Mauritanie dans l'Adrar."<sup>13</sup>

Diospyros mespiliformis has a very similar range,  
extending, according to Gilg<sup>14</sup>, "von Yemen<sup>15</sup> bis Senegambien,  
vom Sambesi bis Angola, auch in der Aequatorialprovinz und  
in Deutsch-Ostafrika" [Tanganyika].

Engler<sup>16</sup> describes Dalbergia melanoxylon as "ein  
Bewohner lichter Wälder, parkartiger Gehölze und verschiedener  
Arten von Steppen, wie der Baumsteppen, der Dornbuschsteppen  
und der Akaziensteppen, weit verbreitet im tropischen Afrika ---.  
In Deutsch-Ostafrikas Steppen und Trockenwäldern ist er stellen-  
weise häufig, und zwar auf Ebenen sowohl wie Hügeln und  
Berghängen."<sup>17</sup>

In Uganda it is found in Bunyoro, West Nile, Madi, Acholi,  
Karamoja, and Mbale, "in dry savanna, at elevations below  
3000 ft." <sup>18</sup> It is stated to grow "on very dry, often  
extremely rocky sites." <sup>19</sup> The distribution of Diospyros  
mespiliformis is very similar, viz Mengo, Bunyoro, West Nile,  
Madi, Acholi, Teso, Karamoja, and Mbale. It occurs "usually  
in scrub forest in rocky gullies on hillsides, also common  
in open savanna, in the Northern and Eastern Provinces." <sup>20</sup>

The only hope of establishing the approximate distribution  
of these two species, particularly their northern limit in

North-east Africa during the Pharaonic period, appears to lie in an ecological study of them at the present time, particularly in the Sudan and Eritrea, followed by an examination of such evidence as there is for the state in this area anciently of the climatic, edaphic, and biotic factors influencing their distribution.

- Afrikas und der Nachbargebiete, herausg. v. A. Engler, Teil B., 309; A. Engler, Die Vegetation der Erde, Sammlung Pflanzengeographischer Monographien herausg. v. A. Engler und O. Drude, IX Die Pflanzenwelt Afrikas insbesondere seiner tropischen Gebiete. Grundzüge der Pflanzenverbreitung in Afrika und die Charakterpflanzen Afrikas, von A. Engler, III Band, I Heft, Leipzig 1915, 629; E.G. Baker, The Leguminosae of Tropical Africa. Part II: Suborder Papilionaceae. (Unitas Press, Ostend, 1929), 520; A.F. Broun and R.E. Massey, Flora of the Sudan, 1929, 207; Royal Botanic Gardens, Kew. Official Guide to the Museums of Economic Botany, No. 1. Dicotyledons, 4th ed. London 1930, 81; A. Chevalier, Revue de Botanique Appliquée et d'Agriculture Tropicale, 14e. Année. Juillet 1934, 950-51; J.M. Dalziel, The Useful Plants of West Tropical Africa, London 1937, 237-38; W.J. Eggeling and C.M. Harris, Fifteen Uganda Timbers (= Forest Trees and Timbers of the British Empire, ed. L. Chalk, J. Burt Davy, A.C. Boyle, IV, Oxford 1939, 93-98; A.L. Howard, op. cit., 82; W.J. Eggeling The Indigenous Trees of the Uganda Protectorate, revised and enlarged by I.R. Dale, London 1951, 300-301 & photo. 50; F.W. Andrews, The Flowering Plants of the

1. G. Bentham, 'Synopsis of Dalbergieae, a Tribe of Leguminosae', Journal of the Proceedings of the Linnean Society. Supplement to vol. IV - Botany., London 1860, 47; D. Oliver, Flora of Tropical Africa II, 233; A.F. Broun, Catalogue of Sudan Flowering Plants, 1906, 24-25; A. Fiori, Boschi e Piante Legnose dell' Eritrea, Firenze 1909-1912, 186-87; E. Gilg, Deutsch-Ost-Afrika. Band V. Die Pflanzenwelt Ost-Afrikas und der Nachbargebiete. herausg. v. A. Engler. Teil B., 309; A. Engler, Die Vegetation der Erde. Sammlung Pflanzengeographischer Monographien herausg. v. A. Engler und O. Drude. IX Die Pflanzenwelt Afrikas insbesondere Seiner tropischen Gebiete. Grundzüge der Pflanzenverbreitung in Afrika und die Charakterpflanzen Afrikas. von A. Engler. III Band. I Heft, Leipzig 1915, 629; E.G. Baker, The Leguminosae of Tropical Africa. Part II: Suborder Papilionaceae. (Unitas Press, Ostend, 1929), 520; A.F. Broun and R.E. Massey, Flora of the Sudan, 1929, 207; Royal Botanic Gardens, Kew. Official Guide to the Museums of Economic Botany, No. I. Dicotyledons, 4th ed. London 1930, 81; A. Chevalier, Revue de Botanique Appliquée et d'Agriculture tropicale. 14e. Année. Juillet 1934, 950-51; J.M. Dalziel, The Useful Plants of West Tropical Africa, London 1937, 237-38; W.J. Eggeling and C.M. Harris, Fifteen Uganda Timbers [= Forest Trees and Timbers of the British Empire, ed. L. Chalk, J. Burtt Davy, A.C. Hoyle, IV] Oxford 1939, 93-98; A.L. Howard, op. cit., 82; W.J. Eggeling The Indigenous Trees of the Uganda Protectorate, revised and enlarged by I.R. Dale, London 1951, 300-301 & photo. 50; F.W. Andrews, The Flowering Plants of the Anglo-Egyptian

Sudan II, Arbroath 1952, 192.

2. No description is given here of the leaves, flowers, fruit and seed of either species (for which see Andrews, *Op.cit.* II, 192 [Dalbergia melanoxylon], 367-68 & figure. 136. [Diospyros mespiliformis] and pls. VIII and IX), for no Egyptian representations of them or ancient specimens are known. The hbny-trees depicted at Deir el-Bahri are too fragmentary and conventionalized for identification purposes. (p. 52 )
3. The colour does, however, vary considerably (Cf. Howard, *op. cit.*, 287: "The task of describing the colour of any given wood is always one of the utmost difficulty. Degrees of colour are so numerous and minute that it becomes almost impossible to find adequate words to express the differences". According to Gilg, *op. cit.*, Teil B., 309, "Das Kernholz ist ... von tief purpurner bis fast schwarzen Farbe." Howard, *op.cit.*, 82, describes it as "almost black, --- with a tendency to a dark-purple plum colour." Dalziel, *op. cit.*, 237, says the heartwood is "dark purple to brown-black", and Eggeling, *op. cit.*, 300, "purple to brownish-black, usually more purple or brown than black, not always uniform in colour throughout." Chevalier, *loc. cit.*, X 951, says the heartwood is black.
4. Roy. Bot. Gdns. Guide to Mus. Econ. Bot. I Dicotyledons, 81.
5. Cf. Dalziel, *op. cit.*, 237-38. Eggeling and Harris, *op. cit.* 97, note, however, that though "the heartwood is considered very durable, --- like Uganda Ironwood [it] is sometimes

- attacked by a borer in the standing tree."
6. Broun, op. cit., 44-45; G.M. Crowfoot, Flowering Plants of the Northern and Central Sudan, Leominster 1928, pl. 110; Broun and Massey, op. cit., 239; Andrews, op. cit., II, 367; Gilg, op. cit., Teil B., 222; Unwin, West African Forests and Forestry, London 1920, 178, 384; Dalziel, op. cit., 347-48; Eggeling, op. cit., 105; Fiori, op. cit., 293-94; Oliver, op. cit., III (London 1877), 518-519.
  7. Op. cit., 384.
  8. H.E. Desch (Timber, its Structure and Properties, 2nd. ed. London 1947, 206-207) says that "contrary to popular statements, no timber is immune to subterranean termite attack, but the range in resistance of different timbers is appreciable. --- Moreover, resistance to fungal decay is not necessarily an indication of resistance to subterranean termite attack." Again, "hardness of a timber is no criterion of its powers of resistance", though while "naturally resistant timbers tend to be gnawed by termites, --- the soft, non-resistant species may be completely hollowed out, except for an outside skin of wood."
  9. Op. cit., 105.
  10. Op. cit., 348.
  11. Gilg, op. cit., Teil B., 222, describes D. mespiliformis as "ein kleinerer Baum mit hartem weissen, im Innern oft schwarzen Holz." Fiori, op. cit., 293-94, says it has "legno di color rosso, duro, omogeneo e resistente; secondo Schweinfurth nei vecchi alberi si ha pure un durame nero al

centro, ciò che però osservasi di rado nell' Eritrea." Eggeling describes the wood (op. cit., 105) as "white to grey-pink, slowly darkening to dark brown, hard, fine, and even in grain, close and uniform in texture, very strong ----. Some trees yield ebony-coloured wood, the black coloration reputed to develop only after death." Irvine likewise says (Plants of the Gold Coast, Oxford 1930, 162): "the heartwood is brown at first, gradually turning black after the death of the tree. It is believed that by burying the wood in the soil it turns black more quickly."

12. Op. cit., 96.
13. Rév. Bot. appliquée 14, 950-51. The Sahel in Mauretania stretches from the Adrar and the Akjoujt region to the sea. It comprises the Lévrier Bay area, Akjoujt, and part of the Adrar. Among the Moors the term also includes the whole of the Spanish colony of Rio de Oro. The greater part of the Sahel consists of stony or rocky plains interspersed with isolated peaks and dunes. (Mokhtarould Hamidoun, Précis sur la Mauritanie [Études Mauritaniennes No. 4, Centre IFAN], Saint-Louis, Sénégal 1952, 1, and end-map.)
14. Op. cit., 222.
15. One of two species of Ebenaceae collected in March 1763 by Petrus Forskål among the Hadie mountains of the Yemen, between El Urs (Ersch) and Aludje, "about six hours' journey towards the east from Beit el Fakih, and about

- fourteen degrees and a half of latitude north of the Equator," is stated by Hiern to be identical with Diospyros mespiliformis Hochst. (W.P. Hiern, 'Third Notes on Ebenaceae', Journal of Botany, new series, VI, London 1877, 97-98). Admittedly, the specimen consists of a fruiting leafy branch from which the fruits are missing, and the leaves and the fragmentary bases of two fruiting calyces only remain on the branch. Nevertheless Hiern thinks that "the identification of the species is determined beyond reasonable doubt, though not with absolute certainty." He adds that in view of the very wide distribution of this species over tropical Africa, "its extension to Yemen cannot be considered as greatly opposed to antecedent probability" (loc. cit., 98). Cf. Oliver, op. cit. III (London 1877), 519. (It is not mentioned by A. Defflers, Voyage au Yemen, journal d'une excursion botanique faite en 1887 dans les montagnes de l'Arabie heureuse, suivie du catalogue des plantes recueillies avec leurs noms arabes, 1889.).
16. Pflanzenwelt Afrikas --- III Band, 1 Heft, 629.
17. Details of specimens from Tanganyika in the B.M. [Nat. Hist.] are as follows: 1. Turiaian Rd. Habitat: Miombo Country. notes: shrub. 2. Locality: Tendaquru. altitude 600 ft. Habitat: grassland wooded. Notes: tall tree. 3. Locality: "Lindi, Lutamba - See, 40 km. westlich Lindi, 200-250 m.ü.M. - Uferumgebung. 5-15 m., häufig." 4. Locality: "Mahenge: Ulanga-Ebene, mit einzelnen Bäumen und

Sträuchern. Kleiner Baum 8-10 m. häufig. Ulanga-Ebene, 3-400 m." 5. Locality: "Morogoro, Uluguru-Gebirge, N.O. Trockenwald-Savanne. 550 m.ü.M. Kiroka. Kleinerer Baum 4-6 m." 6. Locality: Tabora. altitude 3500 - 4000 ft. Habitat: "light alluvium common and widespread." Notes: small medium tree. 7. Locality: Pombwe, Tabora province. 1100 metres. "A small tree growing in clans on the large anthills in the dry forest. also near the coast in short-tree-tall grass savanna." (Coll. L.T. Wigg. 24/12/1927). 8. Locality: Shinyanga, altitude 4000 ft. Habitat: "Commiphora-Combretum thicket and savannah." Notes: "Trees. On all soil types."

18. Eggeling, op. cit., 300.

19. Eggeling and Harris, op. cit., 96.

20. Eggeling, op. cit. 105.



## IV.

Passing referēnces to the flora of the Sudan are to be found in the works of a number of the early European travellers, (e.g. Burckhardt's account of his two journeys in 1813 and 1814).<sup>1</sup> By some explorers, some of them trained botanists, collections of plants were made. Specimens of nearly a hundred species were collected by Cailliaud in 1820-22 in the course of his journey as far as Fazogli on the Blue Nile, in the company of Ismäil's victorious army.<sup>2</sup> These were subsequently studied by Raffeneau-Delile,<sup>3</sup> who refers<sup>4</sup> to earlier researches by the botanist Lippi, a member of du Roule's ill-fated embassy to Abyssinia (Ethiopia) in 1704-05,<sup>5</sup> in the oasis of Khargāh and in the deserts west of the Nile in Nubia as far as Korty. From 1837-39 the Austrian Theodor Kotschy, a member of Joseph von Russeger's expedition,<sup>6</sup> collected an enormous number of specimens, some of which were published after his death by Schweinfurth.<sup>7</sup> Valuable information on the southern and eastern parts of the Sudan was added by the large collection made by Schweinfurth himself.<sup>8</sup>

The botanical collections of the Speke and Grant expedition of 1860-63 were partially published by Oliver and Baker in 1872-75.<sup>9</sup> The plants of the western Sudan were systematically investigated for the first time as a result of the enormous collections made by Pfund and his collaborators.<sup>10</sup> A list of the species collected in Darfur and Kordofan was later published by Zarb.<sup>11</sup> The vegetation of Jebel Marra in the extreme west of the Sudan was studied by Lynes in 1920,<sup>12</sup> and the geographical affinities

of the plants from these mountains were discussed by Good,<sup>13</sup> but this region remains botanically one of the least explored parts of the Sudan.

Between 1906 and 1929 hand-lists and flora were published by Broun,<sup>14</sup> Crowfoot,<sup>15</sup> and Broun and Massey.<sup>16</sup> These have now been superseded by Andrews' work,<sup>17</sup> the last volume of which appeared in 1956. Despite increased knowledge of the plants of the Sudan gained during the last thirty years, however, ecological research connected with individual species is in its infancy. Andrews writes in the Introduction to his flora:<sup>18</sup> "very little information of the conditions of growth, viz. type of soil, high land or low land, forest, woodland or desert, time of flowering and fruiting, and other characters of a plant's habit of growth has been included in the text. This information about the plants of the Sudan is, in general, unrecorded." <sup>19</sup>

The earliest contribution to the knowledge of the flora of Eritrea was made by Schweinfurth between 1881 and 1892<sup>20</sup>, and a number of Italian botanists later published various general works on the flora of the country.<sup>21</sup> But as in the ~~later~~ case of the Sudan, research on individual species is still lacking. Drar ██████████,<sup>22</sup> writing in 1955, states that he was "unable to find references or obtain reprints dealing with any special ecological research on the plants of Eritrea."<sup>23</sup> After these preliminary remarks, we turn to the discussion of Dalbergia melanoxylon and Diospyros mespiliformis in the Sudan and Eritrea.

Lying mainly in the south-west part of the Sudan, adjoining French Equatorial Africa, the Congo and Uganda on the south and west, and bounded on the north by the Bahr el-Arab, is the Broad-leafed Woodland and Forest region with an annual rainfall of 40-60 inches [Pl.X].<sup>24</sup> Here both Dalbergia melanoxylon and Diospyros mespiliformis are found, especially in the area of high grass woodland in the southern portion of this region, which contains gallery forests and bowl or depression forests.<sup>25</sup> The north-east portion of the Broad-leafed Woodland and Forest region contains large stretches of seasonally inundated land, known locally as 'toich'. These areas of 'toich' land are interrupted by higher non-flooded islands "where are found such woodland trees as --- Diospyros mespiliformis Hochst."<sup>26</sup>

Many of the species of this Broad-leafed Woodland and Forest region (which corresponds to Smith's 'Mixed Deciduous Fire-swept Forest'<sup>27</sup>) stretch north of the Bahr el-Arab on to the southern parts of the sand invasion in western Kordofan and southern Darfur. Among such are Dalbergia melanoxylon, and Diospyros mespiliformis.<sup>28</sup> In Kordofan the latter is found near the sandy edges of watercourses in the region of the Nuba Mountains<sup>29</sup>. West of the Nuba Mountains and through Darfur is gently rolling country often with 'qōz'<sup>30</sup> sand towards the northern portion and heavier soils to the south. Granitic outcrops occur and alluvial soil along the seasonal watercourses. Among the trees and shrubs found is Diospyros

mespiliformis.<sup>31</sup>

The northernmost occurrence of Dalbergia melanoxylon in the natural state in the Sudan seems to be near seasonal watercourses at the southern limit of the Acacia Short-grass Scrub region, as an outlier of the Acacia Tall Grass Forest region.<sup>32</sup> Reference to the map on pl. X will show that the former region consists of a narrow belt bounded by Dueim and Fasher in the north and Gedaref, Singa, and Um Ruaba in the south. It skirts the northern boundary of Jebel Marra, where the belt narrows considerably. The area has an annual rainfall of 12 to 20 ins. and a drought period of 4-6 months, but the rainfall is sufficient in quantity and lasts for a sufficient time to bring to maturity grasses and herbs, and to maintain a rather open woodland type of country. The soil too is, in general, more water-retaining.<sup>33</sup>

West of Darfur, in approximately the same latitude, Dalbergia melanoxylon is found, as already stated, throughout the Sahelian zone of Lake Chad and West Africa: in Baguirmi, Kanem, the former Niger Colony as far north as the southern edge of Aïr, the Hombori mountains, and Kayes. Hombori, in the former French Soudan, latitude 15° 20' N., has an average annual rainfall of 361.1 mm. and a dry season of 6-7 months.<sup>34</sup> On the limestone plateau of the [French] Soudan, Diospyros mespiliformis occurs in rocky ravines and gullies where a temperate and humid micro-climate nurtures a dense, woody vegetation.<sup>35</sup>

East of the Nile at Malakal local forests of Acacia mellifera Benth. ('kitr'), Dalbergia melanoxylon, and Zizyphus spinachristi Lam. ('sidr') grow near the river.<sup>36</sup> Further north at Gallabat both Dalbergia melanoxylon and Diospyros mespiliformis occur.<sup>37</sup>

According to Fiori,<sup>38</sup> the former is common in Eritrea "nei luoghi pietrosi del versante occ[identale] della Colonia da 1300 a 1700 m.; rara[mente] spingesi nelle vallate del versante or[ientale] come a Curòh e nella valle Maldi."<sup>39</sup>

D. mespiliformis is stated to occur "qua e là specialm. lungo i torrenti da 800 a 1600 m.; Hamasen e precisam. presso Ghinda al Dongollo ed in Val Cecca, Bogos, Mensa lungo il Messeb e Chenafenà ov'è abbondante massime lungo il Mareb."<sup>40</sup>

The northernmost occurrence of this species east of the Nile is in the Red Sea Hills of the Sudan where it is found towards and in the moist zone which lies towards the east of the Erkoweit plateau and includes the north and east sides of the escarpment.<sup>41</sup> Though lying in the Acacia Desert Scrub region of the Sudan [pl. X], the plateau has a more luxuriant vegetation owing to its topography and rainfall.<sup>42</sup> The principal rains occur in the winter, though light showers may also fall during the summer. During the winter the hills are almost continuously covered by mist which blows up from the sea. A portion of the rain and mist blowing from the north-east meets no obstacle before impinging on the Erkoweit escarpment and plateau. As a result, abundant evergreen vegetation, including a number of Abyssinian spp., is maintained in this

area and on the sides of the escarpment.<sup>43</sup>

It is clear from the foregoing that neither Dalbergia melanoxylon nor Diospyros mespiliformis is confined to a particular soil or rainfall belt or vegetational zone.

With regard to soil texture, it has been shown that the former can grow successfully on sites with a clay content ranging from 2% to 57%, and these figures do not necessarily represent the limits in this respect in either direction. It cannot be said therefore, to be a species "typical of clay soils" or "typical of sands", or "a species which requires a fresh loam."<sup>44</sup>

With regard to rainfall, Dalbergia melanoxylon ranges from areas which receive 1200 mm. annually to those receiving 360 mm.<sup>45</sup>

Very little information is available, however, regarding the size to which these two species grow in different parts of the country and the quality of the wood they produce. It does not follow, however, that a plant <sup>growing on a site</sup> receiving, say, 360 mm. of rain is necessarily more stunted than one of the same species in a region which receives 1200 mm., for other factors are involved, such as the nature of the soil surface on which the rain falls. Thus Smith notes that "the most striking and elementary fact in the distribution of Sudan trees, taking the country as a whole, is that the tree species which requires 3 X x inches of rain on clay soils requires less than 2 X x inches of rain on sands. ---- The boundaries between sand and clay are species barriers in any given rainfall ---- [There] is outstanding evidence that rainfall is more efficiently used by

the perennial plant on the sands than on the clays."<sup>46</sup>

Again, "indigenous Sudan tree species have their most northern natural occurrences (their occurrences in lightest rainfall), on sandy or rocky soils and never, by any chance of nature, on the heavier clays."<sup>47</sup>

In Uganda, where, as we have seen (p.82), Dalbergia melanoxylon is found on "very dry, often extremely rocky sites," "straight logs of good diameter are scarce"<sup>48</sup>. "The timber is exported in the form of short logs 3 to 5 ft. in length and very variable in girth and quality."<sup>49</sup> Fiori<sup>50</sup> cites Schweinfurth's statement that the trunk (including, presumably, the bark and sapwood) of this species attains a diameter of up to 50 cms., but adds that in his own experience and that of Senni, it does not exceed 20-25 cms. in Eritrea. Small pieces of 'ebony' (D. melanoxylon ??), from trees said to grow south of Sennar, were on sale in the market at Shendi at the time of Burckhardt's visit in 1814, but the largest he saw were about one foot in length.<sup>51</sup> According to Broun and Massey,<sup>52</sup> good-sized and sound logs are rare. Dr. A.J. Arkell informs me that all the 'ebony'-trees, babanûs, (D. melanoxylon ?) he saw<sup>53</sup> in Darfur were stunted, being little more than bushes about six to eight feet high, from which no logs of any size could be obtained.

