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The making of palm vinegar at al-Ḥiswah (near Aden) and some other crafts related to palm trees.

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In the Yemen, a few miles west of Aden, on the road to Little Aden, lies a small village, surrounded by palm-groves, named al-Ḥiswah which is famous for its production of palm vinegar (**xall**)[1] made by the local peasants.

The palm-groves have different names according to the number of palm trees.[2] The largest holds 100 to 200 trees, and is called **dimneh**, a word that usually refers simply to any kind of (arable) land. A portion of the palm-grove containing 10 to 20 palm trees is named **sulx**, and in 1989 this was the usual size tended by a peasant.[3] The word **sulāx** derived from the same root is found elsewhere in the Yemen, but with a less specialized meaning of 'piece, bit, fragment'.[4] A unit of two palm trees is called **ḍulfeh**, a word, to my knowledge, that has never been recorded. Dozy[5] mentions **ḍalfah** 'battant de porte', a

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[1] The data quoted here is based on oral research. The transcription scheme of *NAS* could not be used, particularly double letters for one sound, in order to avoid confusions between a single sound or two distinct sounds. The system is then based on a 'one sound one letter' scheme. Here are the particular consonants used in this article : **đ** voiced interdental, **ḍ** voiced emphatic interdental, **ġ** voiced fricative velar, **š** unvoiced fricative palatal, **x** unvoiced fricative velar.

[2] If not otherwise mentioned, all the explanations concerning the palm trees and the making of vinegar are taken from the information of Mr. Sh. Ṣālah Sālam Halas, a peasant from al-Ḥiswah, whom I recorded in 1989. May he find here the expression of my gratitude. My thanks are also due to Mrs ʿA. Maǧīd ʿUbādī and Mr M. Ḥassām Hamāmī from the Faculty of Education in Aden who helped me understanding the recording. This work was done during a linguistic survey in the Yemen in 1989, financed by the French Ministry of Foreign Affairs and the University of Aden.

[3] Dowson, 304, mentions for Libya that 'the average number of palms one tapper can manage [is] between fifteen and twenty'.

[4] Piamenta, 228.

[5] Dozy, II, 12a.

possible corruption of **ḍarfah** or **darfah**, Landberg[6] **ḍālfa** '*Kaktusblatt*', and Beaussier[7] **ḍalfah** '*feuille, raquette de cactus ; feuille de palmier nain, d'agave*'.

The palm tree itself, a dwarf palm, measures 3 to 4 feet,[8] and is named **dōš** (pl. **dwāš** or **idwāš**). The tree is also known in the Yemen and elsewhere as **dūm** 'doum palm',[9] and Landsberger[10] indicates that it is often mixed up with the dwarf palm '*Chamareops humilis*'. ASBD[11] gives the following names in Yemeni Arabic : **šiğarah al-muql** or **dūš** or **ṭafī**. **Dūš**, recorded by Landberg,[12] Stace[13] and Piamenta[14], does not designate the tree but the wine made from it, the 'toddy palm', and another tree '*Thymus palegioides* Forsk.'. The word is not found in classical Arabic. Is it to be compared to **dūšāb** '*vin de palmier ; sirop de datte*'[15] of Persian origin? Serjeant doubts it because the translation '*vin de palmier*' (i.e. toddy) seems to him rather incautious.[16]

In al-Ḥiswah, 'toddy' is named **ṭārī**,[17] and the word seems typical of the area. According to Hobson-Jobson[18] the English word 'toddy' itself comes from 'Hind. **tāṛī** i.e. the fermented sap of the **tāṛ** or

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[6] Landberg, *GD*, 2251.

[7] Beaussier, 625b.

[8] In ASBD, 113, it is said that this kind of palm tree '*Hyphaene thebaica* (Del.) Mart.', a variety of doum palm, grows usually in the area of al-Ḥiswah and in Tihāmah and reaches a height of 10 metres. But the peasants use the tree before it is full-grown. It is also a variety of dwarf palm '**näšer**' that was used for the production of toddy in the Dathīnah (Landberg, *GD*, 1352), but in the Maghreb, it is a variety of tall date-palms, '*Phoenix dactylifera*' (Faure, 95, and Dowson, 295).