Kassas<sup>54</sup> writes of the Erkoweit area, where Diospyros mespiliformis has its northernmost occurrence in the Sudan; "the nearer to the north-eastern boundary the wetter will be the habitat. The south and south-western boundaries merge,

into the inland arid plateau. Again, the higher the level, the more moist it will be. In consequence there is a marked zonation in the plant cover parallel to the north-eastern boundary-line, with local differences due to elevation." Kassas distinguishes five zones running inland from, and roughly parallel to, the north-eastern boundary of the plateau.<sup>55</sup>

Within the moist zone (Zone I), which extends parallel to, and is bounded by, the north-east border of the escarpment and which faces directly the water-laden winds and sea-mists as they roll inshore, Diospyros mespiliformis is found everywhere, being particularly abundant on Jebel Manaweb.<sup>56</sup> It occurs, too, near the top of Jebel Sela (4,244 ft.), the highest mountain of the Erkoweit oasis, lying at the north-eastern edge of the escarpment.<sup>57</sup>

In the transitional Zone II, lying between the moist Zone I and the Euphorbia-dominated Zone III, D. mespiliformis occurs but is included among the species that are "characteristic of Zone I and less important in Zone II."<sup>58</sup>

It is also found in Zone III, which occupies the middle part of the Erkoweit oasis, but is here "of minor status." On the boundary between Zones II and III is Jebel Nafeib (3,787 ft.) which rises about 200 feet above the level of the plateau. On its east-facing slope is a cover of scrub dominated by Euphorbia abyssinica with abundant Maytenus senegalensis, D. mespiliformis, and Rhus abyssinica. "The west-facing slope is also dominated by Euphorbia abyssinica with rare



individuals of the above-mentioned bushes. These were (April 1954) dry and depauperate as contrasted to those of the east-facing slope." <sup>59</sup>

The fourth zone, lying on the south-west boundary of the area, receives the sea mists and water-laden winds only after they have lost the greater part of their moisture. "Most of the trees and shrubs characteristic of the wetter zones are not recorded here except for rare individuals --- found in certain places where local topography allows for water accumulation."<sup>60</sup> Kassas makes no reference to D. mespiliformis in this zone; nor does it occur in the fifth zone which separates the fourth from the desert plain that extends west of Erkowit. "The zone lies 'outside' the Erkwit oasis as it is cut off from the maritime effect by the Erkwit jebels --- The ground is undulated into lowly hillocks covered with rock fragments and boulders --- The plant cover is very sparse."<sup>61</sup>

Finally, Kassas notes that "certain species with wide range of distribution show morphological variations indicative of habitat features." Thus in the moist Zone I D. mespiliformis grows into a tree of considerable size, but in other zones it is smaller and bushy in form.<sup>62</sup>

With regard to the size of the logs, we must beware of/ <sup>judging</sup> the utility of the ancient hbny-wood by the standards of the modern timber merchant. Most hbny objects, it is true, are small, and the larger ones were not made from a single piece of wood. None of the pieces used in the Deir el-Bahri

shrine, for example, are longer than 70 cms. (p.78 n. 69). Even so, the average size of the unworked logs, as deduced from the representations (p. 27), was not very much less than that of the logs of Dalbergia melanoxylon at present exported from Mozambique, West Africa, and Uganda.

de Fazzoli ---, Paris 1826-27.

3. Cailliaud, op. cit. IV (text), 283-402: "Centurie de Plantes d'Afrique du Voyage à Méroé," recueillies par M. Cailliaud, et décrites par M. Raffeneau-Delille ---."
4. Op. cit., 295-99.
5. On which see Crawford, The Fung Kingdom of Sennar, Gloucester 1951, 227-36.
6. See B.N. Tophill, 'Some Extracts from the Life and Travels of Theodore Kotschy', SNR 25(1) (1942), 109-121.
7. G. Schwelaforth (ed.) Reliquiae Kotschyanae. Beschreibung und Abbildung einer Anzahl unbeschriebener oder wenig gekannter Pflanzenarten, welche Theodor Kotschy auf seinen Reisen in den Jahren 1837 bis 1839 als Begleiter Joseph's von Russegger in den südlich von Kordofan und oberhalb Fesoglu gelegenen Bergen der freien Neger gesammelt hat. Nebst einer biographischen Skizze Theodor Kotschy's, Berlin 1868. See also: C.G. Ehrenberg, Reisen in Aegypten, Libyen, Arabien und Senegal
8. (Naturgeschichtliche Reisen durch Nord-Africa und West-

Notes.

1. J.L. Burckhardt, Travels in Nubia, London 1819. See R.L. Hill, A Bibliography of the Anglo-Egyptian Sudan, from the earliest times to 1937, Oxford 1939, 53 ff.
2. F. Cailliaud, Voyage à Méroé, au Fleuve Blanc, au-delà de Fazoql ---, Paris 1826-27.
3. Cailliaud, op. cit. IV (text), 293-402: "Centurie de Plantes d'Afrique du Voyage à Méroé," recueillies par M. Cailliaud, et décrites par M. Raffeneau-Delile ---."
4. Op. cit., 295-99.
5. On which see Crawford, The Fung Kingdom of Sennar, Gloucester 1951, 227-36.
6. See B.H. Tothill, 'Some Extracts from the Life and Travels of Theodore Kotschy', SNR 25(1) (1942), 109-121.
7. G. Schweinfurth (ed.) Reliquiae Kotschyanae. Beschreibung und Abbildung einer Anzahl unbeschriebener oder wenig gekannter Pflanzenarten, welche Theodor Kotschy auf seinen Reisen in den Jahren 1837 bis 1839 als Begleiter Joseph's von Russegger in den südlich von Kordofan und oberhalb Fesoglu gelegenen Bergen der freien Neger gesammelt hat. Nebst einer biographischen Skizze Theodor Kotschy's, Berlin 1868. See also: C.G. Ehrenberg, Reisen in Aegypten, Libyen, Nubien und Dongola (Naturgeschichtliche Reisen durch Nord-Africa und West-

- Asien in den Jahren 1820-23. Historischer Theil, t.I), Berlin 1828 [not seen].
8. Cf., for example, G. Schweinfurth, 'Ein Vegetationsstreifen zwischen Suakin und Kassala', Zeitschrift für allgemeine Erdkunde 19, Berlin 1865, 403-407; id., 'Flora des Soturba an der nubischen Küste,' Verhandlungen der k.k. Zool. Botan. Gesellschaft in Wien 15 (1865), 537-60.
  9. D. Oliver and J.G. Baker, 'The Botany of the Speke and Grant Expedition', Transactions of the Linnean Society of London 29 (1875).
  10. J. Pfund, 'Reisebriefe aus Kordofan und Darfur,' Mitteilungen der Geographischen Gesellschaft in Hamburg, 1876-77, 121-305.
  11. J.H. Zarb, Rapport sur les spécimens botaniques colligés pendant les expéditions égyptiennes au Kordofan et au Darfur en 1875 et 1876, Cairo 1879.
  12. H. Lynes, 'Notes on the Natural History of Jebel Marra', SNR 4, 119-37; L.V. Lester-Garland, 'Some Plants from Jebel Marra', Journal of Botany 59 (1921), 46-48; C. Norman, 'Plants from Jebel Marra, Darfur', Journ. Bot. 62 (1924), 134-38.
  13. R. Good, 'The Geographical Affinities of the Flora of Jebel Marra', The New Phytologist 23 (1924), 266-81.
  14. A.F. Broun, Catalogue of Sudan Flowering Plants, Khartoum 1906.

15. G.M. Crowfoot, Flowering Plants of the Northern and Central Sudan, Leominster 1928.
16. A.F. Broun and R.E. Massey, Flora of the Sudan, London 1929.
17. F.W. Andrews, The Flowering Plants of the [Anglo-Egyptian] Sudan, 3 vols., Arbroath 1950-56.
18. Op. cit. I, Introduction, ix.
19. The same is true of Uganda (cf. Dale in Eggeling, op. cit., Introduction, ix), and of North-east Africa generally (M. Drar, 'Egypt, Eritrea, Libya and the Sudan', in Arid Zone Research VI - Plant Ecology. Reviews of Research [UNESCO, Paris 1955], 163: "ecological research connected with individual species or plant communities is in its infancy in the whole region.")
20. G. Schweinfurth, 'Sammlung arabisch-aethiopischer Pflanzen', Bulletin de l'Herbier Boissier 2 (1894), app. 2; 4 (1896), 266.
21. A. Fiori, Boschi e Piante legnose del'Eritrea, Firenze 1909-1912; id., 'Piante raccolte ■ nella colonia Eritrea nel 1909', Nuovo Giornale Botanico Italiano, 1912, No. 19, 412-62; No. 20, 345-493; R. Pirotta, 'Flora della colonia Eritrea', Annuario R. Istituto Botanico di Roma, 1907, 103.
22. 'Egypt, Eritrea, Libya and the Sudan', Arid Zone Research - VI Plant Ecology, 164.
23. A certain amount of information is given in: G. Negri, 'Caratteri della Vegetazione dell'Africa Orientale Italiana'

Relazione e comunicazioni tenute al III Congresso di studi coloniali in Firenze 1937, 15., 3-34; R. Pichi-Sermolli, 'Osservazione sulla vegetazione del versante occidentale dell' Altipiano Etiopia', Nuovo Giornale Botanico Italiano 47 (1940), 609-23.

24. On the principal divisions of the vegetation of the Sudan, see F.W. Andrews in J.D. Tothill (ed.), Agriculture in the Sudan, Oxford 1948, Chapter 4; J. Smith, Distribution of Tree Species in the Sudan in Relation to Rainfall and Soil Texture [Ministry of Agriculture, Sudan Government. Bulletin No. 4], Khartoum 1949, Part 2, Chapter 1 & pl. 4. The boundaries shown on the map do not, of course, exist as hard-and-fast lines traceable on the ground, for individual species cross almost all these boundaries, just as they cross wide ranges of rainfall.
25. A specimen of Diospyros mespiliformis in the B.M. [Nat. Hist.] Herbarium, from Azza Forest, south of Meridi, is described as "evergreen in second canopy of high depression forest." A spreading-crowned tree 80-90 ft.

(Gallery forests occur as fringes along the margins of the larger streams and are enabled to exist under a lesser rainfall by the more abundant ground-water. "Gallery forests on smaller streams consist only of a single ranked fringe dominated by Syzygium owariense Beauv. --- and the ebony (Diospyros mespiliformis Hochst.)"

- (Andrews in Tothill, op. cit., 50) ).
26. Andrews in Tothill, op. cit., 46, 48, 50, 52. (A specimen of this species [coll. J.E. Dandy] in the B.M. [Nat. Hist.] came from the left bank of the River Jur at Gorinti below Wau, at an altitude of c. 400-500 m. "Habitat: Bush; Notes shrub.")
  27. Smith, op. cit., 14 ff. & pl. 4.
  28. Smith, op. cit., 15.
  29. Andrews in Tothill, op. cit., 44-45; Broun and Massey, op. cit., 239.
  30. Colloquial Arabic 'sand-dune'; the term 'qōz-country' is applied to any part of the vast area of fixed dunes, generally reddened at the surface, occurring in Darfur, Kordofan and Northern Provinces (Agric. in the Sudan, 107, 125, 832, 859).
  31. Andrews in Tothill, op. cit., 46. Cf. J.L. Burckhardt, Travels in Nubia, London 1819, 314: "I understand that it ['ebony'] grows in the deserts adjoining to Darfour on the west." According to information obtained by Burckhardt in Mecca from a pilgrim of the Beduin Beni Hassan tribe of Dar Katakou, west of Bornu, the ebony-tree, بادانر was very common in the uninhabited waterless district, fifteen days journey in length, lying between Dar Rouka [not marked on B.'s map] and Darfur (op. cit., Appendix I, 481).

The habitat of a specimen of D. mespiliformis in the B.M. [Nat. Hist.] Herbarium, obtained from near Garsila,

- Darfur, at an ~~alt~~ altitude of c. 2,500 ft., is noted as "moister savannah areas and occasional stream beds." [Coll.: D. Francis, 9/12/57].
32. Andrews in Tothill, op. cit., 39. In the B.M. [Nat. Hist.] is a specimen collected in May 1921 (by Capt., later Rear-Admiral, H. Lynes R.N.) at Jebel Marra, Darfur. Kellokitting, altitude 4000 ft. Cf. C. Norman 'Plants from Jebel Marra, Darfur', The Journal of Botany 62 (May 1924), 136.
33. Andrews in Tothill, op. cit., 38.
34. P. Jaeger, 'Les Plateau gréseaux du Soudan occidental', BIFAN [Série A: Sciences naturelles] 21, No. 4, Oct. 1959, 1148.
35. loc. cit., 1150.
36. G.A. Booth, 'The Forests of Upper Nile Province, 1862-1950', SNR 33 (1), 113.
37. (a) Dalbergia melanoxyton: e.g. B.M. [Nat. Hist.]: "Flora von Gallabat. Umgegend von Matamma. gesammelt von Dr. G. Schweinfurth. 1865."
- (b) Diospyros mespiliformis: Broun, op. cit. (1906), 44-45.
- Cf. Count Gleichen, (ed.), The Anglo-Egyptian Sudan: a Compendium prepared by Officers of the Sudan Government, I, London 1905, 107-108.
38. Op. cit., 186.
39. Specimens in the B.M. [Nat. Hist.] Herbarium from Eritrea and Ethiopia (Abyssinia) come from the Takaze



- river and Keren:
1. Schimper iter Abyssinicum. "Arbusculum ad latera montium versus fluvium Tacaze infra Dscheladscheranne. d. 1. Mai 1840."
  2. "Arbusculum in demissis versus fluvium Tacaze prope Djeladgeranne. d. 6 Aug. 1840."
  3. O. Beccari-Piante del Paese dei Bogos (Abissinia Settentrionale). "No. 37. Dalbergia melanoxylon. Abita: Keren, sul Mte. Deban fra i 4500 e i 5500 p. 1870."
40. Fiori, op. cit., 293-94. Specimens in the B.M. [Nat. Hist.] came from Hamasen "lungo il torrente Ghillà sotto i monti Deksanà, m. 1600 c.s.m.", and between Sagalù and Aidereso; and Assaorta, Monte Dijot, m. 1200-1800.
41. Andrews in Tothill, op. cit., 55; Broun, op. cit., 44-45; Broun and Massey, op. cit., 239; M. Kassas, 'The Mist Oasis of Erkwit, Sudan', Journal of Ecology 44 (1956), 180-194. Two specimens of D. mespiliformis from the vicinity of Erkoweit ( $18^{\circ} 50' N.$ ,  $37^{\circ} 4' E.$ ) are (1959) in the B.M. [Nat. Hist.] Herbarium, and others, collected by Kassas, in the herbarium of the Botany Dept., Cairo University (Communicated by Professor V. Täckholm, letter dated 29/9/1959).
42. The annual rainfall varies from 40 mm. in 1951 to over 600 mm. in 1950, an exceptionally wet year (Kassas, loc. cit., 181).

43. Andrews, in Tothill, op. cit., 54. Similar conditions exist on Jebel Elba, but no instance of D. mespiliformis seems to have been reported from here (G.W. Murray, Esq., letter dated 19/9/1959; Prof. V. Täckholm, letter dated 29/9/1959).

In addition to the two spp. discussed above, passing reference may be made to a third, Maba abyssinica Hiern (family Ebenaceae). This is described by Andrews (op. cit. II, 370) as a straight-boled forest tree up to 80 ft. high, with dark-grey to black-brown, shaggy bark, scaling in strips. Though not regarded as an ebony-producer, the tree has, according to Broun and Massey, a dark wood which takes a fine polish and is used for gun-stocks. It occurs in Sennar, Kordofan, and Bahr el-Ghazal. In Arabic it has the same name as Diospyros mespiliformis, viz. Gughan, Jukhan (Broun and Massey, op. cit., 239 ; Broun, op. cit. 44-45; Gleichen, op. cit., 158). Eggeling, however, (op. cit., 108) states that the whitish wood, though hard and with ebony-like markings near the centre, is not durable. According to Fiori (op. cit., 292-93), this sp. occurs in Eritrea "nei boschi da 900 a 1600 m.: Ghinda al Dongollo ed in Val Cecca, Cheren, M. Lalamba presso Cheren, Chenafenà, Acrur, Hamasen e Mensa". He describes it as an "alberetto di 3-4 m., glabro, simile al Diospyros mespiliformis, ma con fogliame verdescuro. --- legno bigio - rossigno con mazzature nerastre od anche nero-ebano nei nodi ed al

centro, duro e pesante." Fiori (op. cit. 292) says

of the wood of another Ebenacea, Euclea Kellau Hochst.

that it has "gli stessi caratteri di quello del

Diospyros mespiliformis, ma raggiunge piccole dimensioni."

44. Smith, Distribution of Tree Species in the Sudan ---,  
34.

45. Id., op. cit., 37-8.

46. Op. cit., 23-4.

47. Op. cit., 57.

48. Eggeling, op. cit., 300.

49. Eggeling and Harris, Fifteen Uganda Timbers, Oxford  
1939, 96.

50. Op. cit., 186-87.

51. Burckhardt, Travels in Nubia, 314.

52. Op. cit.,

53. Locality and time of year?

54. Journal of Ecology, 44, 184.

55. loc. cit., 182 fig. 1.

56. loc. cit., 184.

57. loc. cit., 186, 188.

58. loc. cit., 188.

59. loc. cit., 189.

60. loc. cit., 189, 191.

61. loc. cit., 192.

62. loc. cit., 194.

## ■. V.

The evidence for climatic conditions in historical times in the area now forming the republic of the Sudan consists of written records and archaeological remains. Caution is necessary, however, in using these sources. Often changes of which they bear witness are uncritically ascribed to the climate without considering other factors. The interpretation of written records, in particular, is a matter of some difficulty. We may be presented with a statement of an event, and possibly also the attributed cause, but even assuming the event to have been accurately described, unless additional data is given which provides some indication of the background against which it occurred, the value of the evidence is considerably diminished. Facts may have been omitted because in the narrator's opinion they were accidental or without interest. Background is required, however, to establish the probability of a single cause or a group of interacting causes and to eliminate other possible factors which may have contributed to the event or change in question. From the Neolithic on, man is an active agent, and often a destructive one, in effecting change, and from this period onward, therefore, a distinction must be drawn between natural changes, or changes due to conditions outside of and unaided by human activities, and changes which, though natural in tendency, have either been started or helped by man. In view of our very incomplete evidence, however, it is not always easy to retain this

distinction or to separate prime causes and accessory factors.<sup>1</sup>

In Darfur a southward trend has been noted in former sites of northern towns. "Uri near J[ebel] Mutarrag (ca. 1500 A.D.) is now almost waterless and Kobe N.W. of Fasher (ca. 1800 A.D.) is waterless. Turra at the N. end of the Marra range was densely inhabited about 1500-1600 A.D., but now the supply supports only a scanty population. About 1500 A.D. the main E.-W. route across Darfur and Kordofan ran through Kawa near Dueim, Faragab, Bara, Uri Wara and N. of Lake Chad. It now passes through Kostî, el Obeid, el Fasher, Abeshr and S. of Lake Chad."<sup>2</sup>

"The pilgrimage in 1497 of the Emperor el Haji Muhammoud to Mecca from Gao via In Gades and Agades and Bilma (lat.  $16^{\circ}$  -  $17^{\circ}$  N.) with a retinue of 800 people and numerous horses and donkeys shows that this region must have been fertile and comparatively well-watered at the time, whereas today it is part of the desert. Since the fifteenth century the southern boundary of the Sahara appears to have advanced southwards and to be still advancing. The region to the north of Tahoua was occupied by people living in permanent villages on the line Gao - In Gale - Agades as late as the eighteenth century and the remains of these villages can still be seen in the sand. The present boundary of the Sahara appears to be Ansongo - Zinder - Lake Chad - source of the Wadi Hawa in Lake Undar. - - - The evidence as a whole points to gradual desiccation of N. and E. Africa between the pre-Christian era and the present day, shown mainly by the decreased fertility

of the Libyan shore of the Mediterranean, once a 'granary' of the Roman Empire, and the southwards extension of the Sahara from perhaps lat.  $18^{\circ}$ - $19^{\circ}$  N. to the neighbourhood of lat.  $15^{\circ}$  N." The question arises, however, whether this desiccation represents a real climatic change or whether it has been brought about by the advent of man.<sup>3</sup>

Records of failures of water in wells or of ancient habitations abandoned and now poorly watered or waterless, are not always satisfactory evidence of former abundance of water, nor are the reasons for the reduction in water resources known. Signs of dug wells, in the form of hollows in the ground surrounded by mounds of 'spoil', seen in a barren tract are not necessarily proof of the erstwhile existence of successful wells, but may be merely signs of energetic but unsuccessful attempts to find water which never existed there. Again, a well-centre, once active and productive, may have a history of waning productiveness. Past achievements, however, may have been exaggerated, and while the waning may be real enough, it may be due to progressively increased consumption by a larger population, human and animal, as compared with the past, and in excess of replenishment from natural sources.<sup>4</sup>

"It is only possible to assess the fundamental causes in such cases by means of observation and measurement. El Obeid is an example, within historic times, of progressive exhaustion clearly not due to failure of rainfall. Failure of replenishment may be due to increase in animal population and human activities destroying surrounding vegetation in small well-

centres. --- A shallow water-supply near a valley may be affected by a heavy flood which erodes pervious material and deposits in its place finer impervious clays which impede seepage. Shallow wells in a watercourse which are allowed to fall in during floods and which are re-dug year after year, eventually become barren because clays gain access to the level of the underground aquifer and impede water-circulation. This is one of the commonest causes of destruction of water-supply in the Sudan, and the effect is enduring. These are a few of the cases which may explain progressive diminution of well-supplies. All are local causes, and would only be appreciated by the aid of a very precise scientific analysis of the history of the area under consideration. All are independant of climatic (i.e. rainfall) deterioration." *[Italics mine]*.<sup>4</sup>

The statements of the Classical writers regarding the climate of the Sudan in Graeco-Roman times are often inconsistent and only general conclusions can be drawn from their accounts. Pliny, writing in the first century A.D. states<sup>5</sup>: "The exploration of the geography of Ethiopia, which had<sup>lately</sup> been reported to the Emperor Nero, showed that from Syene on the frontier of the empire to Meroë . . . trees are rare, and there are none except of the palm species."<sup>6</sup> However, "round Meroë (they reported) greener herbage and a certain amount of forest appeared, and the tracks of rhinoceruses and elephants."<sup>7</sup> This passage need not imply that Nero's explorers had come

upon thick forests; that quoted from Book XII, viii, 19 suggests that what the centurions found near Meroë was the beginning of grass and more abundant trees after their long journey through desert country, and Pliny's "silvarum aliquid" might well refer to the groves of acacia (Acacia raddiana) still found near the site of Meroë.<sup>8</sup> There was, however, dense vegetation in the Island of Meroë. Strabo<sup>9</sup> speaks of large thickets there. Certainly the smelting of iron, which, judging by the huge piles of slag found at Meroë and elsewhere,<sup>10</sup> was carried on on a large scale, must have required considerable quantities of charcoal, which implies more extensive areas of trees,<sup>11</sup> doubtless mostly acacia,<sup>12</sup> than are found to-day; though it is also possible that much charcoal may have been brought to Meroë from some distance by river. At any rate, the use of iron tools probably speeded up forest clearance generally. Strabo also states<sup>13</sup> that among the fauna of the Island were elephants, lions, and leopards, as well as many other wild animals who "flee for refuge from the hotter and more arid regions to those that are watery and marshy." He also mentions as one of the criteria whereby kings were chosen, superiority in cattle-breeding,<sup>14</sup> which implies the existence of extensive pastures.