[9] Chebabi, 481.

[10] Landsberger, 42.

[11] ASBD, 113.

[12] Landberg, *GD*, 882.

[13] Stace, 118a.

[14] Piamenta, 161a.

[15] Dozy, I, 425b.

[16] Personal communication.

[17] See ASBD, 113.

[18] Hobson-Jobson, 927.

palmyra',[19] and it is most likely that Arabic **ṭārī** has the same origin since Indian settlement in Aden is of long standing, and it is the alcoholic beverage quite popular in India from ancient times (Hobson-Jobson gives citations from AD 1330). Apart from **dūš** mentioned in the previous paragraph, more common terms in Arabic dialects for 'toddy' are **nabīḏ** (var. **nabīd**) or **lāgmi**[20] / **lāgbi**.[21] People from al-Ḥiswah may also call the tree itself **šigarat aṭ-ṭārī** 'the toddy tree'. It is from this toddy that vinegar is produced, and I was told that nowadays toddy as such is not drunk, but only used to make vinegar. Hunter,[22] who provides a detailed report on the Aden economy in the 19th century, refers to the distilling of liquor from rotten dates by the Jewish community, but does not refer to toddy or palm vinegar, and al-Ḥiswah is only mentioned in the context of its attempts to grow vegetables. Still, when the Rasūlid Sultan al-Mu'ayyad visited Aden in 1299, 'he commanded that the farming of the House of Vinegar (*damān Bayt al-Khall*) be abolished' and Serjeant[23] suggests that *Bayt al-Khall* was a euphemism for the manufacture of spirituous liquors, as **nabīḏ** from Aden was quite famous as far back as the 12th and 13th centuries.[24] It is difficult to say whether the production of toddy and vinegar stopped at some stage, perhaps because of the decrease of population in Aden, or whether Hunter's lack of reference to them was due to their unsignificant production in the local economy.

The procedure of making vinegar starts with the treatment which must be given to the tree. First, the young palm tree is pollarded, all the leaves are removed,[25] and the trunk is barked (**qaššar**) on

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[19] I am indebted to Professor R.B. Serjeant for drawing my attention to this article.

[20] *Tak.*, 3663.

[21] Dowson, 295.

[22] Hunter, 82-83, and 138.

[23] Serjeant, 65.

[24] Serjeant, 80.

[25] ASBD, 114, gives a variant : first, all the leaves but two are torn off, and after 8 days the remaining two leaves are removed and the tree is pollarded. He does not mention the barking of the trunk. According to Lethielleux, 227, in the Fezzan area, the procedure consists in making an incision at the top of the tree. See also

almost all its length until the pith (**qalb**) is reached. The pith is left to harden for eight days in the open air. This waiting period is important as it allows a good inflow of sap afterwards. These 8 days having elapsed, the pith is split (**tfaqqaš**) and a piece of spathe (**ṭalaʿ**) cut in the shape of a tongue is nailed in the slanting slot. Before, a funnel (**kōməʿ**) was used. The spathe, that presses upon the sap, acts as a gutter (**misrəb**) where the toddy accumulates. To rivet the spathe, four nails are used. They are made of the thorns of the sesbania (*Sesbania grandiflora*), a shrubby tree growing in the Yemen.[26] The spathe is not placed on top of the pith but penetrates well into the slot in order to let the sap flow out properly. To protect the pith from crows (**ʾarāb**, pl. **ʾarabān**[27]) whose beaks might cause severe damage leading to the tree's death, a sack (**gūnyeh**, pl.**gawānī**) is placed on top of it. It also keeps the toddy free of impurities.

Under the gutter, a bottle (**qārūrah**, pl. **qarāwīr**[28]) with a long neck is tied upside down with string[29] to the trunk, with its bottom chopped off and the neck corked. In Dathīnah, a century ago, Landberg[30] describes a small basket woven with palm leaves, the **šiṭṭ** (or **šaṭṭ**), that was used to collect the toddy and was drunk first thing in the morning. The basket, he states,[31] was so tightly woven that it could hold liquid without any problem.

One day later, the top of the pith is filed (**qašaṭ**) at 7 am[32] with a kind of large knife or rasp (**mibrad**)[33] to clear the sap duct. The operation has to be renewed four times a day at 7 am, 11 am, 5 pm and

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Dowson, 299-301.

[26] The nails are not made by the peasants, but bought in shops (**šābāt**).

[27] In the dialect of my informant the voiced velar fricative **ġ** has become a glottal stop **ʾ**. Cf. CA **ġurāb**.

[28] The plural in CA is **qawārīr**.

[29] ASBD, 114, says that it is a piece of sack that is used for this purpose.

[30] Landberg, *GD*, 882.

[31] Landberg, *Hdr*, 431.

[32] ASBD, 114, explains that this is done because a skin is continuously growing over the slot in the pith. Dowson, 301, also describes this procedure of 'shaving' on the tapped date-palms.

[33] It is made by the peasants themselves after the blacksmith has prepared the piece of iron. The rasp has to be regularly sharpened with a whetstone (**məsann**).

8 or 9 pm. If the palm tree is good, the bottle is full on the morning of the second day, and afterwards a full bottle of toddy is collected twice a day, early morning, and at midday.[34] If the palm tree is bad (**bāyax**) only one collection is made at 5 pm. The quantity of toddy also depends on the season, summer being the best.[35] The process of sap alone becoming **ṭārī** (toddy), i.e. alcohol, ASBD[36] explains, is totally natural and is due to the presence of sugar in the sap that ferments in the open air. White froth (**gafəl**) appears on the surface of the liquid, and the fermentation stops after six hours in the bottle. For a better production of toddy, the palm tree is used after it has borne fruit. According to ASBD,[37] after a period of time he does not specify, the palm tree is left alone to grow normally again, and five months later the whole process starts again where new leaves have grown. My informant said that the palm tree dies after the first production.[38]

So far, the technique is the same for both toddy and vinegar. The making of vinegar itself starts when the bottles of toddy are first decanted in a demijohn (**dabagāna**, pl. **dabagānāt**) that holds the contents of seven bottles. When 30 of these demijohns are full, they are poured into a kind of large barrel (**marṭabān**), a word of Turkish origin that designates a large jar to store food[39] or wine.[40] Today this **marṭabān** is made of plastic, but it used to be made of wood or glass.[41]

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[34] ASBD, 114, states that 750 ml of toddy is produced every 12 hours. See also Dowson, 305.

[35] Munier, 180, indicates that a date-palm can give up to 400 litres of toddy during its life time, Dowson, 306, 500 litres.

[36] ASBD, 114.

[37] ASBD, 114.

[38] Lethielleux, 227, reports for Fezzan, that after a small incision that gives three to six litres of toddy a day during two months the tree is left to grow again and that it is a means to reinvigorate an old tree. A full utilisation lasts three months and kills the tree. Fischer, 26, states that once the tree has been pollarded '*dies rohe Verfahren tötet natürlich den Baum*'. Dowson (303-4) reports that in Libya the frequency of tappings is of an average of twice, up to six times, with a period of five years between each tapping.

[39] Piamenta, 463b.

[40] Dozy, II, 582b.

[41] Serjeant (personal communication) remembers having come across a **marṭabān** in al-Shihr (Ḥaḍramawt), "a large pottery' jar used (in this case) for holding shark oil".

The toddy is left there in darkness for 40 days until it turns into vinegar, and nothing is added to the liquid to help this process. The vinegar is then bottled and sold in small shops along the road that runs through the village. It has a sweet taste and can be used for dressing, but its main usage is to cure various stomach aches in children, and it has proved to be effective against intestinal worms.