In the Island of Meroë remains of buildings of some size and degree of elaboration are found inland at such places as Naga, Musawwarat, and other localities in the Shendi district.<sup>15</sup> In the region of Meroë itself and stretching south therefrom



are numerous hafirs,<sup>16</sup> or water-storage tanks, which are particularly thick south of the Sennar-Jebel Moya ~~line~~ line.<sup>17</sup> The fact that these sites are away from the Nile is in itself interesting, for all the important Egyptian Pharaonic remains further north are near the river. Does the existence, then, of these hafirs and stone and red-brick buildings imply a heavier rainfall in the area then than now? The date of the hafirs is uncertain, but the majority were probably constructed during the great periods of the Meroitic kingdom when plenty of prisoners of war were available for this purpose.<sup>18</sup> At the same time, however, their presence may be an indication of a diminution in water-supplies, coupled perhaps with a decrease in rainfall.<sup>19</sup> Arkell<sup>20</sup> points out that though few of these hafirs fill at present, they would all do so if at the end of the rains the soil in and in front of them was puddled by human feet, thus concentrating it and preventing the rain water of the following year from soaking into the ground instead of running into the hafirs. Crowfoot believed that climatic conditions then were much the same as now and pointed out that in 1907 150,000 ardebs<sup>21</sup> of durra were produced in the desert wadis in Berber province, which did not comprise more than a third of the ancient Island of Meroë.<sup>22</sup> He was of the opinion, too, that some of the sites were only occupied for part of the year. Of Musawwarat he writes<sup>23</sup>: "These palaces and temples answered no necessary end: they cannot have been occupied much longer in the year than

is a shooting box in Scotland. ---- they were in fact the superfluous works of a dynasty great in peace and prosperity."

Jackson,<sup>24</sup> however, thinks that the durra yield of 1907 was apparently exceptionally good, and he doubts whether the present yield of grain from the desert wadis would have been reliable enough to support "a settled people living upon and cultivating the inner valleys as well as the banks of the Nile," as Crowfoot describes them.<sup>25</sup> So far the Soil Conservation Board has not found it worth while to construct hafirs as far north as the Shendi area.<sup>26</sup> He is doubtful too whether such elaborate buildings as those at Musawwarat<sup>27</sup> would have been erected for use during a few months only. The evidence is not conclusive, but these remains may indicate perhaps a slightly greater rainfall.

As already stated, Pharaonic Egyptian remains at all periods, both in Egypt and the Sudan, are confined to the Nile Valley and its vicinity, an indication that away from the river conditions were generally too arid to allow of permanent settlement. The only traces of the ancient Egyptians away from the Nile are in the desert mines and quarries, and on the routes leading to them.

On a stela dated to his sixth year, found in Temple T at Kawa, Taharqa records that while on his way north to join Shebitku at Thebes, he had found the temple, built of mud-brick, all sanded up to its roof, which had been covered over with earth "at a time of year when one feared the occurrence of rainfall."<sup>28</sup>

In the very year in which this stela is dated, there were again heavy rains in Nubia which "made all the hills glisten"<sup>29</sup>, and at the same time there was an exceptionally high Nile. However, though no significance need be attached to the oft-repeated claim that "the like whereof had not been seen since the time of those of old," this was nevertheless obviously a very unusual event, and the inscription recording it was repeated in three places. Occasional heavy rains do occur in the region to-day,<sup>30</sup> and even further north, but the sanding up indicates a normally arid climate.

The high ground east and west of the Nile Valley, however, does seem to have received more rain during Middle Kingdom times and earlier, sufficient at any rate to permit pastoral tribes to live with their herds. In Upper Egypt east of the Nile at Megwel Eir Arib at an altitude of 509 metres, below the high mountain pass of Gebel Garf, a cattle cemetery, dated (though only by a single potsherd) to the C-Group period, was found on a site where no cattle could live to-day.<sup>31</sup> According to Murray,<sup>32</sup> "the high ground above 600 metres, below the cliffs of the Gilf Kebir, was certainly inhabited by people of the 'C-Group' culture and may not have been finally deserted till about 2500-2000 B.C."

Near Jebel Tageru Newbold's party in 1923 came across "countless broken sherds of pottery and a good many broken stone querns and pestles." Other sherds obtained near Um Gerein, further north on the route, bore well-marked incised patterns.

On the north slope of the Wadi Hawar traces were found of old habitation sites with scattered heaps of bones, pottery similar to that obtained at Um Gereinat, and sandstone grinders and pestles similar to those found along the underside of the cliff of Jebel Tageru.<sup>33</sup> Pottery and grindstones have also been found between Merga and Bir Natrun and between Lagiya and Merga. Pottery being from its breakable nature of little use to nomads, its discovery, along with stones used for grinding grain or grass seed, in these areas now too dry for permanent habitation indicates to Arkell "before 2000 B.C. a phase of somewhat higher rainfall than the present."<sup>34</sup> He would see in the owners of these remains relatives of the cattle-owning C-Group of whom he says:<sup>35</sup> "it is by no means impossible that it was the increasing desiccation of their old homelands, wherever they were, and where conditions till then<sup>had</sup> probably resembled those in present day northern Kordofan, that<sup>t</sup> brought the C-Group people into the Nile Valley in Nubia from the steppe country either west or east of it. The west<sup>the</sup> is/more probable ---- pots and potsherds have been brought in from Wadi Howar ---- which are connected with C-Group pots."<sup>36</sup>

It is difficult, however, in the case of an area now deserted which shows traces of former habitation, to determine the size of the population, its demands in the way of water, or the length of its sojourn. The places in question may have been some sort of transit-camp used for a few months only over a period of centuries, or settlements occupied for a

period of a few years.<sup>37</sup> Again, very precise statistics of population and rainfall over the period of occupation would be required before it could be proved that general climatic changes alone were responsible for an enforced move from an area where water was originally abundant. For emigration may have been the result of the overtaxing of the water supply by an increased human and animal population.<sup>38</sup>

In and near the Nile Valley Arkell thinks that "the fact that the C Group people could keep a considerable number of cattle in Lower Nubia, where desert conditions are so severe to-day that the owner of an oxen-driven water-wheel has difficulty in keeping one or two beasts alive throughout the year, indicates that desiccation has increased in this latitude since the third millennium B.C. To keep cattle in the numbers that the C Group people did, there must have been sufficient rain in the rainy season to provide grazing grounds outside the river valley."<sup>39</sup> Again, referring to the west bank of the Nile in the region of the Second Cataract, he writes:<sup>40</sup> "Although the hinterland of the west bank is now too waterless to support any human habitation, there are traces of villages and graves there, and it must have been inhabited or two forts would not have been needed on the west bank at Semna. This inhabitation, together with the fact of the river levels being 26 feet above those of the present day at Semna and the presence of the C Group cattle

in Lower Nubia, indicates a climate rather less dry than at the present day."

With the significance of the Nile records at Semna I have dealt elsewhere;<sup>41</sup> here it need only be remarked that, while they do undoubtedly point to a higher flood level during the Twelfth to Thirteenth Dynasties than at present, they cannot be cited as evidence of climatic change in Nubia since that date. The existence of the C-Group cattle does admittedly suggest more abundant pasture in Lower Nubia than at present, but was there in fact a heavier rainfall?

Many of the Pre-dynastic bodies found by the Archaeological Survey of Nubia in 1907-08 were in a "truly wonderful" state of preservation. "The degree to which the .. preservation of even the most fragile parts of the body is carried is astonishing."<sup>42</sup> For example, in many bodies in the large cemetery (No. 45) at Shem Nishai, Dehmit, "the skin covering the body was practically complete, and the hair, even of the eyebrows, was fresh-looking and capable of being removed . . . without the aid of paraffin wax or any other preservative. The skin of these ancient bodies has become hard and paper-like . . . The preservation of the tissues of the eye calls for special mention, for it is a remarkable thing that so delicate a structure as the eye should remain at all after a lapse of four or five thousand years. Yet not only does the eye remain, but every detail of its gross anatomy may be identified in a dried and shrunken condition."<sup>43</sup> "The reason

for the extraordinary perfection of these bodies is the fact that they were buried in shallow graves in the hot dry sand; air was, in great part, excluded from them; moisture did not reach them; and they became simply dried up and naturally preserved." <sup>44</sup> When, however, graves were sunk to a greater depth, as commonly in the Middle and New Kingdoms, the bodies came into contact with subsoil moisture which hastened their decay, for "desiccation occurred only when the body lay in quite a shallow grave, and the digging of deeper graves in the Middle Empire caused a diminution of this preserving action, whilst in the New Empire, the making of deep pits did away with it completely." <sup>45</sup> In cases where bodies of these periods are buried in shallow graves near the surface, they too are often very well preserved. <sup>46</sup>

From these remarks, it seems clear that in the Nubian Nile Valley itself moisture had never penetrated the sand (a very permeable medium) from above since the earliest bodies were buried there just before the First Dynasty. <sup>47</sup> In the mud-brick buildings at Kerma there has certainly not been as much deterioration as would have occurred had the rainfall since the time of their construction been heavy. <sup>48</sup> The excellent state of preservation of the hair and skin on some of the bodies found in the tumuli <sup>49</sup> likewise points to dry conditions since the time of their burial. <sup>49a</sup> Whether the drain beneath the stone paving of the gateway in the west wall at Sesebi (Dyn. XVIII) was for carrying off rain-water <sup>50</sup>

seems doubtful. In view of the other evidence cited in this chapter, it appears unlikely that the regular rainfall was heavy enough to necessitate the construction of drains.

The discovery on the surface near the Khafre' quarries, 60 km. north-west of Abu Simbel, of a copper crowbar of Old Kingdom date in perfect preservation, and the fact that less than a mile away, a stela of Khufu was found standing and unweathered,<sup>51</sup> suggests that there has been no great amount of rain outside the Valley either, except, as already noted, on the higher ground.

In Prehistoric times "evidence from the Sudan suggests that a rainy interlude took place there in Mesolithic times (8000-4000 B.C.) . . . In Egypt there was a corresponding amelioration in the climate which ended in the 'early predynastic period' (about 4000 B.C.). During this interlude the rainfall was slight and, at its close, the temperature was probably hotter than it is to-day. East of the Nile the climate on the high limestone plateau (1200 metres) of the Galala mountains may be presumed to have resembled that of present-day Palestine, as a few terebinth trees have survived to remind us. The northern Red Sea Hills were doubtless wooded . . . West of the river the aspect of the plateau between the sea and the Qattara depression must have been that of modern Cyrenaica . . . south again, in the Northern Sudan, the plains were like those of Kordofan to-day, and over them the hunters chased the ostrich, the giraffe and the elephant."<sup>52</sup> Relics of this rainy interlude may be / seen



in the Wadi Qena, for example, where "the floor is covered with the trunks of dead tamarisks and mounds of humus which neither the wind nor the rare floods have as yet been able to carry away; the shells of snails which lived on the former vegetation may be picked out of the soil over a wide area in the Eastern Desert. . . . The situation in about 4000 B.C. was therefore this; in the main drainage channel of the country the Nile was depositing the fine black silt which it had begun to bring down from Abyssinia 4000 years before, but the watercourses of the desert had degenerated into 'wadis' which only occasionally ran with water after rain." <sup>52</sup>

However, "after the cessation of regular rainfall the present conditions of total aridity in Upper Egypt would not be reached for some time. The larger desert trees, acacias, tamarisks, Balanites and dom-palms, would obtain from the air sufficient moisture to live,<sup>53</sup> but their seeds could not mature. The wind would not remove the humus all at once and the subsoil water would sink very slowly. On the foothills the rain would continue after it has ceased in the plains." <sup>52</sup> The finds from eight sites discovered along the southern border of Egypt,<sup>54</sup> which were dated by Bovier Lapierre as generally 'predynastic', included some pottery disks which occur "over a wide area in the deserts both east and west of the Nile."<sup>55</sup> Such disks have subsequently been found associated with First or Second Dynasty

pottery.<sup>56</sup> These finds indicate human occupation over a wide district, now quite uninhabitable, round the wells of Sheb and Tarfawi. At these places, however, it was not rain but an occurrence of subsoil water near the surface that enabled people to live there in oases for some centuries after the cessation of rainfall, and the cause of the final abandonment of the area, perhaps c. 3000 B.C., was the fall in the subterranean water table.<sup>57</sup>

In general, then, the evidence afforded by the Classical writers, the Egyptian texts, and archaeological research indicates that there has been no basic change in the climate of Nubia after the Neolithic. The same conclusion was reached by the Committee appointed by the Sudan Government to consider the question of soil conservation:<sup>58</sup> "The history of the Northern Sudan as known from archaeological research covers a period of 5,000 years and there is nothing in the distribution or condition of buildings erected throughout this period or of graves to suggest that the climate was essentially different from that of to-day."<sup>59</sup>

be inferred from VI, xxxv, 196 that in Roman times the tropical rain forest extended as far north as Khartoum, as Layarden claims ('The Equatorial Forest of Africa: its past, present, and future', Supplement to Journ. Roy. Afr. Soc., 1937); followed by Booth ('Forests of the Upper Nile Province, 1862-1950,' SNR 33 (1), 113) Of the fauna mentioned, "elephants could have lived near the Nile"

1. Sudan Government, Soil Conservation Committee's Report, Khartoum 1944, 125 ff.
2. Arkell in op. cit., 154.
3. Op. cit., 153-54.
4. Op. cit. 126-27.
5. N.H. XII, viii, 19.
6. Cf. Strabo XVII, 1, 53: "As for those Ethiopians who extend towards the south and Meroë, they are not numerous either, nor do they collect in one mass, inasmuch as they inhabit a narrow, and winding stretch of river land;" id., XVII, 1, 3: these 'Ethiopians' "lead for the most part a nomadic and resourceless life on account of the barrenness of the country and of the unseasonableness of its climate."
7. N.H. VI, xxxv, 185: "Herbas circa Meroen demum viridiores, silvarumque aliquid apparuisse et rhinocerotum elephantorumque vestigia."
8. Cf. too Wainright, SNR 26 (1), 21. Certainly it cannot be inferred from VI, xxxv, 196 that in Roman times the tropical rain forest extended as far north as Khartoum, as Lavauden claims ('The Equatorial Forest of Africa: its past, present, and future'. Supplement to Journ. Roy. Afr. Soc., 1937); followed by Booth ('Forests of the Upper Nile Province, 1862-1950,' SNR 33 (1), 113.) Of the fauna mentioned, "elephants could have lived near the Nile if the

- country was fairly thinly populated, and a certain amount of grass or marsh remained by the river; while rhinoceroses can withstand very dry climates." (Jackson, 'Changes in the Climate and Vegetation of the Sudan,' SNR 38, 59; cf. p. 54. Cf. SNR 34 (2), 317)
9. XVII, 2, 2.
  10. Cf. Wainright, SNR.25 (1), 20 ff.
  11. Cf. Arkell, Hist. Sudan, 147.
  12. Wainright, loc. cit., 21 and n. 5, notes that "hard wood such as the sunt is considered necessary by various negro smelters of to-day for the production of good iron."
  13. XVII, 2, 3.
  14. loc. cit.
  15. See Hintze, 'Preliminary Report of the Butana Expedition 1958', Kush 7, 171-96.
  16. E.g. At 'Alem, ten miles north-east of the Meroë pyramids (Addison and Dunham, SNR 5 (1), 42 ff.); Crowfoot, The Island of Meroë [and Meroitic Inscriptions, I, ] London 1911, 14-15, 22-23, 28, 29; pls. 2, 2; 4; 13.
  17. Arkell in Tothill (ed.), Agriculture in the Sudan, 15.
  18. Idem, Hist. Sudan, 166.
  19. Op. cit., 166-68.
  20. Agric. in the Sudan, 15.
  21. An ardeb = 336 rotls. [1 rotl = approximately 1 lb.]
  22. Crowfoot, op. cit., 10, n.2.
  23. Op. cit., 40.
  24. SNR 38, 61.

25. Op. cit., 29.
26. Jackson, loc. cit.
27. On which see Hintze, Kush 7, 179-83 and pls. 46-49.
28. M.F.L. Macadam, The Temples of Kawa, I. The Inscriptions, Oxford 1949, 15. Inscr. IV, stela of year 6, ll. 10-11.
29. Macadam, op. cit., 25, 27. Inscr. V, stela of year 6, l. 9.
30. Cf. Macadam, op. cit., 18, n. 26; Jackson, SNR 38, 56.
31. G.W. Murray, 'Graves of Oxen in the Eastern Desert of Egypt', JEA 12, 248 - 49; id., 'The Egyptian Climate; An Historical Outline', Geogr. Journ. 117, 433. The one sherd found was of "brown incised ware resembling C-group pottery."
32. Id., Geogr. Journ. 117, 432.
33. D. Newbold, 'A Desert Odyssey of a Thousand Miles', SNR 7, 54, 59, 62; pls. 1-3.
34. A.J. Arkell, 'The Historical Background of Sudan Agriculture', in J.D. Tothill (ed.), Agriculture in the Sudan, Oxford 1952, 14.
35. Hist. Sudan, London 1955, 49.
36. Cf. Idem, Agric. in the Sudan, 14; Sudan Govt., Soil Conservation Committee's Report, Khartoum 1944, Appendix XXV (G. Andrew, 'Notes on Quaternary Climates in the Sudan'), 153.
37. Such may prove to be the case with some sites in the north western Sudan which have not yet been fully examined, for example Arkell's "Iron-age sites --- between J.

- Meidob and J. Teiga, now waterless and deserted" (Soil Cons. Comm. Rep., 154)
- 38) Soil Cons, Comm. Rep. Appendix XVII, G. Andrew, 'Memorandum on Desert Creep', 127.
- 39) Hist. Sudan, 49.
- 40) Op. cit., 66.
- 41) See Chapter IX of my History of Nubia from the decline of the Ramesside Empire to the fall of Meroë (in preparation) and the literature there cited.
- 42) Elliot Smith & Wood Jones, Archaeological Survey of Nubia 1907-1908, vol. II. Report on the Human Remains, (Cairo 1910), 190.
- 43) id. ibid.
- 44) Smith & Wood Jones, op. cit., 189-190. [italics mine].
- 45) id., op. cit., 192.
- 46) id., op. cit., 193.
- 47) Murray, Geogr. Journal 117, 432.
- 48) Reisner (Harvard African Studies V: Excavations at Kerma, parts I-III, Camb. Mass., 269-70) states that at Kerma "in recent times, there has been a slight rainfall every two or three years. In February, 1913, I witnessed a steady gentle shower which lasted intermittently all day long. Heavy rains, such as occur every few years at Napata and every year farther south, are almost unknown according to the people at Kerma, but may not be impossible once in a generation."

Apart from sacking and burning, the poor state of

- preservation of most of the Nubian sites is due entirely to centuries of erosion by wind-blown sand.
49. E.g. Reisner, *op. cit.*, 357 (K 1074, Body A), 451 & pl. 27, 3 (K 1806), 465 & pl. 30, 1 (KXX, Body B). Cf. pp. 363 (K 1085, Bodies B and C), 364 (K 1088).
- 49a. The finding at Kerma of figures of elephants (Reisner, Kerma IV-V, 267-68; pl. 55, 1.6) is not sufficient to prove that this pachyderm was to be found in or near the region at that time. Moreover even if it was, its presence would not necessarily indicate a higher rainfall. (Cf. note 8).
50. Fairman, JEA 24, 152, followed by Arkell, Hist. Sudan, 92-93.
51. Murray, Geogr. Journ. 117, 432.
52. Murray, *loc. cit.*, 429-31.
53. Throughout the whole distance from Deir Tasa to Khawaled Brunton found tree-roots, probably of *Acacia* or *Tamarix* spp., sometimes at a considerable distance edge of the cultivation, and often well below the present from the present/desert surface. "Their presence seems to indicate that at the date when they flourished . . . there was a better water supply, either from direct rainfall, or from sidestreams into the Nile, than there is now." Since O.K. graves had been dug through the roots, the trees were clearly growing before that period, and may well date from Badarian times. (Brunton, Mostagedda, 67-68).

54. P.A. Clayton, 'The South-Western Desert Survey Expedition, 1930-1931, Bull. Soc. Roy. de Géogr. d'Egypte, 19, 254-65. [Not seen].
55. Murray, Geogr. <sup>Journ.</sup> ■ 117, 432.
56. id. JEA 25, 38-39; pl. 9; Murray and Myers, JEA 19, 132; pl. 20, 1; Murray, Bull. de l'Inst. Fouad Ier. du Désert, I (1951) [I have not seen the last-named].
57. id., Geogr. <sup>Journ.</sup> ■ 117, 432, 434.
58. Soil Conservation Committee's Report, 6.
59. Cf. op. cit., 8: "There is .... very strong evidence <sup>the</sup> in/Sudan that the climate of to-day with its normal variation has undergone no basic change for better or worse since the close of the final major wet phase of Pleistocene times [the Makalian] in which a Neolithic civilization flourished, at least in the Central and Northern Sudan."; p. 145: "The balance of evidence is against any secular change in climate having taken place in the last 3,000 years."; p. 157: "The evidence of measurable changes within the period covered by archaeological research back into pre-dynastic times shows no indication of any major changes."