The production of toddy and vinegar is not the sole usage of the **dōš**, the palm tree. Its fruit, named **ḍēḥ** (sing. **ḍēḥa**[42]), which are round, reddish-brown and of the size of a table-tennis ball,[43] are edible, and they are sold by the children of al-Ḥiswah in the market of the near-by town of Shaykh ʿUthmān (where people call them **bahaš**, a more common name in the Yemen). They are eaten before they reach their full maturity, while there is still a sweet liquid inside the husk (**qorš**). They are quite hard and one needs time to eat them. The crows are also very fond of the liquid in the fruit which they sip after piercing the husk with their beaks. When they are fully ripe, the liquid turns into a small white stone named **molog** and the fruit can be used for sowing.

The leaves are sold for wickerwork. From the large ones (**ṭafī**)[44] large baskets (**laghāt** or **zanābil**) with handles and a lid (to keep dates, etc.) are woven. From the leaves of the crown, **qolb** (or **qolob**) **al-ʿazaf**, people plait round straw mats (**səlaq** or **misirfah**) to put food in, or straw hats (**qudfa**), and out of the pre-leaves (**girrāf** or **ʿigəm**) that sprout from the still closed yellow flower (**fətəš**) which turns white after cleaning, prayer mats (**sagāgid**), long rectangular mats[45] (also named **girrāf**) for the cylindrical earthenware ovens (**nōfah**), and round mats are made.

Even the bark (**qulaf**) of the palm tree was formerly used to make shoes (**gəzmah**, pl. **gazmāt**) at a time when no flip-flops (**šambalāt**) existed. A piece of bark was used as the sole, four holes were pierced in it, through which a pre-leaf was passed and knotted. Nowadays the bark is only used to kindle a fire in the earthenware oven. Literature

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[42] In CA it designates the ripe date of the wild palm tree.

[43] Grohmann, 109, indicates that the fruit is the size of a potato.

[44] Recorded also as the name of the tree by ASBD, 113.

[45] They can also be made out of the crown leaves.

mentions also various usages in house-building (see Munier, Lethielleux, etc.) but my informant did not mention them.

Arabic botanical and agricultural treatises and specialized literature provide quite a number of references to palm trees (more numerous naturally for date palms than for doush (or doum) palms which are of a less economical and nutritional interest to the Arab populations), and to the forbidden consumption of toddy but, with the exception of ASBD (and the agronomist Dowson), the descriptions that are available to me lack to various degrees technical details about the extraction of toddy. The situation is even more difficult for palm vinegar, to which reference is very seldom made. The thorough description that is given above is of course limited to a specific area and a specific tree, and cannot be used as a general example, as some comparisons have shown. The lack of interest in the production of vinegar may be due to its very local diffusion. In the Yemen, I have never yet come across a bottle of palm vinegar anywhere but in the Aden area. It might prove interesting to see if Arabic medical treatises are more revealing about palm vinegar.

From a linguistic point of view, the dialect of al-Ḥiswah shows a number of peculiarities concerning technical terms, either words previously unrecorded or having taken on specialized meanings. All the words related to the doush palm tree and its by-products are listed below.

LIST OF VOCABULARY

The list is provided below in the alphabetical order of roots. *Hamzah* (ʾ) and *ʿayn* (ʿ) start the alphabet. **g** corresponds to CA *jīm*, **q** to *qāf*, **ʾ** to *ghayn*, and **ḍ** to both *ḍād* and *ḍāʾ*.

〈ʾfy〉 see 〈**nwf**〉.

〈ʾrb〉 **ʾarāb**, pl. **ʾarabān** : crow (= CA 〈**ġrb**〉).

〈ʿfr〉 **ʿafr**, pl. **ʿfūr** / **ʿafūr** : young palm tree that can be fertilized. Cf. CA **ʿafār** 'fertilization of the palm tree'. Unrecorded in Piamenta for the Yemen.

〈ʿgm〉 **ʿəgəm** / **ʿigəm**, pl. **ʿəgūm** / **ʿigūm** : pre-leaves of the doush palm tree. It is the stone of a date in CA, but a date

without stone in Ḥaḍramawt (Landberg, *Hdr.*, 310).

‹ʿzf› see ‹qlb›.

‹bhš› **bahaš** : fruit of the palm tree named 'doush' (Shaykh ʿUthmān). In Piamenta, 42, it is also the name of the tree.

‹brd› **mibrad** : rasp, file.

‹bwx› **bāyax** : bad, of a palm tree that produces a small quantity of toddy. Unrecorded in Piamenta for the Yemen.

‹dbgn› **dabagānah**, pl. **dabagānāt** : demijohn of a capacity of about 5 litres used to decant the toddy. The word has undergone a nasalisation of **m**, Piamenta, 156b, records **damijānah**.

‹dmn› **dimneh** : palm-grove of 100 to 200 palm trees. Any kind of (arable) land, Piamenta, 157, and Dozy, I, 462.

‹dwš› **dōš**, pl. **dwāš** : variety of palm tree : *Hyphaene thebaica* (Del.) Mart. whose sap produces toddy and vinegar. It is not a CA word but Landberg, *GD*, 882, records the word as designating the toddy itself, not the tree, and Piamenta, 161, the 'toddy palm', and another tree '*Thymus palegioides* Forsk.'.

‹ḍlf› **ḍulfeh** : portion of palm-grove of two **dwāš** (palm trees). Unrecorded meaning.

‹ḍmm› VII **yinḍamm** : 'hardens', an unrecorded VII.

‹ḍyḥ› **ḍēḥ** (coll.), sg. **ḍēḥa** : round, reddish-brown fruit of the doush. The word **ḍayḥ** in CA is the ripe dates of the wild palm tree named **muql**. Unrecorded in Piamenta for the Yemen.

‹ftš› **fətəš** : yellow flower of the doush still closed, that has not turned black. The noun is unrecorded, but Piamenta, 365, gives I and V verbs 'to open up, to blossom'.
Popenoe, 346, gives the following names : **haḍīm**, **fāliq** or **qāliq**.

‹fqš› V **tfaqqaš** (intrans.) : to split in two parts. V is unrecorded, but the meaning is found under I in CA and II in Piamenta, 377.

‹gʿms› **gaʿmūs**, pl. **gaʿāmīs** : old doush palm tree. Kazimirski, I, 302, simply gives **ğaʿāmīs** 'palmier'.

‹gdb› **gabba** (for ***gadba**) : barren (the flower of the palm tree). The root and meaning are classical, but note progressive assimilation of **d** to **b**.

‹gfl› **gafəl** : white froth that indicates that the toddy is fermenting. Variants of this word are found in Piamenta, 70, and in CA.

‹gḥṣ› **gaḥṣ** : young, still too tender doush palm tree. Unrecorded.

‹grf› **girrāf** : 1/ long rectangular mat made of the crown leaves or of the pre-leaves of the doush palm used in earthenware oven. 2/ The pre-leaves of the doush palm. In CA the word **ğarf** means 'dry grass'. Unrecorded in Piamenta for the Yemen.

‹gwn› **gūnyeh**, pl. **gawānī** : sack used to carry the fruit (**ḍēḥ**) of the doush palm. Common.

‹gzm› **gəzmeh**, pl. **gazmāt** : sandals. Common word in the Yemen.

‹ġrb› see ‹ʾrb›

‹ḥbl› **ḥəbla** : pregnant, of the palm tree the fruit of which has not yet blossomed out.

‹xḍr› **xaḍār** : greenery (= all the leaves of the palm tree). Dozy, I, 378, gives a similar Egyptian form.

‹xll› **xall** : vinegar.

‹xmr› **xamər / xamr** : wine.

‹kmʿ› **kōməʿ** : funnel. It was formerly used instead of a spathe to collect the toddy (see also Landberg, *GD*, 91 where 'funnel' is **maḍabb**). = CA and YA ‹**qm**ʿ›. The change of **q** to **k** occurs only in this word.