## VI.

Through Nubia has experienced no great climatic changes during the last fifty centuries, the area has suffered very considerably from the effects of soil erosion. Erosion may be defined as the result of the impact of climatic forces, such as rainfall and wind, on the land under varying conditions of slope and natural vegetational cover. It is one of the most fundamental of natural processes and the result of its action is seen in the configuration of the land. Under natural conditions the normal rate of erosion is balanced by the rate of soil formation, protection being afforded by the natural vegetational cover; erosion is retarded and topsoil develops faster than erosion can carry it away. When the balance is upset, however, by the removal of the vegetational cover, accelerated erosion, or, as it is usually termed, soil erosion, sets in, and unless checked by adequate treatment, becomes steadily worse and leads to the eventual ruin of the land.<sup>1</sup>

The extent to which erosion is liable to occur varies with the conditions, but at any point its incidence is determined by:-

- (a) The amount, distribution and intensity of the rainfall.
- (b) The force of the prevailing winds.
- (c) The configuration, and particularly the slope, of the land.
- (d) The erodibility of the soil.
- (e) The vegetative cover.

(f) The system of husbandry and soil management practised.

With regard to rainfall, it is not so much the amount of rain that falls during the year that is important, but rather how and when it comes. A single heavy fall in a few hours may occasion very severe soil losses and damage, while the same precipitation spread over an interval of several days or weeks can cause little harm. The rate of movement of water depends on the slope of the land, and other things being equal, the steeper the slope, the more rapidly does water run down it, and rapidly moving water has great erosive power.

Some soils erode easily while others, under the same or comparable rainfall with similar slope and vegetational cover, erode very little. The texture of the soil is an important factor. Coarse-textured soils permit rainfall to penetrate easily and thus reduce the amount of run-off and thereby resist erosion, but where such soils have impervious sub-soils and impeded drainage, serious erosion may nevertheless occur. The structure of a soil (by which is meant the state of aggregation of the ultimate soil particles into larger water-stable compound particles known as crumbs) also has an important influence on erodibility. Soils in which a crumb structure is well developed are more resistant to erosion and allow easy ingress of rainwater and deep root penetration. Crumb structure is intimately connected with the treatment the land receives; continuous cultivation tends to break down the soil aggregates, while resting land under a suitable fallow cover

tends to promote crumb structure. It is in connexion with the last of the factors listed above, viz. the system of husbandry practised, that the influence of man and his animals has made itself felt.

The archaeological and textual evidence alike attest the existence of large numbers of domestic animals in Nubia from a very early period.<sup>2</sup> Among the booty taken by Snefru after his raid into Nubia (Ta-Neḥes) were 200,000 cattle and sheep.<sup>3</sup> On his return through Lower Nubia after his third journey to Yam Harkhuf was presented with 'cattle and small cattle' (i.e. sheep and goats) by the chief of Irertjet, Setju, and Wawat.<sup>4</sup> Rather later in the Sixth Dynasty live iw̄- and wndw-cattle appear among the gifts of the chiefs of Wawat and Irertjet which Pepinakhte brought to the Residence.<sup>5</sup>

At some time between the end of the Sixth Dynasty and the beginning of the Eleventh the cattle-owning C-Group people arrived in Lower Nubia.<sup>6</sup> The origins of these people cannot be discussed here; recent opinion tends to derive them from the steppe country west of the Nile from whence they were forced to migrate by increasing desiccation,<sup>7</sup> possibly caused by overgrazing the pastures (cf. pp. 117, <sup>138 ff.</sup>). Steindorff<sup>8</sup> thinks of them as ursprünglich wohl nomadisierende Hirten, vergleichbar den Baqqâra, 'dem Rinderhirtenstamme', die die Grassteppen Kordofans heute bevölkern, oder den Ma'âza, 'dem Ziegenhirtenstamme' der östlichen Wüstenstriche." Reference has already been made (p. 117) to the discovery between Merga and Bir Natrun, along the Wadi Howar, and near Jebel Tageru, of incised sherds

resembling C-Group pottery, associated with stones used for grinding grain (?) or grass (?) seed. These finds suggest that the ancestors of the C-Group, if the owners of these remains were indeed such, were not entirely nomadic even before their migration to the Nile Valley.

Be that as it may, they certainly became comparatively sedentary after their arrival in Lower Nubia.<sup>9</sup> This is apparent from their pottery, their large and numerous cemeteries, and the development of the graves therein.<sup>10</sup> Settlements of a permanent or semi-permanent nature existed at a number of localities, notably at Aniba,<sup>11</sup> Wadi el-Arab,<sup>12</sup> near Amada,<sup>12</sup> and on the west bank of the Nile opposite Korosko,<sup>12</sup> and <sup>at</sup> Faras.<sup>13</sup> That at Wadi el-Arab consisted of "a small group of huts constructed of rough boulder stones --- set upright in the ground and bonded by means of a rubble and mud 'cement', the whole having a mud rendering."<sup>14</sup> The roofs were presumably of wattle and daub. Flat stone slabs formed the threshold of the door in each room. In one were two corn bins and a small magazine. The floors were covered with a deposit of charcoal in which were interspersed animal bones and other village rubbish, as well as pottery which included many fragments of bowls, jars, and rough cooking pots; sandstone grinders were also found. Though at Wadi el-Arab "the depth of the charcoal and rubbish deposit did not argue a very long occupation,"<sup>15</sup> at Aniba, where the settlement covered a much larger area, evidence was found of four

occupation levels, each averaging about 20 cms. in depth, separated by layers of sand varying in places from 30 to 60 cms. in depth.<sup>16</sup>

Despite their semi-settled existence, however, there is abundant evidence that the main interests of the C-Group people centred round their large herds and flocks. Next to the entrance in one of the rooms in the settlement at Wadi el-Arab, was a small stone tethering-post.<sup>17</sup> The large stone stelae placed at intervals in the cemeteries frequently bear incised or painted representations of cattle,<sup>18</sup> and incised drawings of cattle and their herdsmen are common on C-Group pottery.<sup>19</sup> Skulls and horns of cattle, goats, sheep, and gazelle were sometimes placed on or near the superstructures of the graves.<sup>20</sup> Among the objects commonly placed in the graves were clay figures of animals - cattle, sheep, and goats. These models, on which more care has been expended than on those of human beings, show a close observation of nature and attention to detail, particular care being applied to the shaping of the head and horns.<sup>21</sup> These figures were clearly intended as substitutes for the herds the deceased had possessed in his lifetime and were supposed to supply him with meat, milk, and clothing in the hereafter. In the later C-Group period it became a frequent practice to bury sacrificed animals, usually sheep but also goats, in the grave with the deceased.<sup>22</sup> Frequently bodies were wrapped in leather,<sup>23</sup>

and numerous examples have been found of leather kilts embroidered with beadwork,<sup>23</sup> and, less commonly, sandals<sup>23</sup> and leather caps.<sup>23</sup> Leather pillows stuffed with 'tibn' were placed under the head.<sup>23</sup> Even when occupied with other tasks, the thoughts of the C-Group man turned to his herds. On the walls of the shafts, and occasionally also the burial chambers, of tombs in the Egyptian New Kingdom Cemetery S at Aniba are a number of incised or painted 'doodlings' executed by the native Nubians employed on their construction.<sup>24</sup> The frequency with which cattle and herdsmen appear in these drawings is surely an indication of what occupied a prominent place in the minds of the 'artists'. In the Annals of Tuthmosis III cattle figure regularly among the impost of Wawat.<sup>25</sup>

So far we have discussed only evidence from the better documented area of Lower Nubia, but there is abundant evidence for the existence of large flocks and herds in the region further south. On his boundary stela at Semna, dated to his eighth year, Sesostris III places a ban on the entry into Nubia north of this point of "any cattle, goats or sheep belonging to the <sup>Nehesyu</sup> [redacted]".<sup>26</sup>

In the tumuli at Kerma, in addition to the human sacrifices "there were in almost all graves from one to a dozen rams --- buried entire."<sup>27</sup> On the surface along the southern edge of the large tumulus K.III was a crescent of over a hundred ox-skulls, in which Reisner would see the remains of the funerary feast.<sup>28</sup> Commonly found in graves, and nearly always

In the New Kingdom cattle appear regularly among the imports from Kush. In the Papyrus Koller, for example, a Nubian chieftain is warned to make certain that the tribute horns of the sacrificial rams to prevent goring. In several cases they were actually found in position on the rams' horns.<sup>29</sup> Ox-hide or sheep-skin covers, cut to fit the inside of the bed-frame and with a tag at the head-end for lifting, were common in the 'Nubian Cemetery', and in the 'Egyptian Cemetery hides were also found on the beds under the bodies.<sup>30</sup> The hides of sheep, goats, and oxen were also tanned into leather or cured with the hair on. Leather and rawhide were put to a great variety of uses - for making bags, skirts, scabbards, sandals, plaited thongs and girdles, caps, pot-nets, for stringing beds and stools, etc.<sup>31</sup> The most common garments found were leather skirts. Though it was not possible to determine from which animal the skin was taken of which they were made, goat, sheep, and gazelle would all have yielded skins suitable to the production of this leather.<sup>32</sup> Most of the sandals, of which probably every grave contained originally one or more pairs, were cut from a single piece of thick cowhide. Narrow strips of ox-hide without the hair were used for the diagonal bed-stringing; the stool-stringing was usually of strips of goat-hide with the hair still on.<sup>34</sup>

Bone was a very common material at Kerma, being used for awls, threaders, spatulae, hairpins, bracelets, inlays, etc. The bone most commonly used was from the leg of a sheep or goat.<sup>35</sup>

In the New Kingdom cattle appear regularly among the imports from Kush.<sup>36</sup> In the Papyrus Koller, for example, a Nubian chieftain is warned to make certain that the tribute is made ready "in all its details, namely, oxen, younglings of long-horned cattle, short-horned cattle, gazelles, etc. ----; their barges, their cattle-ferries --- being ready to land ----!"<sup>37</sup>

Among pastoral peoples the survival-value of their animals is of great importance, for without them life is very difficult, and since the cattle-owner cannot know in advance which of his beasts are the hardy, the best looking often having the lowest survival-value,<sup>38</sup> the only way to guard against disaster is to breed as many as possible and let the ruthless process of the survival of the fittest do the weeding out. Moreover, among people to whom animals mean so much, as they obviously did to the C-Group, there is a strong tendency to associate them with all social and domestic activities, so much so that the attachment of the cattle-owning tribesman to his beasts becomes almost a religious bond.<sup>39</sup> Under such circumstances there is, and <sup>doubtless</sup> was, great reluctance to limit the size of the herds. In Pharaonic Nubia certain factors, it is true, existed which undoubtedly did serve as a check on numbers. Apart from the incidence of cattle disease, about which nothing is known, large numbers of animals were probably slaughtered to provide meat for the Egyptian troops stationed in Nubia or in transit. Others were doubtless taken by the temple estates, and in the New Kingdom live cattle were regularly exported to Egypt. Nevertheless, the animal population,



particularly sheep and goats, must have been very considerable, and Nubia was almost certainly overstocked.

The result of over-stocking is over-concentration of livestock on the available pastures which in consequence become over-grazed. In areas with low rainfall or a long dry season, concentration of livestock around the available sources of water is more intense with consequent gross over-trampling of land in their vicinity. Trampling produces such compaction of the soil that its physical structure is badly affected. Persistent grazing and treading prevents the ~~new~~ regeneration of trees and shrubs and inhibits the formation of a cover of annual weeds which would 'anchor' the soil and which, by the growth and death of their roots, would make the surface layers more permeable. So hard do these layers become that what rain does fall cannot penetrate to any depth. This lack of percolation into the soil is the reason why, even in areas which receive a fairly well-distributed rainfall of reasonable quantity, the vegetation may be dominated by xerophytic spp. Under such circumstances rainfall is of little significance in relation to plant life when most of the water runs off the surface. With the destruction of the vegetational cover, the soil surface is exposed **to** swift deterioration and erosion by wind and rain.

Large tracts of desert scrub, forest trees and grass have been, and still are, destroyed to clear areas for cultivation and grazing (as well as by hunters and honey-

gatherers, who use the smoke from fires to overcome wild bees). Where the clearings are cultivated, native agricultural practice leads to an undue exposure of the soil surface and to swift deterioration of the soil. Where the clearings are destined for grazing, they are invaded by grassland, the rejuvenation of which is guaranteed by periodical burning. In the majority of cases these grass fires get out of control and cause serious damage to the adjacent vegetation. Human habitation and annual grass fires are the elements largely responsible for the open grass plains and scattered 'heglig', Balanites aegyptiaca, which are the outstanding feature at present in the Upper Nile province.<sup>40</sup> Much of the present savannah woodland of the plains around the Imatong Mountains was originally produced through the destruction of the forest for cultivation.<sup>41</sup> Once an area of grassland has been established, fires arising in it will tend to invade the edge of the forest and may penetrate it a few metres each year, so that in the course of decades or centuries considerable areas of forest will be destroyed. Apart from direct effect on vegetation, fire exercises an indirect harmful action on plant life as it leads to a gradual degradation of the soil by inhibiting the production of organic matter, and accelerates erosion, which is inseparable from the problem of natural regeneration.<sup>42</sup>

In addition to cattle, sheep and goats<sup>43</sup> are responsible for much destruction of vegetation. The former can live on poorer country than cattle, while the goat can exist on anything

that is not absolute desert. It suffers from few epidemic diseases and short of forced slaughter there seems no means of limiting its numbers. Flower, cited by Robinson,<sup>44</sup> states that "the camel and goat do not graze but tear out the vegetation by the roots and thus loosen the fertile soil which is blown away from the land. Both animals are particularly destructive to all kinds of trees or shrubs." The camel, of course, was not known in Nubia before Roman times,<sup>45</sup> but the goat has always been there. The occurrence of certain species of trees only within mountainous enclaves, where domestic animals are concentrated for a certain period every year in the plains surrounding those mountains, is in many cases due mainly to browsing animals, particularly among spineless species. At Jebel Elba, for example, Moringa aptera is mainly confined to the most difficult places, which are out of reach of camels and goats.<sup>46</sup> Donkeys too do a certain amount of damage to trees. They often peel off the bark of young 'sayal' trees for food, or rather for the astringent material it contains, for over two metres, and sometimes the peeled strips together with the browsed end remain hanging on the stems.<sup>46</sup>

Considerable destruction of vegetation is due to wild animals. In the Imatong Mountains in the southern Sudan, for example, elephants do a surprising amount of damage by uprooting trees up to 12 m. high and 30 cms. in diameter, stripping

the bark from standing trees, and smashing down the undergrowth over wide areas. This damage in immature forest greatly increases the danger from fires, especially when the zone of more or less fire-resistant shrubs separating forest from grassland is destroyed; the grassland will sooner or later be burnt, and the elephant-damage results in fire entering the forest and thus extending the area of grassland. 47 Considerable damage is also caused by bush-buck and duikers which browse young Podocarpus milanjanus trees, and by rats of various species and porcupines which eat the bark of somewhat larger trees. 48

The removal of vegetation and onset of erosion has been accelerated by indiscriminate felling of trees and shrubs for purposes other than clearing areas for cultivation and grazing - building huts and fences, manufacture of implements, charcoal, domestic fuel, and so on. Destruction of trees for charcoal and firewood has taken place in almost every part of the Eastern Desert in Egypt and the Sudan. Reference has already been made (p.113) to the large quantities of charcoal required for the iron-smelting industry at Meroë. According to Drar, 49 the species mostly cut down for charcoal in the Eastern Desert at present

is the 'sayal', Acacia tortilis. The Bedouin cut off the branches of young trees to make ropes from the bark fibre and such trees never recover. They also obtain all the material required for leather tanning from the bark of adult trees. Bushes of 'salam', Acacia ehrenbergiana, have been largely destroyed for making sticks carried by the Arabs in the desert. The extermination of the golden-leaved olive Olea chrysophylla from the Erkoweit plateau, however, is due, according to Drar, <sup>50</sup> to its use as firewood rather than for walking-sticks as stated by Kennedy-Cooke. <sup>51</sup> It burns extremely well, probably owing to its oleo-resinous substance.

Grant <sup>52</sup> says of Dalbergia melanoxylon (in Uganda, 1862) that it is "considered the very best firewood". Baker <sup>53</sup> mentions a fire "of dry babanoose wood ---". This species of wood is exceedingly inflammable, and burns like a torch; it is intensely hard, and in colour and grain it is similar to lignum vitae".

Despite the impact of erosion on the vegetation of what is now the Sudan, Dispyros mespiliformis and Dalbergia melanoxylon do grow even in badly eroded areas. For example, much of the north-east side of the Imatong Mountains consists of bare

gneiss rock. Where a little soil has collected between boulders, D. mespiliformis is found. The eastern foothills of the mountains have in general been so overgrazed that the grasses in the vegetation have been eliminated and replaced by weak shrubs, and at the same time the surface soil has been so eroded that it is confined to pockets and crevices in a rubble of boulders; but among the larger trees frequently found on such sites is D. mespiliformis.<sup>54</sup> Smith notes that this species resists fire more successfully than many others by extreme formation of corky bark.<sup>55</sup> The sharp spines of Dalbergia melanoxylon presumably afford some measure of protection against browsing animals. Prolonged and indiscriminate felling, however, is a different matter.

Referring to the ebonies of Ceylon, Wright<sup>56</sup> says: "The occurrence of ebony (black wood) within the plant cannot be stated in terms of the age of the tree. . . . The black heartwood occurs usually in the stem (trunk), but is often present in young twigs and roots. . . . The occurrence of the central black wood is often erratic, though most usually it

decreases in volume from below upwards . . . . In some instances . . . the black heart-wood repeatedly dies away and reappears at different points along a given length (of trunk or branch)." Dalziel <sup>57</sup> says of Diospyros mespiliformis Hochst: "It seems clear that the freshly-cut stem of a tree in sound condition shows no black wood. The wood is, in fact, white or light reddish, or often greyish or greenish-white, and, although darkening to dark brown, it may never, even in a thick stem, develop a black centre." Metzger, <sup>58</sup> speaking of the same species in Togoland, says that the dark colour of the wood appears to depend less on age than on locality, large trees from fringing forest having almost no ebony-like heart, while smaller ones from open savannah almost all show a black heartwood 4-8 inches in diameter. The consequence of these facts is that the search for profitable ebony in ebony-trees is by no means a simple one.

In Ceylon "the ebony is obtained by felling the tree and stripping off the peripheral sap-wood. It is usual to fell all those trees which have attained, or exceeded, a breast-height circumference of 2 m. (6½ ft.), providing the preliminary examination

indicates the existence of a good proportion of solid black heart-wood. The preliminary examination usually consists of making an incision and determining the extent to which the discoloration (blackening of the wood) has proceeded . . . ." 59

In a number of areas, however, <sup>either</sup> no control at all has been exercised or practices such as that described have been introduced too late to save certain spp. from total extinction or drastic reduction in numbers. 60 For example, referring to the so-called Andaman marble-or zebra-wood, from Diospyros oocarpa Thw., Howard 61 says: "Before the 1939 war the supply of even reasonably sound trees seemed practically exhausted, and those logs which were shipped were inferior in size and condition." Unwin 62 says of Diospyros Dendo Welw. (?) 63: "The timber has been exported for many years from Calabar, but of late in decreasing quantities, owing to the exhaustion of the nearer sources of supply." 64 Perrot, 65 referring to the Madagascar ebony Diospyros Perrieri Jum., three to four thousand tons of which were exported annually before 1914, says that it is "aujourd'hui à peu près disparu par suite d'exploitation irraisonnée"; another species, D. microrhombus Hiern., has likewise almost completely disappeared. Finally, Chevalier 66



concludes his review of ebony with the warning: "Ce que vous avons cherché à mettre en lumière aussi, c'est la raréfaction de plus en plus grande des bonnes espèces productrices. Toutes se sont raréfiées; il en est qui vont disparaître si l'on ne met un frein à l'appétit des exploitants. ----- Le coupable de cet appauvrissement de la forêt tropicale est avant tout l'homme blanc, le mercanti -----. Recherchant avec cupidité tout ce qui a une valeur marchande, sans se préoccuper le moins du monde du lendemain, il poussa les indigènes primitifs, à abattre tous les arbres à bois précieux".

In ancient Egypt hbny was eagerly sought after, and during the New Kingdom in particular, it formed, as we have seen, a regular feature of the impost of Nubia. The continual demand for the wood must have resulted in the ruthless felling of those trees which produced it. Since there is no reason to suppose that any preliminary examination was undertaken by the natives of the areas where they grew prior to felling, in order to determine their suitability, and since too both Dalbergia melanoxylon and Diospyros mespiliformis (as well as other African ebonies) are slow-growing (pp. 80, 81), supplies of these particular species would eventually have been exhausted <sup>67</sup> in some areas. In view of these considerations, it seems likely that the two Sudan ebony trees may at one time have occurred further north. But how far north?

1. H. A. Tempany, The Practice of Soil Conservation in the British Colonial Empire, 2ff.
2. Cf., for example, Reisner, Archaeological Survey of Nubia. Report for 1907-1908, passim.
3. H. Schäfer, Ein Bruchstück Altägyptischer Annalen, Berlin 1902, 30; Breasted, Ancient Records I, 146. The figure may perhaps have been exaggerated, but was nevertheless, in fact, probably large.
4. Urk. I, 127.
5. Urk. I, 134.
6. Säve-Söderbergh, Ag. u. Nub., 39
7. Arkell in Soil Conservation Committee's Report, 153; Id. in Tothill, Agriculture in the Sudan, 14; Id., Hist. Sudan, 49.
8. Aniba I, Gluckstadt and Hamburg 1935, 5. cf. Griffith, LAAA 8, 67.
9. Junker, Ermenne, 11; Steindorff, Aniba I. 5.
10. Cf. Säve-Söderbergh, op. cit., 41.
11. Steindorff, Aniba I, 202-219; pls. 88-96.
12. Emery and Kirwan, Excav. and Survey between Wadi es-Sebua and Adindan, 106-108; pls. 21-23. cf. pp. 209, 212.
13. Arkell, JEA 36, 24.

14. Emery and Kirwan, op. cit., 106.
15. Id. op. cit., 107.
16. Steindorff, Aniba I, 202 ff.
17. Emery and Kirwan, op. cit., 107; pl. 21.
18. Id. op. cit., pl. 20; Firth, Arch. Surv. Nub. 1909-1910,  
pl. 35 a, b.
19. Aniba I 95; pls. 54, 8; 56; 57, 65 (pot marks);  
Emery-Kirwan, op. cit., pl. 24.
20. Steindorff, Aniba I, 193 and n. 2 (with further references);  
pls. 80, 82.
21. Aniba I, 119, 122-24; pl. 73; Firth, Arch. Surv. Nub.  
1909-1910, pl. 37 d.
22. Aniba I, 30-31 and n. 3, 162; pl. 20 c, d [sheep only];  
Emery and Kirwan, op. cit., 9.
23. Emery and Kirwan op. cit., 9.
24. Aniba II, 55-56; pl. 31.
25. Urk. IV, 696, 703, 716, 721, 725, 728.
26. de Buck, Egyptian Readingbook I, 78.
27. Reisner, Excavations at Kerma I-III, 71.
28. Op. cit., 71, 78; pl. 29, 3 (K.XX).
29. Kerma IV-V, 253-54, pl. 52, 3; Kerma I-III, pl. 26, 4.
30. Op. cit., 219; Kerma I-III, pls. 10, 1, 3; 22, 1; 23, 1, 2.
31. Op. cit., 18-19, 303-11.
32. Op. cit., 100-102, 304.
33. Op. cit., 306.
34. Op. cit., 304.

35. Op. cit., 248, 249 ff.
36. References in Säve-Söderbergh, op. cit., 223-24.
37. P. Koller, 3, 5-7 (Camino, L.-Eg. Misc., 438; Gardiner, L.-Eg. Miscellanies [= Bibl. Aegypt. VII, Brussels 1937], 119). However, by this time (Dyn. XIX) 'Kush' was often applied to the whole Nile valley from Aswan to Abu Hamed (cf. Vercoutter, Kush 7, 128, 132).
38. C.P. Fisher, 'Note on the Livestock of the Sudan', Appendix XV, Soil Conservation Committee's Report, 118.
39. Cf. E. Evans-Pritchard, 'Economic Life of the Nuer: Cattle', SNR 20(2). 209-245. G.D. Lampen writes with reference to the Baggara: "It is impossible to have any understanding of these tribes without taking into account their dependence on and love of their herds. The better and wealthier the cattle-owner the less he cultivates.---- I have asked how many cows will keep a man and his wife, and usually am told that no number seems enough when you have acquired them ---. The Baggari puts all his savings into cattle (except his wife's ornaments) and acquires cattle as an end in themselves, as a miser collects gold." ('The Baggara Tribes of Darfur', SNR 16(2), 99, 101.)
40. Genus Diospyros in Ceylon: its Morphology, Anatomy, and Taxonomy', Annals of the Royal Botanic Gardens, Peradeniya, 11 (1904), 23-25, quoted in Howard, op. cit., 183.
41. The Useful Plants of West Tropical Africa, 1907.
42. Cited by Dalziel, op. cit., 348.

40. M. Drar, 'Egypt, Eritrea, Libya and the Sudan', Arid Zone Research - VI. Plant Ecology, 169. (cf. Pichi-Sermolli, 'Tropical East Africa', op. cit., Photo VIII - scattered tree grassland with Balanites aegyptiaca [western Ethiopian lowland]).
41. Jackson, Journal of Ecology 44.
42. Pichi-Sermolli, Arid Zone Research VI, 350.
43. See Bennett, John and Hewison in Tothill, Agric. in Sudan, 636-41 (sheep), 642-44 (goats).
44. A. E. Robinson, 'Desiccation or Destruction. Notes on the increase of Desert Areas in the Nile Valley', SNR 18 (1), 123.
45. See Lucas in Tothill, Agric. in Sudan, 24-25; and Arkell, op. cit., 16.
46. Drar, Arid Zone Research VI, 167, 169.
47. J. K. Jackson, 'The Vegetation of the Imatong Mountains, Sudan', Journal of Ecology 44, 346.
48. Id., loc. cit., 346.
49. Loc. cit., 167
50. Loc. cit., 168-9
51. Soil Cons. Comm. Report, 55.
52. J. A. Grant in D. Oliver and J. G. Baker, 'The Botany of the Speke and Grant Expedition', Transactions of the Linnean Society of London 29 (1875), 62 (No. 64).
53. S. W. Baker, The Nile Tributaries of Abyssinia, London 1883, 135 (near Sofi, on the Atbara).
54. Jackson, Journal of Ecology 44, 348, 358-59.
55. Smith., op. cit., 34.
56. 'The Genus Diospyros in Ceylon: its Morphology, Anatomy, and Taxonomy', Annals of the Royal Botanic Gardens, Peradeniya, ii (1904), 22-25, quoted in Howard, op., cit., 183.
57. The Useful Plants of West Tropical Africa, 348.
58. Cited by Dalziel, op. cit., 348.

59. Wright, loc. cit., quoted by Howard, op. cit., 183.
60. Cf. Gamble, Manual of Indian Timbers, 457, who speaking of the sales of Diospyros ebenum from Ceylon, says that before Conservancy started as much as 2600 tons a year (1881) were disposed of, "a rate which would soon have exhausted the resources of the forests."
61. Op. cit., 355.
62. Op. cit., 387.
63. Probably really D. atropurpurea Gürke (Dalziel, op. cit., 346).
64. Cf. Howard, op. cit., 184-85, who says that the import from Old Calabar has now ceased entirely.
65. Matières premières usuelles du Règne Végétal, II, 1729.
66. Rev. Bot. app. 14 (Juillet 1934), 964.
67. Cf. Chevalier, Les Végétaux Utiles de L'Afrique Tropicale Française. La Forêt et les Bois du Gabon, Paris 1916, 32: "Les Ébéniers sont assez clairsemés dans la forêt et comme ils croissent lentement, les districts exploités par les indigènes se sont fort appauvris."

## VII

According to Pliny, 'Ethiopia' had "flourishing forests, mostly of 'ebony'-trees".<sup>1</sup> Lucan refers to "Meroë --- rich in the foliage of the ebony-tree",<sup>2</sup> and to the lavish use of "ebony of Meroë"<sup>3</sup> in the palace of Cleopatra at Alexandria. Strabo<sup>4</sup> reports that among the plants found in abundance in the Island of Meroë were the palm, 'persea', 'keratia', and 'ebony'. Diodorus,<sup>5</sup> too, (1st century B.C.) says that in the Island there was "much 'ebony'". Herodotus, in the fifth century, says that in 'Ethiopia' there was "abundance of elephants, and all woodland trees, and 'ebony'."<sup>6</sup> Elsewhere<sup>7</sup> he reports that the 'Ethiopians' nearest to Egypt, "whom Cambyses subdued in his march towards the long-lived Ethiopians", and also those who lived about the holy Nysa, brought as gifts to the Persians every other year, among other things, 200 blocks of 'ebony'.<sup>8</sup>

On the occurrence of 'ebony' in the coastal region of the Red Sea the Classical writers are silent. The Periplus, for example, does not mention 'ebony' at any African port, and according to Warmington "it is by no means certain" that the wood is included in the Digest List (A.D. 176-180) of goods from Arabia,

East Africa, and India subject to the 'vectigal Maris Rubri' on entry into Egypt.<sup>9</sup> The explanation may be that 'ebony' from this area did not enter Egypt by the Red Sea, but travelled thither overland and down the Nile, though in the Graeco-Roman period the Nile route was little used on account of the hardships involved, and it was partly to obviate these difficulties that the Ptolemies developed the Red Sea route.<sup>10</sup>

However that may be, the most that can be inferred from the foregoing is that in Graeco-Roman times one or more species of trees producing a wood termed 'ebony' grew in 'Ethiopia' (i.e. the Sudan), probably as far north as the region of Meroë itself. As we have already seen, however, it is not possible, despite assertions to the contrary, to identify the sp. or spp. that yielded this wood.

The uninformative statements of the Egyptian texts concerning hbny from the province of Kush proper, i.e. northwards as far as the Second Cataract, have already been discussed. The material evidence is even more unsatisfactory. Comparatively few sites in Kush have been excavated, and even fewer properly published; and nearly all were denuded and badly plundered. Moreover, of the specimens of



wood found very few, if any, have been botanically examined.<sup>11</sup> Many, indeed, particularly fragments, seem to have been left on the site.<sup>12</sup> A very small number of examples are stated to be 'ebony',<sup>13</sup> but as these 'identifications' were made by eye only, little reliance can be placed on them. In any case they tell us nothing of the species. Moreover, the discovery of the odd specimen or two of Dalbergia melanoxylon or Diospyros mespiliformis would not by itself amount to proof that these species grew in the neighbourhood of the site where they were found. Timber suitable for a variety of purposes was, it is true, plentiful in Kush; on the Jebel Barkal stela of Tuthmosis III<sup>14</sup> mention is made of the hewing of dōm-palms (m<sup>3</sup>m<sup>3</sup>-trees) for shipbuilding, and considerable quantities of wooden objects were found at Kerma.<sup>15</sup> Such trees, however, seem to have consisted very largely of species of palm and acacia which are still plentiful in Dongola and Berber Provinces,<sup>16</sup> and which in Pharaonic times were also to be found further north in Wawat and Egypt itself.<sup>17</sup>

The stretch of the Nile Valley north of the Second Cataract as far as Aswan, which formed part of the province of Wawat, is archaeologically one of the best known areas in Africa, having been systematically examined by two Egyptian Government

| SITE           | GRAVE No. | DATE                 | OBJECT(S)   | REMARKS  | REFERENCE.  |
|----------------|-----------|----------------------|---|--|---|
| Cemetery 69    | 200       | N.K.                 | kohl-stick  | Egyptian grave, unusually large.   | Firth, <u>Arch. Surv. Nub.</u> 1908-09, 76.   |
| " 90           | 1         | N.K.                 | kohl-vessel   | large, deep, rectangular grave of a woman. Apparently intact.  | Firth, op. cit., 197.   |
| " 102          | 102       | A-Grp.               | pendants.   | Intact grave of female.  | Firth, <u>Arch. Surv. Nub.</u> 1909-10, 61.   |
| " 96.          | 3         | N.K.                 | kohl-stick and double kohl-tube.                        | A large, deep-chambered communal or family grave, containing at least 30 bodies scattered in no apparent order on the floor of the chambers. The 'ebony' objects came from the debris.                                       | Firth, op. cit., 148.   |
| " 96.          | 106       | N.K.                 | "folding stool of ebony with bronze hinges and rivets." | A rather rich grave, despite the disturbance that had occurred.  | Firth, op. cit., 151.   |
| " 110.         | 253       | late C-Grp.          | "decayed jar with side handles."                        |  | Firth, <u>Arch. Surv. Nub.</u> 1910-11, 52.   |
| Aniba, Cem. S. | S. 10.    | 1st half of Dyn. 18. | kohl-tube in shape of palm-column. H. 19.0 cms.         |  | Steindorff, <u>Aniba II</u> , 117; pl. 60, 6.   |
| " " "          | S. 45.    | Early Dyn. 18.       | Ointment-spoon. L. 9.5 cms.                             |  | id., op. cit., 119, 176 [here described merely as "Hölzerner Salblöffel"] Pls. 63, 14; 65, 18a. |
| " " "          | SA. 21.   | Dyn. 18.             | Fragment of inlay. L. 12.6 cms.                         |  | id., op. cit., 124, 225 [here described merely as "fragment of wood, inscribed"]; pl. 65, 14.   |
| " " "          | SA. 31.   | Dyn. 18-19.          | kohl-stick. L. 7.1 cms.                                 | "wohl Ebenholz" (p. 118).<br><br>(Cf. p. 118: "Die Menge der gefundenen Griffel oder Stäbchen, --- ist entsprechend der Zahl der Schminkgefäße ziemlich gross. --- Als Material kommt --- Holz (Ebenholz) --- in Betracht".) | id. op. cit., 118, 233.   |

It is not everywhere clearly indicated in the report whether an object is merely of any wood or 'ebony'. Cf., e.g., grave S32 [Hyksos period or early Dyn. 18]: "einige schmale, etwa 0,1 cm. starke Brettchen von dunklem Holz---, die offenbar als Furniere ---- gedient haben." Op. cit., 124, 170.)

Fig. I.

Occurrences of 'ebony' in Lower Nubia.

surveys<sup>18</sup> as well as by other expeditions working on single sites or groups of sites. In the course of this work, some thousands of graves, ranging in date from the Early Predynastic to the Christian periods, were uncovered, including a reasonable number of intact burials. Despite the ravages of white ants, a very large number of wooden objects and fragments were found.<sup>19</sup> Yet here again we are faced with the same difficulty as in the southern province, namely the complete lack of botanical examination of these specimens. Here too the examples reported, rightly or wrongly, to be 'ebony' are very few.<sup>20</sup>

The archaeological evidence is thus very incomplete and unsatisfactory and by itself affords no basis for conclusions regarding the occurrence or otherwise of Dalbergia melanoxylon and Diospyros mespiliformis in Kush and Wawat. However, from the circumstance that both species do occur on very dry, rocky and eroded sites in Uganda and the Sudan, and the fact that Dalbergia melanoxylon is still found on the other side of Africa as far north as the Adrar in Mauretania i.e. roughly in the same latitude as Dongola, I am inclined provisionally to place the northern limit of these species west of the Nile at least as far north as

latitude 20° N. in the New Kingdom, and possibly still further north in the Middle and Old Kingdoms. The determination of their northern limit east towards the Red Sea is problematical, but they probably occurred further north than near the Valley, as they do at present, perhaps rather north of the latitude of Port Sudan, with possibly a pocket at Jebel Elba.

The northern limit of hbny-producing trees generally, however, is even more difficult, if not impossible, to estimate, for as we have seen, the name was not confined only to species at present regarded as ebony-producers, but included a number of others. Which those were is impossible to say, for even if the specific or generic identity of large numbers of ancient wood specimens from Nubia had been determined, it would be very difficult to show with certainty that a particular species was included among the woods which the Egyptians called 'hbny' - unless an example thereof was found actually so labelled or inscribed.

Schweinfurth 21 says of Acacia laeta R. Br. ex Benth., for example, "Diese Acacie stellt ein stamm-bildendes schlankes Bäumchen dar von 10-15' Höhe. Das Holz ist gleich hart und schwer, auch ähnlich gefärbt wie das afrikanische Ebenholz der Dalbergia,

mit weisslichem Splint und schwarzem Kern. --- In besonderer Verbreitung findet sich diese Art in den Bergen an den Küsten Nubiens, Abyssiniens und des glücklichen Arabiens; auch fand sich dieselbe im Sennaar und im Inneren Abyssiniens am mittleren Tacasse. Kotschy sammelte sie ferner bei Syene an den ersten Nil-Katarrhakten, wo sie im Januar 1837 in Blüthe und Frucht angetroffen wurde ----- gleichfalls in Oberaegypten sammelten sie Unger 1858 ----- und Ehrenburg. Auch fand sie Kotschy häufig im Nubalande zwischen Scheibun und Tira, südlich von Kordofan am 10 Mai 1837 in blühenden Exemplaren". [Italics mine].

Jackson <sup>22</sup> suggests that the 'ebony' which Bruce saw at Wad el Tumbel, a little north of Sennar, may possibly have been Acacia mellifera Benth. ('Kitr') which he says has "a black heartwood and leaves somewhat like ebony" [Dalbergia melanoxylon]. <sup>23</sup> It is found in the northern and central Sudan. <sup>24</sup>

Reference has already been made to the fact that, with one, possibly two, exceptions, hbny is not recorded among the tribute of Wawat in the Annals of Tuthmosis III, whence it might be inferred that hbny-producing plants, of any species, did not occur as far north as Lower Nubia in the New Kingdom. Such a conclusion would further imply that the woods of the above-mentioned Acacia spp., which must have occurred

in this province at that time, were not regarded as hbny. However, the evidence regarding hbny from Wawat is too scanty to form the basis for any definite conclusion.

Whether hbny was in use in the Proto- and Predynastic periods is uncertain, for the name is not attested for certain before the Third Dynasty (pp. 27,48). However, from the robbed and burnt royal tombs, or cenotaphs, of the first two dynasties at Abydos a fair quantity was recovered of small objects and fragments which are described as 'ebony'.<sup>25</sup> Those I have seen are made of a hard, dark-brown or blackish wood, which probably is one or more of the species later called hbny. None, to my knowledge, have been examined.<sup>26</sup> Little is known of Thinite activity in the south and south-east, but the First Dynasty Pharaohs certainly penetrated as far upstream as the vicinity of the Second Cataract, for a rock-inscription of Djer at Jebel Sheikh Suleiman, on the west bank about half a mile west of Kor, records a campaign against, or conquest of, Nubia,<sup>27</sup> and trade doubtless followed the flag or may even have preceded it.

In contrast, the thousands of Predynastic graves dug in Egypt (as well as the very few found outside

the Nile Valley 28), including many intact burials, some with rich grave equipment, have produced only one instance of 'ebony', and that of doubtful date. 29 This situation cannot be due entirely to chance, the impact of natural conditions, white ants, or plundering. The explanation may be that the qualities of the wood(s) later known as hbny were not yet appreciated, or, if they were, the plants producing it grew so far away from Egypt that only the odd piece found its way thither, passing from tribe to tribe, and it was not until the advent of the powerful, well-organized Thinite state that the wood began to arrive in any quantity. 30 However, this need not necessarily imply that the northern limit of hbny-producing plants lay all that far south of Egypt, for unlike the First Dynasty, the Egyptian Predynastic cultures have not so far been recorded further upstream than Dakka. 31

If now we sum up the evidence as far back as the Predynastic period, we find that while climatically Nubia has undergone no basic change, it has suffered very considerably from soil erosion caused by over-concentration of livestock. This has severely affected the vegetation of the area, and though Dalbergia melanoxylon and Diospyros mespiliformis do grow on badly eroded sites, we are probably justified in

inferring that earlier they occurred further north than they do at present. This conclusion is strengthened by the circumstances that they are found on very dry, rocky sites and that D. melanoxyton still occurs in Mauretania in approximately the same latitude as Dongola. An accurate determination of their northern limit, however, is not possible on the basis of the material at present available, but provisionally it may be placed roughly in the latitude of Dongola, i.e. within the province of Kush, in the New Kingdom and possibly further north earlier. The identity and distribution of other possible hbny-producing spp. cannot be determined, but some of them may well have occurred at one time near the First Cataract.

9. E. H. Warmington, The Commerce between the Roman Empire and India, Cambridge 1928, 213. Cf. p. 307.



NOTES

1. N.H. VI, xxxv, 196.
2. Civil War X, 303-304. Hosius, C. (ed.),  
 ■ M. Annaei Lvcani. de Bello Civili, Libri decem,  
 Lipsiae 1892.
3. X, 117-119. The MSS read 'Mareotica', but the editorial emendation is undoubtedly correct. There is no evidence that 'ebony' was ever obtained from, or via, Mareotis.
4. XVII, 2, 2.
5. I, 33.
6. III, II4.
7. III, 97.
8. The location of the 'holy Nysa' is of no relevance here, since 'ebony' is not said to have grown there, and the inhabitants of the area may therefore have obtained it from elsewhere. According to Callixenus (apud Athenaeus, 'Deipnosophistae,' V, 201 a), 2000 logs of 'ebony' were carried by 'Ethiopian' bearers in the triumph of Ptolemy II (not Ptolemy V, as stated by Loret, RT 6, 128. Cf. Rostovtzeff, Social and Economic History of the Hellenistic World, I, 407).
9. E. H. Warmington, The Commerce between the Roman Empire and India, Cambridge 1928, 213. Cf. p. 307:

"--- the [Digest-] list as we have it was drawn up in the time of Marcus Aurelius, --- but I believe it goes back farther than the Antonines, the 'first edition', so to speak, was, I think, issued by Nero".

10. Cl. Préaux, Sur les communications de l'Éthiopie avec l'Égypte hellénistique', Chron. d'Ég. 53 (Jan. 1952), 257-81.
11. Such is the case, for example, with the numerous wooden objects (kohl-pots, kohl-sticks, fragments of boxes, armlets, etc.) found in the Middle and New Kingdom cemeteries at Buhen (Randall-Maciver and Woolley, Buhen, Philadelphia 1911, 231-32). The same is true of those from Kerma, the number and variety of which was surprising (See G. A. Reisner, Excavations at Kerma, IV-V [= Harvard African Studies, VI], Cambridge, Mass. 1923, 207-47). Wood was used there for coffins, boat-models, beds, stools, foot-stools, tables, head-rests, dishes and spoons, kohl-sticks, combs, razor-cases, mirror-cases, small boxes, wands, knife-and mirror-handles, throwsticks, etc. In addition it was also used in the form of beams for strengthening mud-brick walls, as columns, for roofing rooms and passages, for doorposts and doors. "Wood was freely used and must have been locally available.

At present Dongola Province is rich in wild trees, mainly sunt and other acacias, and a great deal of dôm-wood is rafted down from Berber Province beyond the Fourth Cataract. There is no reason to doubt that the same trees grew in the province in the Middle Kingdom" (Op. cit., 207). Elsewhere Reisner states: "The wood in the beds which were well preserved seemed to be acacia (sunt), ---- but there has been no opportunity to have the wood examined by a botanist ---. Ebony did not occur in any part, even in the legs" (Op. cit., 218. cf. Dunham, JEA 26, 137; pl. 26). [Four samples of hard wood from Kerma and two fragments of hard wood inlay from pyramid N19 at Meroë are being examined for me at Boston, but the results are not to hand at the time of writing.]

12. This is particularly unfortunate, for it is just such fragments that could have been spared for examination; few museums are prepared to see sections, however small, taken from their finer wooden objects.
13. Tomb W415 at Meroë [B.C. 100-100 A.D.] contained a folding stool of 'ebony' (completely decayed) (D. Dunham, 'Two Pieces of Furniture from the Egyptian Sudan', Bulletin of the Museum of Fine

Arts, Boston, 46 (Dec. 1948). No. 266, 100-101, figs. 5-6, 8-9), and three small fragments of 'ebony' were found in pyramid N36. (Dunham, Royal Tombs at Meroë and Barkal [= The Royal Cemeteries of Kush IV], Boston 1957, 184).

From the town-site of Meroë, excavated by Garstang, no examples of 'ebony' are reported, but most of the material is still unpublished. From what species is, for example, the "hardwood" of which a model temple-pylon found in the 'Lion Temple' is made? (J. Garstang, A. H. Sayce, and F. Ll. Griffith, Meroë, the City of the Ethiopians, Oxford 1911, 22; pl. 22, 1).

"Frag. of wooden (ebony?) rods, the longest 71 cm." were recovered from tomb 6 at Barkal (Dunham, Royal Tombs at Meroë and Barkal, 99), and three fragments of an 'ebony' rod, diam. c. 0.9 cm., from tomb 12 (op. cit., 23). Tomb 2 at this site yielded a piece of blackish wood with a design in relief on two long sides and on one end (op. cit., 93; fig. 62; pl. 70D).

O. Bates and D. Dunham, Varia Africana IV [= Harvard African Studies VIII], 1927, 50: Gammal,

Cem. 100, grave 175: "circular wooden box cover (ebony?), much worm-eaten."

Fifteen 'ebony' gaming-pieces, varying in height from 2 to 3 cms., came from the royal tombs of the X-Group at Ballana and Qustul, just north of the Egyptian-Sudanese border. (Emery, The Royal Tombs of Ballana and Qustul, Cairo 1935, 345; pl. 87).

14. 11. 29-30. SÄve-Söderbergh, Äg. u. Nub., 219-220.
15. see n. 11 above.
16. n. 11 above.
17. SÄve-Söderbergh, op. cit., 25-26.
18. A third is now in progress.
19. See, e.g., Steindorff, Aniba II, 71, 76, 78, 95, 112, 114, 116-117, 118, 123-124, 148, 151 (ushabtis, rings, beads, armllets, hairpins, kohl-tubes and rods, headrests, vessels, etc.); and Tomb Register, pp. 152 ff, passim; pls. 60, 61, 63, 65, etc.; C. L. Woolley and D. Randall-Maciver, Karanög: The Romano-Nubian Cemetery, Philadelphia 1910, 69-72, 116 ff. passim (Analysis of Tombs and their contents), 245-48 (Catalogue of Objects).
20. They are listed in Fig. 1 in case it should prove possible some day to examine such as have survived. In the meantime, however, no conclusions can

be based on them.

21. G. Schweinfurth (ed.), Reliquiae Kotschyanae, 1.
22. SNR 38, 62.
23. CF. Andrews, Flowering Plants of the Anglo-Egyptian Sudan II, 136 fig. 58. [A. mellifera] and Eggeling, Indigenous Trees of the Uganda Protectorate, 301 fig. 64 [D. melanoxylon].
24. Andrews, loc. cit. In Uganda where it occurs in Acholi, Karamoja, and Mbale, it is "only found in the very driest savannas" (Eggeling, op. cit. 211).
25. (a) The 'royal tombs'. Petrie, Royal Tombs I, 11, 22, 40; pls. 11, 3 = 15, 15; 11, 15 = 15, 17; 11, 4 = 15, 18 (fragments of tablet of Udimu). op. cit., II, 36; pl. 32, 27, 28 (model cylinder seals from B16), 63 (portion of top of a chair leg). pl. 34, 60 ('ebony' rod). p. 35; pl. 34, 50-51 (arrow-tips; cf. pl. 37, 14). p. 38; pl. 39, 48-53 (fragment of carvings, including one of a bull's leg.) pl. 43, 5-9 (arrow-tips?) pl. 45, 28 (from tomb of Khasekhemui). p. 19; pl. 10, 1 = 2, 4 (2 pieces of tablet from B18). p. 20; pl. 3, 2 = 11, 1 (tablet of Aha); pl. 3, 4, (upper part of a label of Aha), (8 pieces of tablet). p. 21; pl. 10, 2 = 3A, 5 (tablet of Aha.) pl. 11, 2 = 3A, 6 (tablet of Aha, found in 2 pieces, 1 in B18 and

the other in B19). pp. 22-3; pl. 5, 11 (part of cylinder seal from the tomb of Djer). p. 23; pl. 5A, 13 (piece of tablet). p. 24; pl. 6A, 5 (label). p. 25; pl. 7A, 2 (frag. of label). pp. 25-6; pl. 7A, 4 = Abydos I, pl. 11, 7 & p. 7 (piece of label,) p. 29; pl. 12, 4 (frag. of label from B18). (b) The tombs of the courtiers. Petrie, Tombs of the Courtiers, 6; pl. 5, 16 (rod); 4; pl. 2, 4; 3, 11: 4; pl. 2, 1; 3, 10; 4; pl. 2, 2; 3, 13 ('ebony' cylinder seals). (c) Amélineau's excavations. Nouvelles Fouilles à Abydos (1895-6) I; a couple of frags. from Umm el Ga'ab are described (p. 306; cf. pl. 31, Nos. 8 and 9) as "fragment de bois d'ébène incrusté d'émail." Nagada. Royal Tomb. de Morgan, Tombeau Royal, 191 figs. 696, 697 = Quibell, Archaic Objects, I, 217 (Nos. 14107, 14108); II, pl. 44 (pieces of boxes (?)). Saqqara. Emery, Saqqara 3035 (reign of Udimu): The Tomb of Hemaka, 13, 35-9, fig. 8; pls. 17a, 18a (label bearing name of Djer); a circular box from this tomb is stated to have narrow inlays of 'ebony' (Aldred, Oxford Hist. Technology I, 697).

26. Nor are they likely to be, since the majority are objects which cannot be spared.

27. Arkell, JEA 36, 27-29; pl. 10.
28. G. W. Murray and D. E. Derry 'A Predynastic Burial on the Red Sea Coast of Egypt', Man 23 (9), 129-131; F. Debono, 'Expédition archéologique royal au Désert Oriental (Keft -Kosseir)'. Rapport préliminaire 1949. ASA 1951, 59-91; W. B. K. Shaw, 'Two Burials from the South Libyan Desert,' JEA 22, 47-50 (Predynastic ??).
29. Brunton, Mostagedda, 40, 53; pl. 25, 31: 'ebony' (?) bangle, child's size, from the filling of a robbed grave. Area 2200, Badarian (??).
30. It is true that Egypt was receiving materials from much further afield than Nubia prior to the First Dynasty, for example lapis-lazuli from North-eastern Afghanistan and quantities of obsidian from the Red Sea coast of Ethiopia (Abyssinia), but the organization of the trade in these materials was not in the hands of the Predynastic Egyptians (Amratians and Gerzeans), but in those of the "Square-boat" people (See pp.177-178).
31. E. Massoulard, Préhistoire et Protohistoire d'Égypte, Paris 1949, 363, 366.



## VIII

Before discussing the possibility that some of the ebony-wood employed in Ancient Egypt may have been obtained from India and Ceylon, it will be convenient to enumerate the main ebony-producing species (as well as a number of others) of that area, and further east, at the present time.

(a) India and Ceylon.

The ebony of India and Ceylon is furnished by various species of the genus *Diospyros*, some very common, some scarce, occurring mainly in South India, Ceylon, Burma, and Eastern Bengal. Only four species extend to Northern India. In Ceylon there are 22, in South India 17; in Western India 13; nine in Eastern Bengal and Assam; and 22 in Burma. "About eight species occur in the dry forests, the rest in the wet evergreen ones." <sup>1</sup> According to Gamble, <sup>2</sup> the chief commercial kinds of ebony obtained from the Indian representatives of *Diospyros* are: 'ebony' proper, "the produce of two or three different trees", 'calamander wood', and 'Andaman marble-wood'. Observing that "the species of *Diospyros* require more investigation ... in order to ascertain which are the black-wooded species and which are not," Gamble classified ebonies into:

1. Heartwood wholly black or only slightly streaked:  
Diospyros ebenum, tomentosa, melanoxylon, assimilis.
2. Heartwood regularly streaked with black and brown or grey: D. kurzii, quaesita, oocarpa, oppositifolia, etc.
3. Heartwood very small, merely black streaks in the brownish-grey or grey wood: D. Embryopteris, Kaki, etc.
4. Heartwood none, wood red, white, grey or yellowish:  
D. montana, Lotus, Chloroxylon, etc.

Diospyros ebenum Koenig. A large tree growing in the "forests of the Deccan and Carnatic, chiefly in dry evergreen forests in the Ceded Districts, especially Kurnool and Cuddapah, scarcer southwards; dry regions of Ceylon, chiefly in the Northern Provinces, but extending to the south-east round the coast." It prefers "a rocky, well-drained soil, and is found chiefly in company with other species of *Diospyros*, ..." Gamble <sup>3</sup> says that this species, "the chief ebony-yielding tree," is very little cut in India, "the trees not being very common, and being found only here and there and of small size. But in Ceylon it is one of the chief woods." The same writer <sup>4</sup> also states that this species is "the only one giving a black wood without other streaks or markings,"

the heartwood<sup>being</sup> "jet black".<sup>3</sup> Howard,<sup>5</sup> however, says: "I have never seen any Ceylon or Southern India wood absolutely black, with no variation in colour. The India wood, including Ceylon, is of a very close, dense, hard grain, rather brittle, with a consistency somewhat resembling African blackwood [Dalbergia melanoxylon], with almost a marble-like smoothness. It is rare to find a piece not streaked with a darker or lighter brown and sometimes even a golden colour, but never of the same intense blackness as some ebony which can be found on the West Coast of Africa."<sup>6</sup>

Diospyros tomentosa Roxb.<sup>7</sup> A large (Circars) or small (N. India) tree, growing in "Northern India; in the sub-Himalayan tract and Siwaliks from the Ravi to Nepal, most common in Western Saharampur and Bijnor; Bengal ...; Rajputana, Central Provinces, Berar, Chota Nagpore, Orissa and the N. Circars down to the Godavari." This ebony "delights in dry, stony hills, but is also found on almost any forest soil." It is very difficult to distinguish, either in the field or Herbarium, from D. melanoxylon. The wood, which is very hard, is dark reddish-brown, with an irregular black heartwood, occasionally streaked with purple or brown.

D. melanoxylon.<sup>8</sup> A large or small tree found in South India, common in the dry forests of the Mahratta country, Deccan and Carnatic; rare in the dry region

of Ceylon. Large trees are uncommon, and the amount of ebony available is small. "The tree affects chiefly dry rocky hills". The wood is hard, reddish-brown, with an irregular black heartwood.

D. kurzii Hiern. <sup>9</sup> 'Andaman Marble- or Zebra-wood.' An evergreen tree, one of the most important in the Andamans, where it grows in the tropical and moist<sup>e</sup> upper mixed forests; also in the Nicobar and Coco Islands. The heartwood is "streaked black and grey in more or less alternate layers, or rarely quite black." <sup>9</sup> Howard <sup>10</sup> describes it as black with very light, often creamy white, or yellow streaks or patches.

D. quaesita Thw. A large tree growing in the forests of the moist low country of Ceylon, below 1000 ft. Gamble <sup>11</sup> says that "this is the chief of the trees producing the variegated ebony known as Calamander wood, which is the most valuable ornamental wood of Ceylon, now unfortunately scarce, having been much sought for and the trees cut." <sup>12</sup> The wood is "hard, greyish-brown, variegated with broad or narrow belts of black." <sup>13</sup> Howard <sup>14</sup> says of Calamander or Coromandel wood that it is the name "by which several different species of ebony (Diospyros) are known when they possess a particular kind of marking and colouring.

According to Holtzapfell, Coromandel or Calamander wood is Diospyros hirsuta Linn. f., but Gamble gives it as D. quaesita .... Certainly of later years it is exceedingly doubtful whether supplies of Coromandel wood have been confined to one, two, or even three varieties. Similarly marked and coloured wood has been obtained from several different sources and from different varieties.... Yet another source of supply of so-called Coromandel wood has been found in some occasional trees of Ceylon ebony (probably D. ebenum), which show the same marking and colour."

D. Embryopteris Pers. <sup>15</sup> An evergreen tree found "throughout the greater part of India, in wet places and along streams; in the sub-Himalayan tract from the Jumna to Sikkim; in Bengal; throughout Central, Western and South India; especially common in the Circars; Martaban and Tenasserim in Burma; low country of Ceylon." It is "a characteristic tree of swampy places in many parts of India, so much branched as often to resemble a large shrub, but often again reaching a considerable girth." The wood is described by Gamble as "grey with darker streaks and a darker irregular patch in the centre (heartwood?), moderately hard, close-grained."

D. montana Roxb. <sup>16</sup> A small or moderate-sized tree, nowhere very abundant, and yet very widely spread,

being found throughout most of India and Burma (var. cordifolia only): from the Ravi eastward along the Himalaya; in Central, Western, and Southern India in deciduous forests, and in the dry region of Ceylon. The wood is grey, often tinged with yellow or brown, streaked with narrow patches of darker colour, especially towards the centre, but has no regular ebony heartwood.

D. Lotus Linn., <sup>17</sup> 'plaqueminier'. Found in Punjab Himalaya, in Hazara and Kashmir at 2-6000 ft.; also in Afghanistan and Baluchistan. It extends to Southern Europe. The wood is grey, close-grained and moderately hard.

D. Chloroxylon Roxb. <sup>18</sup> Moderately hard wood, yellowish-grey.

(b) Philippines and Indo-Malaya.

Maba buxifolia Pers. <sup>19</sup>; "Bolongata" and "camagoon", yielded by Diospyros pilosanthera Blanco and D. discolor Willd., respectively, are often very similar to Calamander wood.

(c) Celebes.

Macassar ebony is yielded by Diospyros Macassar A. Chev. [= D. utilis Koord. et Valet.], a tree growing in Celebes. It attains a height of 40m. and a circumference of 1.50m., and produces a very hard black wood. It is related to D. quaesita Thw. and D. Moonii Thw. of Ceylon. <sup>20</sup>

On the question of whether any of the hbny-wood used in ancient Egypt was of Asiatic origin, Loret expresses the definite opinion that it was not. <sup>21</sup> Beauvisage, however, no doubt conscious that the number of specimens examined by him was altogether too small to support any definite conclusion, says <sup>22</sup>: "A la question ainsi posée [i.e. whether Indian or African hbny, or both were used] j'apporte une réponse partielle: je suis en mesure d'affirmer, qu'aux temps pharaoniques on travaillait en Egypte le bois de Dalbergia melanoxylon. Il était certes permis de supposer que les anciens Egyptiens employaient plutôt l'Ebène d'Ethiopie que l'Ebène de l'Inde; mais c'était peut-être s'aventurer bien imprudemment que de transformer cette hypothèse en une affirmation positive ---, si j'ai reconnu, que des objets travaillés par les anciens Egyptiens étaient fabriqués en bois de Dalbergia melanoxylon, je me garderais bien d'affirmer que l'Ebène de l'Inde, provenant des Diospyros, était inconnue en Egypte aux temps pharaoniques". Indeed, a few years later Wittmack <sup>23</sup> identified a specimen of wood of Fifth Dynasty date from Abusir as Diospyros ebenum. This identification, however, was doubted by Lucas who considered it "most improbable that ebony should have been obtained from India or Ceylon at such an early period <sup>24</sup>----- it is worthy of note that, so far as is known, there was not any material used in ancient Egypt until about the Eighteenth

Dynasty that can be traced to India." <sup>25</sup>

However, unless or until more definite evidence comes to light, we are not entitled to assume that certain species were not, or could not have been, known in ancient Egypt merely on account of the distance between their present habitat and that land. For research during the six decades that have elapsed since the last detailed discussion of the question <sup>26</sup> has<sup>s</sup> shown increasingly how very much less isolated than had formerly been supposed the lands of the ancient world were, even in the earliest periods. While this is not the place for a detailed consideration of the evidence for Egyptian commercial contacts with India and further east, some of the main points may be touched upon. First, the incentive to such contact existed. As Lucas himself observes, <sup>27</sup> "India and Ceylon possessed, among other commodities, precious and semi-precious stones and odoriferous resins and fragrant woods, materials that were in great demand in Egypt and that are of small bulk and easily transported." A passing reference may be made to two stone axes, one from the Neolithic settlement at Merimde, <sup>28</sup> the other, of Predynastic date, from Hamra Dom, <sup>29</sup> which may just possibly be of jadeite and nephrite respectively. <sup>30</sup> Secondly, among the varied contents of a large two-handled pot, dated to SD 37-38, found in Predynastic village débris at Badari, <sup>31</sup> was some bark which, though it could not be



identified at the Royal Botanic Gardens, Kew, is stated by Mahmoud Abaza Bey <sup>32</sup> to be "possibly sandal or cinnamon". <sup>33</sup> Since there is no evidence that any of the trees and plants producing sandal-wood or cinnamon ever grew in the southern Red Sea area (despite the statements of the Classical writers), or in Egypt itself, the nearest source of supply would presumably have been India, <sup>34</sup> unless at this time they occurred further west in Asia. However, this identification, too, needs confirmation before it can be accepted. <sup>35</sup>

More definite material evidence, however, of Egyptian contact with the East is afforded by the discovery on Predynastic sites in Egypt of lapis-lazuli, the nearest source of which then, as now, was Badakshan in north-eastern Afghanistan. <sup>36</sup> In the Early Predynastic, there appears in Egypt a peculiar, quite foreign, type of vessel with high vertical prow and stern and straight keel - the so-called "square-boat" -, which is seen in its purest form in the rock-drawings found by Winkler and others in the Wadi Hammamat and other routes connecting the Nile Valley and the Red Sea, and sporadically further down the coast. <sup>37</sup> The appearance in Egypt of these boats has long been regarded as evidence of contact with Mesopotamia where similar types occur. <sup>38</sup> There is reason to believe, however, that they may be equally foreign to

that land also and arrived there and in Egypt either from some point intermediate between the two or possibly even from further east. However that may be, they were very probably the means whereby contact was established, and maintained, between Egypt and Iran and further east. Moreover, on the basis of evidence collected for a study of the lapis trade at this time, I believe there is reason to suppose that, contrary to the generally accepted view, much, if not the greater part, of this material used in Egypt in the Predynastic period entered that country from the south, having been conveyed there in these "square boats", which on their way up the Red Sea also collected that portion of Egypt's obsidian supplies (probably the greater part) which came from this area. The winds and currents of the western Indian Ocean and Arabian Sea, discussion of which cannot be attempted here, would not have presented insuperable obstacles to this maritime activity.

From Pharaonic times indications of commercial relations with the Middle East are equally numerous. Lapis-lazuli continued to enter Egypt, though now apparently almost entirely from the north, via the land-route across Western Asia.<sup>39</sup>

A ring found in the tomb of Tut<sup>ankhamun</sup> is stated to be "almost certainly nephrite".<sup>40</sup> It is possible, too, that a few of the

unidentified commodities received from Punt may have been of Indian origin or even from further east, though there is as yet no definite evidence that such was the case.<sup>41</sup> "From the Eighteenth Dynasty onwards the varnish resins may have come from, or through, India, and possibly at a later date indigo."<sup>42</sup> It is not until the middle of the Eighteenth Dynasty, however, that reference occurs to hbny from Asia, and then it is in the form of finished objects. Among the large number of costly items dedicated to Amen by Tuthmosis III after his Syrian campaigns is a "clothes-chest of gold and hbr(y)"<sup>43</sup> Among the booty of the towns of the chief of Kadesh captured after the battle of Megiddo were "six palanquins of that foe, of ivory, hbny and śśndm-wood, wrought with gold", and "a statue of that foe, of hbny wrought with gold."<sup>44</sup>

The origin of the wood of which these objects were made is obscure but we are certainly not entitled to assume without further evidence that it was furnished by species growing in Western Asia or further east. Some of the items in question may have been heirlooms made from African wood, which had been handed down to the Syrian Chieftains by ancestors who had been on better terms with Pharaoh, who may have presented the objects, or the wood, to them as gifts.<sup>45</sup> On the other hand, the fact that one of the objects captured was a statue of the rebellious chief of Kadesh, possibly tells against this view and suggests that

it was

made in Syria, but without knowing which species they were which produced hbny, it is very difficult to say whether hbny-trees ever grew in Syria itself or Palestine.

On sites in both countries objects stated, rightly or wrongly, to be of 'ebony' are very rare.<sup>46</sup> No plant resembling any modern ebony-producing species appears among the flora of Syria depicted in Tuthmosis III's so-called 'botanical gardens' at Karnak (many of the forms there being purely imaginary),<sup>47</sup> or in any other scene of Syrian vegetation.<sup>48</sup> Among the booty from Djahy recorded in the Annals of Tuthmosis III for year 34 (9th campaign) is "a palanquin of black-wood and śśndm-wood".<sup>49</sup> This 'black-wood' seems to be employed here in substitution for hbny, which is elsewhere used alongside śśndm-wood in palanquins.<sup>50</sup> Despite its colour and whatever its botanical and geographical origin, 'black-wood' evidently did not bear sufficient resemblance to hbny in Egyptian eyes to justify its inclusion under this term.

At a later date (6th Century B.C.) Tyre was obtaining supplies of  $\square'J\bar{J}\bar{J}\bar{J}$  via the Dedanites of Southern Arabia<sup>51</sup>, and later still (4th Century B.C.) the inhabitants of Syria seem to have been using as a substitute for 'ebony' the wood of the terebinth ( $\tau\acute{\epsilon}\rho\mu\iota\nu\theta\omicron\varsigma$ ) which "is also very black and close-grained; at least in Syria they say that

it is blacker than ebony, <sup>that</sup> ~~and~~ in fact they use it for making their dagger handles; and by means of the lathe-chisel they also make ~~from~~ <sup>of</sup> it 'Theriklean' cups ---; for this purpose they use, it is said, the heartwood, but the wood has to be oiled, for then it comes comelier and blacker." 52 Again, referring to the weight and closeness of grain of various timbers, Theophrast<sup>u</sup>s says that the heartwood of laburnum ( ΚÚΤΙΣΟΣ ) seems to resemble that of 'ebony'. 53 He also mentions, though without actually saying that it grew in Syria, "another tree which, as well as the black colour, has a sort of reddish variegation, so that it looks like variegated ebony, and of it are made beds and couches and other things of superior quality." 54

It seems therefore, that the wood from which had been manufactured the hbny objects plundered by the Egyptians from the Syrian chiefs had been obtained by the latter from elsewhere than their own country, but from whence it is not easy to say.

Among the tribute of <sup>Retjnu</sup> ~~Retjnu~~ recorded in the Annals of Tuthmosis III for the year 34 is 'ntyw 55 (quantity not stated), the source par excellence of which throughout Egyptian history was the land of Punt. Indeed, apart from this example I know of no instance of 'ntyw from elsewhere than Punt, and it is clear that that mentioned here in the Annals had originally come from the Red Sea

region. Strabo<sup>56</sup> states that in his day (1st century B.C.) Arabs crossed the straits of Bab el Mandeb in skin boats to obtain aromatics from 'Ethiopia' which they then sent up the west coast of Arabia to Syria-Palestine and Egypt along with the produce of their own land. There is no reason why the inhabitants of Southern Arabia should not have been doing this centuries earlier and have included, in addition to aromatics, other commodities, such as ornamental woods.<sup>57</sup> It is possibly in this way that the Habnī(m) used in Tyre reached that city. However, insofar as hbny may in part have been derived from one of the modern ebony-producing species, viz. Diospyros mespiliformis Hochst., there may have been no necessity even to cross the straits of Bab el Mandeb for it, for this species occurs in the Yemen<sup>58</sup> and probably did so too in ancient times.<sup>59</sup> It does not follow, however, that any hbny which may have come to the Syrians from the Red Sea region would all have been derived from species growing in the Yemen or Africa. The occasional cargo from India, Ceylon, or possibly from even further east, could have arrived at the southern end of the Red Sea in coasting vessels, and some of this may have made its way up Arabia to Syria.

It is possible that some of the hbny, bartered by the Puntites to the Egyptians may have been obtained in this way.

Among items received from Punt depicted in the tomb of Puyemrē<sup>60</sup> are two piles of black logs prominently streaked with various shades of yellow and golden yellow. They are labelled 'hbny.'<sup>60</sup> Other representations of black or blackish wood streaked or blotched in varying degree with shades of yellow are attested from the New Kingdom and as far back as the Third Dynasty.<sup>61</sup> In the publications this wood is usually termed 'ebony.'  
 Though it is not labelled, it may very well depict a variety of hbny. It is, of course, impossible to draw any conclusions regarding the availability of such wood from the frequency with which it appears in the tomb-paintings. One might, however, reasonably infer that it was highly prized on account of its decorative appearance and therefore often imitated, and therefore possibly not all that common. Now insofar as the colour of the hbny shown being delivered by Nubians is recorded, it is either black or sometimes streaked with lighter colours,<sup>62</sup> but it is never streaked or blotched with yellow. Again, though much of the wood now sold in the Sudan as ebony is streaky, no species of African wood at present regarded as ebony shows these pronounced golden-yellow markings, which resemble more those on certain species now found in Asia producing what is known as Calamander wood and Andaman marble-wood or zebra-wood.

Is this yellow-streaked hbny, then, to be identified with one or more species at present found in India and Ceylon? It is by no means impossible that products from these lands found their way to the southern end of the Red Sea, particularly in the New Kingdom.

Before pursuing this question, however, we must consider the standard of accuracy of these representations. Referring to the foreign tribute scene in the tomb of Rekmirē<sup>63</sup>, Davies says: "as in the earlier tombs of Puy-em-Rē<sup>64</sup>, Amen-wosre, and Sen-mūt, the keen interest which the foreign expeditions of the [XVIIIth] dynasty had aroused seems still maintained, each set of artists appearing to have studied the subject anew from available data or vivid memories." Mrs. C. R. Williams writes with reference to the Old Kingdom tomb-paintings<sup>64</sup>: "the present writer's study of Old Kingdom color, although far from yielding a convincing explanation for every color puzzle, has given her confidence that the colors in wall decorations are to be taken seriously, that there is no compelling reason to suppose the artist allowed a desire for aesthetic effect or flights of fancy to control his choice of pigments to the exclusion of truth . . . . The presumption of truth within the conventions adopted by Egyptian colorists accords with the belief generally held that the decoration in tombs had utility for the deceased, enabling him to enjoy in



the next life the environment and possessions which had been his on earth." Naturally there was a difference between what the artist saw and what, with the means at his disposal, he was able to reproduce. Nevertheless, it is difficult to agree with Davies' statement that a hardwood leg, rung, and part of the seat of a chair found in the tomb of Mentuherk<sup>h</sup>epeshef at Thebes<sup>65</sup> is "evidently the wood which in Egyptian paintings is coloured black with yellow markings."<sup>66</sup> For the pieces in question are stated to be "of a dark wood with a fine grain," and it is hard to believe that in depicting such wood the Egyptian artist could do no better than colour it black and bright yellow. It is clear that, even after allowance has been made for [REDACTED] loss of accuracy in representation due to limitation of means and mechanical copying, a dark wood streaked or blotched with various shades of yellow was used in Egypt at least as early as the Old Kingdom.

As we have already seen, however (Chapt. II), it would be hazardous to 'identify' the species or genus of this wood on the basis of colour alone, however accurately this may have been rendered. Again, in view of what has been said regarding the consequences of regular and ruthless felling of hbny-producing trees, the possibility remains that this black and yellow wood

was derived from an African species, supplies of which were long ago exhausted. Moreover, even if it were possible to equate this yellow-streaked hbny with one or more species at present found in India and Ceylon, it would not necessarily follow that it was always obtained from thence. Even now comparatively little is known of the ecology of these species and nothing of their distribution in ancient times. They may, therefore, have occurred in Asia further west or even in Africa. In this connection it may be noted that Theophrastus refers to the existence on the island of Bahrein (Tylos) in the fourth century B.C. of a tree producing a very heavy wood, variegated "like the tiger's skin", which Th<sup>i</sup>selton-Dyer suggested might possibly be Calamander wood.<sup>67</sup>

Among the gifts sent to Amenophis III and Akhenaten by Tushratta of Mitanni were a number of objects, apparently mostly unidentified but including a mirror-handle and a dagger-handle, made of ušu-wood.<sup>68</sup> In his edition of the Gudea B inscription Jensen proposed to identify ušu-wood as 'ebony'. There the Sumerian word esi (Akkadian ušu or ešu) denotes a kind of stone as well as a wood, distinguished by the determinatives na4 and giš. From this Jensen inferred that in appearance they resembled each other. Since na4 esi is 'diorite', a hard dark stone, he concluded that the wood which would be most appropriately compared with it was ebony.<sup>69</sup> Jensen's suggestion has been adopted by a number of scholars,<sup>70</sup> the most recent of whom is Leemans, who gives as an additional reason for the

identification the fact that Gudea obtained his ušu-wood from Meluhḥa. "As Meluhḥa was far to the south, probably either India or East Africa, this would seem to be consistent, for ebony comes from India and Tropical Africa. The kinds of ebony which come from tropical Africa are blacker than those from India and Ceylon".<sup>71</sup> It is further suggested<sup>72</sup> that the terms 'Meluhḥa-wood' and 'black wood of Meluhḥa' (ṣulum Meluhḥi) may also denote 'ebony'.

The weak point in this reasoning, however, is that whether Meluhḥa lay in Arabia, Africa or India, not nearly enough is known about the ancient botany of these areas, or the intermediate tracts, for it to be asserted that hard black wood obtained from any of them was necessarily, or even probably, derived from one or more of the ebony-producing spp. of the present day, still less that it was a wood which the Egyptians of the New Kingdom would have regarded as hbny. It has already been noted (p.180) that in the Annals of Tuthmosis III a distinction was drawn between hbny (Urk. IV, 666, 16; 667, 4-5) and 'black wood' (Urk. IV, 705)<sup>72a</sup>.

It is not impossible that during the course of centuries ušu shifted its meaning and came to be applied to a wood (or woods) other than that which it originally designated. If such be the case, the earlier occurrences

of the term would be of little assistance in determining the identity of the wood mentioned in the Amarna Letters. There is no indication there from whence Tushratta had obtained his ušu-wood. The cases cited are the only recorded instances of the receipt of this wood in Egypt; usually it is the Egyptians who send ušu to the kings of Western Asia,<sup>73</sup> It is not clear, however, what wood Egypt itself produced which could have been so acceptable to these rulers. This rather suggests that the Pharaohs may have obtained ušu from their southern provinces, which in turn raises the possibility of its being hbny. It was the wood from which were made, int. al., beds, chairs, head-rests and footstools.<sup>74</sup> Like hbny, it was also used alongside ivory (ṣ̌in <sup>bi-ri</sup>     ).<sup>75</sup> Hbny, however, was not the only wood employed in conjunction with ivory; ṣ̌šndm, for example, was so used [cf. Pl. II]. The medicinal uses of ušu<sup>76</sup> differ from those of hbny, being much more extensive. While the possibility that these two terms designate the same wood(s) cannot be excluded, there is insufficient evidence in the Amarna Letters themselves to establish the identity beyond doubt.

In the Twenty-Sixth Dynasty, Amasis II is said to have sent to the Lacedaemonians a linen breastplate "decked with gold and cotton embroidery".<sup>77</sup> The home of cotton is undoubtedly India, from whence it spread westwards; it seems to have been introduced into Assyria by Sennacherib about 694 B.C.,<sup>78</sup> and Theophrastus, writing in the 4th-3rd century B.C., states that the cotton-plant<sup>79</sup> also grew in abundance on the island of Tylos (Bahrein) in the Persian Gulf.<sup>80</sup>

With the Persian Conquest, Egypt came into contact increasingly with the rest of the Achaemenid Empire.<sup>81</sup> Foreigners from all parts entered the country as soldiers, officials, and merchants,<sup>82</sup> and doubtless the products of their native lands also arrived. Herodotus, who was in Egypt c.450 B.C., refers to the employment of cassia ( *κασίη* ) in embalming.<sup>83</sup> There is, however, no reference to Asiatic 'ebony' in Egypt at this time. This may, of course, very possibly be fortuitous. Nevertheless it is interesting to note that in an inscription at Susa, recording the building of the palace of Darius the Great,<sup>84</sup> though the ivory employed was both African, from 'Ethiopia' (*-Kūšā*), and Indian, from Sind and Arachosia, the 'ebony'<sup>85</sup> is stated to have been brought only from Egypt (i.e. obviously from 'Ethiopia' via Egypt) and there is no mention of 'ebony' from Asia. In view of the fact that some of the ivory

1) Gamble, op. cit., 453.

2) Op. cit., 452.

3) Op. cit., 456-57.

was obtained from thence, this omission of 'ebony' is perhaps significant. Reference has already been made

(p.152) to the delivery of 'ebony' to the Persians by

the 'Ethiopians', and one is also reminded of Dioscorides's

assertion<sup>86</sup> that the African wood was superior to the

Indian. It would appear, then, that so far from 'ebony'

being imported into Egypt from Asia at this time, the

reverse may have been the case.

streaked or speckled with black and pale yellow."

Specimens of such wood may be seen in the Wood

Museum at Kew.

7) Gamble, op. cit., 460-61.

8) Gamble, op. cit., 461-62.

9) id. op. cit., 453.

10) Op. cit. Howard also designates as a producer

of Andaman marblewood or zebra-wood Diospyros

ocarpa Thw. (India, Ceylon, Andaman, Nicobar,

and Coco Islands), the wood of which he describes

(op. cit., 355) as "of a dense, ebony black,

with stripes of golden yellow and whitish-yellow."

Gamble (op. cit., 459) does not mention D. ocarpa

as a supplier of 'Andaman marblewood,' but says

that "the wood is like Calamander [q.v.] and can

probably be used like it." He describes the heartwood

as "irregular purplish-black, ... here and there

with paler streaks, moderately hard."

- 1) Gamble, op. cit., 453.
- 2) Op. cit., 452.
- 3) Op. cit., 456-57.
- 4) Followed by G. Watt, The Commercial Products of India, London 1908, 498.
- 5) Op. cit., 186.
- 6) Cf. Official Guide to the Museums of Economic Botany [Royal Botanic Gardens, Kew], I. Dicotyledons. 4th ed. London 1930, 147: "There are forms of the wood with brown heartwood and with the heartwood streaked or speckled with black and pale yellow." Specimens of such wood may be seen in the Wood Museum at Kew.
- 7) Gamble, op. cit., 460-61.
- 8) Gamble, op. cit., 461-62.
- 9) id. op. cit., 458.
- 10) Op. cit. Howard also designates as a producer of Andaman marblewood or zebra-wood Diospyros oocarpa Thw. (India, Ceylon, Andaman, Nicobar, and Coco Islands), the wood of which he describes (op. cit., 355) as "of a dense, ebony black, with stripes of golden yellow and whitish-yellow." Gamble (op. cit., 459) does not mention D. oocarpa as a supplier of 'Andaman marblewood,' but says that "the wood is like Calamander [q.v.] and can probably be used like it." He describes the heartwood as "irregular purplish-black, ... here and there with paler streaks, moderately hard."

- 11) Op. cit., 459.
- 12) G. also mentions D. oocarpa Thw. as a producer of Calamander-like wood. Cf. p. 191 n.10. Of D. oppositifolia Thw., a very rare tree of the moist low country of Ceylon, he says (op. cit., 462): "Thwaites, quoted by Trimen, says that the wood resembles that of Calamander (D. quaesita), but the specimen does not bear this out completely. H. Wright says that it ... has a plain white wood, with always a hollow centre."
- 13) id. ibid.
- 14) Op. cit., 156-57.
- 15) Gamble, op. cit., 455-56.
- 16) id., op. cit., 454-55.
- 17) id. op. cit., 455.
- 18) id., op. cit., 458.
- 19) Also found in Asia, India, Ceylon, and Burma (J.S. Gamble, A Manual of Indian Timbers; an account of the Growth, Distribution, and Uses of the Trees and Shrubs of India and Ceylon, London 1902, 452) and on the coasts of Madagascar and in West Africa, but Chevalier (Rév. Bot. App. 14, 959) thinks that here it is a different species.
- 20) Chevalier, Rév. Bot. appliquée, 14, 950. (Howard, op. cit., 184, states that Macassar ebony is a wood of unknown botanical origin, and describes it as



varying in appearance, being often reddish-brown with black bands, but sometimes variegated with other tints.)

- 21) RT 6, 125: "Les Egyptiens n'ayant connu que l'ébène éthiopienne, c'est la seule dont je m'occuperai ici."
- 22) RT 19, 78.
- 23) In Borchardt, Das Grabdenkmal des Königs Nefer-ir-ka-rê', 68: "das Mittelstück (Berl. Mus. Nr. 18171) eines Schiebdeckels von einem kleinen, etwa 20 cm. lang gewesenen Holzkästchen, dessen Material Geh.-Rat. Wittmack als Ebenholz (Diospyros ebenum) bestimmte .....".
- 24) Anc. Eg. Materials, 495.
- 25) Op. cit., 531
- 26) G. Beauvisage, 'Le Bois d'Ebène,' RT 19 (1897), 77-83.
- 27) loc. cit.
- 28) H. Junker, Vorläufiger Bericht über die zweite Grabung d. Ak. d. Wissen. in Wien auf d. vorgeschichtlichen Siedlung Merimde-Benissalâme [Ak. d. Wissen. in Wien, Phil-Hist. Klasse, Jahrgang 1930, Nr. V-XIII], 66, 67, 80; pl. 7. Cairo Mus. No. J57954; cf. id., Bericht über d. von d. Ak. d. Wissen. in Wien nach dem Westdelta entsendete Expedition, Vienna and Leipzig 1928: fragment of

a small stone axe, variously referred to as "nephrit" and "jadeite" (pp. 15, 47, 49; pl. 4, 47 = 14b. bottom right corner).

- 29) Quibell, Archaic Objects, 236; pl. 49, No. 14259.
- 30) Lucas, op. cit., 453. Apart from small quantities that exist at various localities in Europe, the nearest source of nephrite to Egypt would have been in the valleys of the Karakash and Yarkand rivers in the Kwen Lun mountain range. It is also found further north at the river Kashgar, and occurs in various provinces of China, viz. Shensi, Kwei Chau, Kwang Tung, Yunnan, and Manchuria. It also occurs, in the form of large water-worn boulders, near Lake Baikal in eastern Siberia. (G. F. H. Smith, Gem Stones and their Distinctive Characters, London 1912, 262; M. Weinstein, Precious and Semi-Precious Stones, London 1930, 102). Jadeite, of the finest quality, is found in the Mogoung district of Upper Burma, and also in the Shensi and Yunnan provinces of China, and in Tibet (Smith, op. cit., 262-63; Weinstein, op. cit., 99-100). However, since these tentative identifications are based only upon the determination of the specific gravity of the objects, which could not be examined chemically or microscopically without destroying

them, they are far from certain.

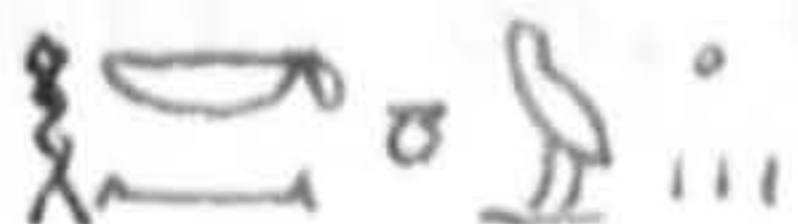
- 31) Area 3200. It stood 31 inches below the modern surface.
- 32) Director, Horticultural Section, Egyptian Ministry of Agriculture.
- 33) Brunton and Caton-Thompson, The Badarian Civilization, London 1928, 46-47, 62, 63.
- 34) Royal Botanic Gardens, Kew. Official Guide to the Museums of Economic Botany. No. 1. Dicotyledons. 4th ed. 1930, 184, 191; Watt, The Commercial Products of India, London 1908, 976-79, 244-45, 310-316; Gamble, A Manual of Indian Timbers, London 1902, 584-87, 560 ff.
- 35) Recent re-examination of a specimen of material found by Wainright in a Predynastic grave at Gerzeh (V. Täckholm and M. Drar, Flora of Egypt III, Cairo 1954, 540-41) has shown that it is not ramie fibre, as originally reported by Midgley (in Petrie, Wainright and Mackay; The Labyrinth, Gerzeh and Mazghuneh, 6). On Ramie (also known as China Grass and Rhea), "a tall, nettle-like perennial, native of Tropical Asia --- widely grown in China, Japan and other Eastern countries", see Royal Botanic Gardens, Kew. Official Guide to the Museums of Economic Botany. No. 1, 211-212;

- Watt, op. cit., 143 ff. The correctness of Midgley's identification had already been doubted by Lucas (op. cit., 171-72), though largely on the grounds that a product of the Far East could not have found its way to Egypt at so early a date.
- 36) Lucas, op. cit., 455. On this see in detail my forthcoming paper on The Lapis-lazuli Trade of Predynastic Egypt.
- 37) Winkler, Rock Drawings of Southern Upper Egypt I, 26-28, 36-39, 40; pls. 22, 23, 35-41; id., Völker und Volkerbewegungen im vorgeschichtlichen Oberägypten im Lichte neuer Felsbilderfunde, Stuttgart 1937, 10-16, pls. 31-37
- 38) Frankfort, Studies in Early Pottery of the Near East I, 138 ff.
- 39) Urk. IV, 668, 7-8, 13 (<sup>Assur</sup> [REDACTED]); 669, 2, 15; 717, 14; 722, 2 (Retjnu); 708, 5 (Isy); 701, 1-3 (Sangara); 686, 8; 688, 9 (Djahy); Rapport sur les Fouilles de Medamoud (1926). Les Inscriptions par E. Drioton, Cairo 1927, 54-55 (statue of Minmose), l.8 : "I taxed Retjnu --- gold, lapis-lazuli .."
- 40) Lucas, op. cit., 453.
- 41) The correctness of the renderings 'cinnamon' and 'cassia' for tī-šps and kdy, for example, (so Breasted, Ancient Records II, III, IV, followed by Lucas, op. cit., 354; Ebbell, The Papyrus Ebers

86 et passim; Forbes, Studies in Ancient Technology III, Leiden 1955, 7, 8; Lefebvre, Essai sur la Médecine égyptienne, 64 n.8, 159, 165, 172 (with caution).

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██████████ et al., Grundriss d. Med. d. alt. Äg. IV, 1, 18, 67, 83, 220, 238, 290; VI, 549-551, merely transliterates: "tj-šps (Zimt?)"; "Zimtbaum (?)." is far from proved. In neither of the two cases in which these materials have been reported from the Pharaonic period can the identification be considered satisfactory (Lucas, op. cit., 354). Although it is not improbable that cassia and cinnamon may have reached Egypt in the New Kingdom, there is no positive evidence that they did.


Ebbell's rendering of  in P. Ebers 813 as "malabathron", (The Papyrus Ebers, 111),

followed very dubiously by Lefebvre (op. cit., 94;

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██████████ et al., op. cit. IV, 1, 282; VI, 383-84

merely transliterates), seems even more doubtful.

The word occurs as early as The Old Kingdom as the name of an oil and the raw material used in its manufacture (Urk.I, 127, det. ). Though it is

unsafe to base any conclusion regarding the availability of the material merely on the

frequency with which the name occurs in the offering-lists, nevertheless the impression gained is that

hknw was not an uncommon commodity in Egypt. ██████████

According to the inscription of Harkhuf, it was obtainable from somewhere in Lower Nubia (via Yam?) (Urk. I, 127), and appears among the items from Egypt which the Shipwrecked Sailor offered to the Serpent (ll. 140 ff; Blackman, Middle-Egyptian Stories I, 45-46). The offer, however, is scorned by the Serpent who points out that hknw was not only obtainable on his Island (which whether mythical or not - see p.46 n.44 - was clearly regarded as being in the Red Sea), but was actually one of its chief products (l. 152; Blackman, op. cit., 46: "that hknw which thou didst say would be brought (to me), it is the chief thing of this island."). That malabathron (on which see Watt, op. cit.,<sup>311-13</sup> and Gamble, op. cit., 561.) could have reached Egypt in the O.K. via the Red Sea and Lower Nubia is not absolutely impossible, though unlikely, especially in quantity, and there is no evidence that it was ever a product of the islands in the Red Sea or of the surrounding coasts.

Equally doubtful are E<sup>b</sup>bell's renderings 'costus' for kst.t and 'indigo' for dr-nkn (E<sup>b</sup>bell, op. cit., 36, 58, 87, 105; 38, 101). For neither does he offer any evidence; the first-named seems little more than a guess based on phonetic resemblance.

42) Lucas, op. cit., 531; cf. pp. 408, 410; 173-74.

43) Wreszinski, Atlas II, pls. 33a, 33b, 5th row from the top, no. 76; Urk. IV, 633.

44) Urk. IV, 666, 16; 667, 4-5.

In a scene showing the arrival of Syrian tribute, in tomb NO. 119 at Sheikh 'Abd el-Gurneh, dating from the first half of the Eighteenth Dynasty, one of the bearers carries on his shoulder a log of dark-looking wood, unnamed, which Wreszinski describes as "kostbare Hölzer" (Atlas I, pl. 340, fifth figure from the left). The colour is not indicated, but the wood looks somewhat like the logs labelled 'hbny' which appear in other tombs among the Nubian tribute. Porter and Moss (Topographical Bibliography I, 2nd ed. Oxford 1960, 234) term it "ebony (?)". The scene is discussed by Scharff ('Ägyptologische Bemerkungen zur Frage der Lokalisierung des Landes "Keftiu", Jahrbuch für kleinasiatische Forschung II (1952/52), Heidelberg 1953, 101-104, tafel 4), but he makes no reference to the wood.





55. Urk. IV, 706, 11.
56. XVI, 4, 19; Periplus § 7 (H. Frisk, Le Périples de la Mer érythrée, Göteborg 1927 [Göteborgs Högskolas Årsskrift XXXIII 1927: 1], 3; Schoff, Periplus of the Erythraean Sea, 25. Cf. Cl. Préaux, Chron. d'Eg. 53 (Jan. 1952), 276-77.
57. Miss Préaux (loc. cit.) notes that the panther - skins obtained in Coele-Syria in the third century B.C. by the agents of Zenon were probably from Africa.
58. pp. 82, 87 n.15
59. Though whether it was actually exploited is unknown. Köhler and Baumgartner (Lexicon in Veteris Testamenti Libros, Leiden 1953, 224) identify the  $\square'117$  of Ezek. XXVII, 15 with Diospyros mespiliformis Hochst., "bezogen aus Nubien", but this is clearly mere conjecture, as is also Cheyne's identification as Diospyros ebenum (Encyclopaedia Biblica II, Col. 1154.)
60. Davies, The Tomb of Puyemrê, I, pl.34 (= pl.32, in line).
61. E.g. Naville, Deir el Bahari III, pl. 71; Davies, Paintings from the Tomb of Rekh-mi-Rê' at Thebes, pl. 19 (backless chair, blackish with golden-yellowish and greyish streaks); idem, The Tomb of Nakht, pl. 25 (chair, black, streaked with very pale yellow, almost white); Gardiner and Davies, The Tomb of Antefoker, pl. 25 & p.23 (chair; here assumed to be 'ebony'); Newberry, Beni Hasan I, pls. 11 (2nd row from top), 35; id., El Bersheh I, pls. 12 (right-hand side), 19, 32, 34, etc.; Davies, Rock Tombs of Deir el Gebrâwi II, pl. 4 & p.5; Blackman, Rock Tombs of Meir I, pl. 9 & p.32 (chair, here too assumed to be 'ebony'); IV, pls. 14, 15, 19, 1 (toilet box) & pp.38, 52 (here again termed 'ebony'); C.R. Williams, The Decoration of the Tomb of Per-Nēb. The technique and the color conventions, New York 1932, pls. 12-13; J.E. Quibell, Excavations at Saqqara (1911-12). The Tomb of Hesy, Cairo 1913, pls. 11-14, 17-18, 20; pp. 17, 19-20 (termed 'ebony').

62. E.g. JEA 28, pl.5, tomb of Amunedjeh (black);  
N.M. Davies and A.H. Gardiner, Ancient Egyptian Paintings  
I, pl. 16, tomb of Rekhmirē' (streaked with light brown  
and olive); N. de G. Davies, Paintings from the Tomb  
of Rekh-mi-Rē', pl. 6 (olive-green patches).
63. The Tomb of Rekh-mi-Rē' at Thebes, 18.
64. C.R. Williams, The Decoration of the Tomb of Per-Nēb,  
73-74
65. Davies, Five Theban Tombs, pl. 17
66. Op. cit., 6
67. V, iv, 7. Theophrastus. Enquiry into Plants (LCL ed.  
Hort) I, 444 n.3; II, 485. Hüsing's attempt, however,  
to show that 'ebony'-trees once grew on the islands  
in the Persian Gulf is unconvincing (G. Hüsing, 'Die  
Ebenholz-Inseln', OLZ 10, cols. 126-29).

68. Amarna Letters, No. 22, Col. I, 32-34; Col. II, 48-49, 69; Col. III, 5-6, 19, 22 (S.A.B. Mercer, The Tell el-Amarna Tablets, Toronto 1939, I, 80-81, 86-89); No. 25, Col. II, 58; Col. III, 20, 46, 49-50; Col. IV, 29 (Mercer, op. cit., I, 138-39, 140-43, 146-47); possibly also No. 13, 1.27 (very fragmentary list of articles - from Babylonia ?, Op. cit. I, 40-41).
69. P. Jensen in Keilinschrift<sup>liche</sup> Bibliothek. Sammlung von assyrischen und babylonischen Texten in Umschrift und Übersetzung, herausg. von E. Schrader, Band III, 1 Hälfte, Berlin 1892, Gudea B, Col. VI, 26-27; Col. VII, 10-11; pp. 36-37, 40-41.
70. E. G. F. Thureau-Dangin, Une Relation de la huitième Campagne de Sargon, Paris 1912, 52-55, 60-61, 64-65; B. Meissner, Babylonien und Assyrien [Kulturgeschichtliche Bibliothek, herausg. v. W. Foy, 3], I, Heidelberg 1920, 54, 353 ("Das 'ušu'-Holz (vielleicht 'Ebenholz'), dessen Härte sprichwörtlich war, und das man darum nach dem Dolerit benannte ---"); A.T. Olmstead, History of Assyria, New York and London 1923, 94, 95, 99, 180, 226, 306, 349, 383; Meissner, in M. Ebert (ed.), Reallexikon der Vorgeschichte, III, Berlin 1925,

art. 'Ebenholz' ("wahrscheinlich bezeichneten die Babylonier und Assyrer das E[benholz] mit dem Namen ušû"); P. Thomsen, in Ebert, op. cit. ("Möglicherweise ist aber unter dem in den Amarnabriefen öfter erwähnten ušû-Holz E[benholz] zu verstehen---"); E. Ebeling in Reallexikon der Assyriologie, herausg. v. E. Ebeling & B. Meissner, II, Berlin & Leipzig 1938, 265 (art. 'Ebenholz') ("Ebenholz wurde in Babylonien, wenn man in dem babylonischen Worte ušu/ešu dieses Holz erkennen darf, zu mancherlei Zwecken verwandt."); Mercer, op. cit.; Lucas, Anc. Eg. Materials, 496 ; C. Aldred in A History of Technology (ed. Singer, Holmyard, and Hall) I, Oxford 1955, 685; A. Hermann, Reallexikon für Antike und Christentum IV, col. 481 ("In Mesopotamien war E[benholz] nicht weniger beliebt, wenn der Ausdruck ušu/ešu wirklich diese Holzart meinte, wie dies aufgrund der Amarnabriefe angenommen wird. Schon Gudea liess dieses Hartholz aus dem Meluchcha-Gebirge (Indien?) einführen".).

71. W.F. Leemans, Foreign Trade in the Old Babylonian Period as revealed by texts from southern Mesopotamia, Leiden 1960, ll & n.5.

72. idem, *ibid.*
- 72a. Contra Leemans, *op. cit.* 11, n.5, who says that "in Egypt ebony was also called 'black wood' ".  
 "in Egypt ebony was also called 'black wood' ".  
 73. E.g. Amarna Letters, No. 5 (Amenophis III to Kadashman - Enlil I of Babylon (Karduniash) ), 11. 20-25, 28-30; No. 14 (Akhenaten to Burraburiash, King of Babylon), Col. II, 55; Col. III, 7, 75-77; Col. IV, 1, 20; No. 34, 20, 24 (the king of Alashia requests from the king of Egypt "one bedstead of <sup>is</sup> u<sup>š</sup>i, inlaid with gold ----" and "14 pieces of <sup>is</sup> u<sup>š</sup>e", presumably unworked logs).
74. Cf. No. 5, 11. 20-25, 28-30.
75. Nos. 5, 1.20 ; 14, Col. III, 75; Col. IV, 1 (cf. 11. 19-20); 31, 1.37.
76. On which see R. Campbell Thompson, A Dictionary of Assyrian Botany, London, British Academy, 1949, 290-91. Campbell Thompson thinks <sup>is</sup> esi, e<sup>š</sup>u/u<sup>š</sup>u is a willow.
- "Where it grows and what kind of land nurtures it

77. Herodotus III, 47. κεκοσμημένον δὲ χρυσῷ καὶ  
εἰρίοισι ἀπὸ ξύλου.
78. Campbell-Thompson, Dict. Assy. Bot., 113
79. lit. "wool-bearing tree", τὸ δένδριον ἔριοφόρον.
80. IV, vii, 7-8; cf. Pliny, N.H. XII, xxi, 38 - xxii, 39.  
On cotton in the Nile Valley see Griffith and Crowfoot,  
JEA 20, 5-12; Lucas in Tothill, Agric. in the Sudan,  
29-30, and the literature there cited.
81. Such contacts were facilitated by, int. al., the  
cutting of the Nile-Red Sea canal by Darius  
(Posener, Chron. d'Eg. No. 26 [July 1938], 271 ff. ;  
id., La première Domination perse en Egypte, 48 ff.)
82. Cf. the terra-cotta heads, including those of Indians,  
found in the foreign quarter of Memphis (Petrie,  
Memphis I, 15-17; pls. 39-40; idem, Meydum and Memphis  
III, 46; pl. 42).
83. II, 86. He appears, however, to have only the vaguest  
knowledge of the place of origin of cassia and  
cinnamon. After stating (III, 107) that Arabia was  
the only country which yielded cinnamon and cassia,  
which latter he describes (III, 110) as growing in  
a shallow lake around and in which lived bat-like  
creatures, Herodotus says of cinnamon (III, 111):  
"Where it grows and what kind of land nurtures it

SPICES

- from at least as early as the Third Dynasty (and probably still earlier, though the texts are silent).  
 \* The Egyptians made use of a wood called hhy - probably they cannot say, save that it is reported, reasonably enough, to grow in the places where Dionysus was reared" [i.e. India].
84. R.G. Kent, Old Persian Grammar, Texts, Lexicon, 2nd ed. New Haven 1953, 110,<sup>143,</sup> 144: D(arius) S(usa) F., ll. 40-41.
85. asā dāru<sup>v</sup>, lit. 'stone wood', so called because of its hardness (so Kent, op. cit., 190; Lexicon s.v. dāru-).
86. I, 129

The species producing hhy-wood was Acacia senegal G. & P., which even at the present day is found as far north as the Adrar in Mauritania, approximately latitude 26° N. In the Sudan Republic the geographical occurrence seems to be near seasonal limit of the Acacia Short-branched region, as an outlier of the Acacia Tall Grass

The distribution in Pharaonic times is uncertain, but probably not far from the present limit, and probably not further north on the Red Sea coast.

It has not proved possible to determine the identity of the other hhy-producing trees, some of which may have occurred even further north than Acacia senegal.

While it is not impossible that quantities of hhy were also obtained from Asia (India, Ceylon), there is as yet no definite evidence that such was the case.

Returning now to the starting-point of our enquiry, it must be admitted that the results obtained have shed disappointingly little light on the location of Persepolis. However, it may well be that the study of the aromatics obtained from thence, on which considerably more evidence exists, will be more illuminating.

## CONCLUSIONS

From at least as early as the Third Dynasty (and probably still earlier, though the texts are silent) the Egyptians made use of a wood called hbny - probably the Egyptian rendering of a vernacular name. Whenever the geographical origin of hbny is mentioned, it is nearly always stated to have been obtained from Nubia or Punt. In the New Kingdom an unidentified part of the hbny-tree, the hp̄, was used as a medicament in the treatment of certain eye-diseases, and at a later date still gum of the hbny-tree was used as an adhesive.

Like the English 'ebony', to which it gave rise, 'hbny' does not appear to have been the name of a particular species, but a general term for a number of species probably belonging to various genera and families. Not all of these would at the present time be regarded as ebony-producers, and despite the linguistic relationship of the names 'hbny' and 'ebony', botanically the two do not correspond exactly. In colour hbny was usually black or blackish, often streaked with lighter colours, and rarely all red or yellow.

One of the species producing hbny-wood was Dalbergia melanoxylon G. & P., which even at the present time is found as far north as the Adrar in Mauretania, in approximately latitude 20° N. In the Sudan Republic its northernmost occurrence seems to be near seasonal watercourses at the southern limit of the Acacia Short-Grass Scrub region, as an outlier of the Acacia Tall Grass Forest region (pl. X).

Its distribution in Pharaonic times is uncertain, but during the New Kingdom it probably occurred west of the Nile Valley at least as far north as latitude 20° N., and possibly even further north on the Red Sea coast.

It has not proved possible to determine the identity and distribution of other hbny-producing trees, some of which may have occurred even further north than D. melanoxylon.

While it is not impossible that quantities of hbny were also obtained from Asia (India, Ceylon), there is as yet no definite evidence that such was the case.

Returning now to the starting-point of our enquiry, it must be admitted that the results obtained have shed disappointingly little light on the location of Punt. However, it may well be that the study of the aromatics obtained from thence, on which considerably more evidence exists, will be more illuminating.



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- BIFAN = Bulletin de l'Institut français d'Afrique noire, Dakar, Senegal.
- BIFAO = Bulletin de l'Institut français d'archéologie orientale, Cairo 1901-
- BMMA = Bulletin of the Metropolitan Museum of Art, New York.
- Chron. d'Ég. = Chronique d'Égypte, Brussels 1926-
- JEA = Journal of Egyptian Archaeology, London 1914-
- LAAA = Annals of Archaeology and Anthropology, issued by the Institute of Archaeology, University of Liverpool, ~~XXXXXX~~ Liverpool 1908-48.
- OLZ = Oriental<sup>ist</sup>ische Literaturzeitung. Monatsschrift für die Wissenschaft vom ganzen Orient, Leipzig 1898-
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DESCRIPTION OF PLATES

- I. The delivery of hby and other items by the men of Year and Min. Tomb of Amunedjeh (No. 84) at Thebes.
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- VI. Tjw-staves and whips of hby depicted in the tomb of Kamsuā (No. 93) at Thebes (after Davies, The Tomb of Kamsuā at Thebes I, pl. 18)
- VII. Dalbergia melanoxylon Guill. et Perr. Tree in the deciduous state, Okello, West Nile Province, Uganda (after Eggeling, The Indigenous Trees of the Uganda Protectorate, photo. 50).
- VIII. Dalbergia melanoxylon Guill. et Perr. 1. Flowering vertical branchlet ( $\frac{1}{4}$  nat. size). 2. Fruiting panicle ( $\frac{1}{4}$  nat. size). 3. Flower in vertical section, X 8 $\frac{1}{2}$ . 4. Staminal sheath, X 10. 5. Immature fruit (nat. size). (after Eggeling, op. cit. 301 fig. 54).

DESCRIPTION OF PLATES

- I. The delivery of hbny and other items by the men of Yetr and Miu. Tomb of Amunedjeh (No. 84) at Thebes. Dynasty XVIII. (after Davies, JEA 28, pl. 5).
- II. The manufacture of furniture of hbny and other woods, and ivory. Tomb of Rekhmirē<sup>t</sup> (No. 100) at Thebes (after Davies, The Tomb of Rekh-mi-Rē<sup>t</sup> at Thebes, II, pl. 53.)
- III. Hbny shrine of Hatshepsut from Deir el-Bahari (after Naville, The Temple of Deir el Bahari, II, pl. 25).
- IV. The hewing of hbny in Punt (after Naville, op. cit. III, pl. 70).
- V. Carpenter making a palanquin of y(ellow) hbny. Tomb of <sup>Dja<sup>u</sup></sup> [redacted], Deir el-Gebrâwi (after Davies, The Rock Tombs of Deir el Gebrâwi II, pl. 10).
- VI. Tîsw-staves and whips of hbny depicted in the tomb of Kenamūn (No. 93) at Thebes (after Davies, The Tomb of Ken-Amūn [redacted] at Thebes I, pl. 18)
- VII. Dalbergia melanoxylon Guill. et Perr. Tree in the deciduous state, Okollo, West Nile Province, Uganda (after Eggeling, The Indigenous Trees of the Uganda Protectorate, photo.50).
- VIII. Dalbergia melanoxylon Guill. et Perr. 1. Flowering vertical branchlet ( $\frac{1}{2}$  nat. size). 2. Fruiting panicle ( $\frac{1}{2}$  nat. size). 3. Flower in vertical section, X 8 $\frac{1}{2}$ . 4. Staminal sheath, X 10. 5. Immature fruit (nat. size). (after Eggeling, op. cit. 301 fig. 64).
- IX. Diospyros mespiliformis Hochst. a. Flowering branch. b. Fruiting branch. Both nat. size (after Eggeling, op.

cit. 106 fig. 25.)

- X. Vegetation map of the Sudan. (after Andrews in Tothill, Agriculture in the Sudan, 34 fig. 1)
- XI. The delivery of Syrian tribute. Tomb No. 119 at Thebes Dynasty XVIII. (after Wreszinski, Atlas I, pl. 340).

Die Welt des Orients. Wissenschaftliche Beiträge zur Kunde des Morgenlandes, 1948, 146-157.

p. 35, s. 2

Tomb of Ti : the most recent publication is : L. Épreux, F. Daumas, G. Goyon, & H. Wild, Tombes de Ti, 2 fasc., Institut Fr. d'Archéol. orientale du Caire, 1939-1953.

#### Chapt. II.

A small/<sup>dark</sup>wooden figure, 9 cms. high, representing a corpse without its wrappings, published by A. Hermann and W. Schwan, Ägyptische Kleinkunst, Berlin 1940, 101, and assigned by them to the Late Period, is termed 'ebony'. They connect it with the figures stated by Herodotus (II, 78) to have been shown to guests at feasts. If, as is probable, this figure is of ebony, it was possibly the sombre colour of the wood that suggested its use for such an effigy.

(Cf. Hermann, Reallexikon für Antike und Christentum IV, col. 491 : "Eine der kleinen Figuren eines Leichnams, wie sie nach Herodot. 2, 78; Plut. Is. 17; Petron. sat. 34 in der Egypt. Spätzeit als Mahnung zum Lebensgenuss vor dem Tode auf Gastmählern gezeigt wurden, ist

ADDENDA and CORRIGENDA

Introduction

A general survey of the Punt question is given by W. von Bissing, 'Pyene (Punt) und die Seefahrten der Ägypter', Die Welt des Orients. Wissenschaftliche Beiträge zur Kunde des Morgenlandes, 1948, 146-157.

p.35, n.2

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bezeichnenderweise auch aus E[benholz]."

p. 59

A fragment of the upper arm of a statuette of Akhenaten in the Metropolitan Museum of Art, New York (Acc. No. 20.2.12) was identified by Samuel J. Record, Professor of Forest Products, Yale, as "Dalbergia sp.? false ebony".

(Unpublished report on wood specimens, dated 20/12/1921).

Its length is 15.8 cms., and the surface has received a high polish. The provenance of this piece is unknown; it is mentioned by Hayes, Scepter of Egypt II, 288, and by C.R. Williams, MMA Studies III (1) (1930), 93 n.80, but no photograph has yet been published. For the above details I am indebted to Mr. Eric Young.

#### Chapt. V.

I have not yet seen the following two studies which doubtless contain material relevant to this chapter :

- (a) K.W. Butzer, 'Environment and Human Ecology in Egypt during Predynastic and Early Dynastic Times', Bulletin de la Société de Géographie d'Égypte 32 (1959), 43-87.
- (b) Idem, Studien zum vor-und frühgeschichtlichen Landschaftswandel der Sahara. III. Die Naturlandschaft Ägyptens während der Vorgeschichte und der Dynastischen Zeit, Wiesbaden 1959 = Akademie der Wissenschaften und der Literatur. Abhandlungen der mathematisch-naturwissenschaftlichen

Klasse. Jahrgang 1959.

p.125 n.12.

Jackson (SNR 28 (1947), 207) states that the acacia species which produced the charcoal for iron smelting at Meroë was more probably Acacia seyal than A. nilotica or arabica ('sunt').

Chapt. VII, Fig.1.

Add : Faras, the 'Western Palace'. Four fragments of carved 'ebony'. date : Meroitic (?) (Griffith, LAAA 13 (1926), 30; pl. 15, 2-5).

Chapt. VIII

W.F. Leemans, Foreign Trade in the Old Babylonian Period as revealed by texts from Southern Mesopotamia [Studia et Documenta ad Iura Orientis Antiqui Pertinentia. vol. VI], Leiden 1960, reached me too late for <sup>detailed</sup> use and I have not yet had time for more than a cursory examination of the material presented. On the Sumerian esi, Akkadian ešū or ušū, see pp. 11 ff., 17, 125-26; on Meluhha, pp.159-166.

On Ebony in general, see W. Boerhave Beekman, Hout in alle Tijden : Bossen, Bomen en Toegepast Hout in het Verleden, Deventer 1949. Hoofdstuk 7 : Bossen, Bomen en Toegepast hout bij de Egyptenaren, 429-31 (Diospyros), 434-38 (Dalbergia). The material is nearly all derivative.

Bibliography. For : Černý, J., Gardiner, A.H., and Peet, T.E., The Inscriptions of Sinai, 2nd ed. Oxford and London 1952-55, read : Gardiner, A.H., Peet, T.E., and Černý, J., etc.

LAST-MINUTE NOTES

pp. 2 and 20, n. 9a

Reference may be made to the discovery by the Ethiopian Antiquities Service of seventeen rock-cut tombs at Yeha, N.-E. of Aduwa in Tigré province, in which were found, int. al., bulbous red pottery vessels of Egyptian shape and others shaped like Egyptian hes-vases

(F. Anfray, 'Archaeological Discoveries in Ethiopia: Rock Tombs excavated at Yeha, and a Castle discovered at Matara', Illustrated London News, 25 March 1961, 502-504, esp. figs. 15 and 16).

p. 66, N.7

On the Hebrew  $\square' \square \square \square$  see T.O. Lambdin, 'Egyptian Loan Words in the Old Testament', Journal of the American Oriental Society 73 (1953), 149. (on the basis of the Hebrew form, an Egyptian prototype \*húbněy is proposed).

p.75, n.58a

To the references there, add: J. Janssen, 'Über Hundenamen im pharaonischen Ägypten', Mitteilungen des deutschen archäologischen Instituts Abteilung Kairo 16 (1958)

[= Festschrift Junker], 178 ( " 'Ebenholz' (41) kann sich auf die Farbe beziehen, was bei 'der Schwarze' (21) sicherlich der Fall gewesen sein wird".), 181, No. 41.

Janssen (Annual Egyptological Bibliography 1958, No. 58333) adds another example of the dog's name Hbn(y), on a relief, probably of Middle Kingdom date, formerly in the collection of P. Lederer. Cf. H.G. Fischer, 'A Supplement to Janssen's list of dogs' names', JEA 47 (1961), 152.

p.175

I have not been able to see the following paper by Wittmack which may well give further details about the specimen from Abusir which he identified as Diospyros ebenum: L. Wittmack, 'Untersuchung altaegyptischen Holzproben aus Abusir', Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin, 1910.