‹kys› **kās**, pl. **kīsān** : calyx, flower-cup. (= CA ‹**k**ʾ**s**›).

‹lgh› **lagha**, pl. **laghāt** : large wicker-basket with handles and a lid (usually to carry dates). Unrecorded word.

‹mlg› **molog** : white stone of the fruit of the doush palm. The word is unrecorded. In CA **mulğ** is a wild date.

‹mrṭbn› **marṭabān** : large plastic barrell (formerly wood or glass) of a capacity of about 150 litres where toddy turns into vinegar. Common in the Yemen.

‹msḥ› **masḥa** : scraping (of the pith). Cf. Piamenta, 465, with a different meaning.

‹ngḥ› **nāgəḥ / nāgeḥ** : ripe.

‹nwf› **nōfa** : cylindrical earthenware oven. A more common variety of this word in the Yemen is **mōfa**, from the root ‹ʾfy› (Piamenta, 10a).

‹qdf› **qudfa** : large straw hat (similar in shape to a cow-boy hat) made of palm leaves. Unrecorded word.

‹qlb› **qalb**, pl. **ʾaqalāb** : pith of the palm tree.

qolb / qolob al-ʿazaf : the crown of palm leaves. Ḥaḍramawt, **naḥr** (Landberg, *Hdr*, 307ff).

‹qlf› **qulaf**, sing. **qulfah / qulfəh** : bark of the palm tree. The meaning of CA **qilf** is the same, but **qulfa** (pl. **qulaf**) means 'foreskin, prepuce'. Serjeant, although not doubting an etymology connected with **qilf**, suggests that the Yemeni word might also be connected with CA **ġilāf** 'cover, etc.', South Arabian *qāf* being often pronounced as *ghayn* (in fact in the Dathinah and in the area of Yafiʿ). But this does not hold true at al-Ḥiswah, or it would be the only word where it occurs, and there is no long vowel in the word recorded. Piamenta only mentions for this root the word **galfā** 'inner wall stone roughly cut'. Stace, 17, gives **qišr** for 'bark'.

‹qmʿ› see ‹kmʿ›.

‹qrš› **qorš** : husk.

‹qrwr› **qārūrah**, pl. **qarāwīr** : bottle. Rossi, 196, gives a plural equivalent to CA : **gawârīr**.

‹qšr› **qaššar, yuquššir** : to bark a palm tree. The root is with metathesis in Dathīnah (**qrš**) (Landberg, *GD*, 2474), perhaps because of the influence of **qorš** 'husk'?

‹qšṭ› **qašaṭ** : to rasp, file.

qašṭah : a rasping.

‹sgd› pl. **sagāgid** : prayer mats. Dozy (I, 633b) records pl. form from Ibn Baṭṭutah.

‹slx› **sulx** : portion of palm-grove containing 10 to 20 palm trees. Meaning unrecorded.

‹slq› pl. **səlaq / sulaq** : round mats made of pre-leaves or palm leaves of the crown. The word is known in Aden and Dathīnah (Piamenta, 229).

‹snn› **məsann** : whetstone.

‹srb› **misrəb** : gutter, to collect toddy, it is made of a piece of spathe.

‹srf› **misirfah** : round straw mat in which to put food. Variants in Piamenta, 221.

‹sysbn› **sēsabān** : *Sesbania grandiflora*. A shrubby tree whose thorns are used to make nails (see Piamenta, 241).

‹šmbl› **šambalāt** : flip-flops. Piamenta, 267, mentions the word with either **n** or **m**.

‹šāb› pl. **šābāt** : shops. The word, unrecorded, comes from English 'shop'.

‹šwb› **šōb** : knot in the trunk of the palm tree where knifes can break. Landberg, *Arabica*, 299, 'saletés'.

‹ṭfy› **ṭafī** : leaf of the doush palm. A common word that designates more particularly the dry palm leaf.

‹ṭlʿ› **ṭalaʿ** : spathe of the palm tree, either male or female. The male is fruitless, and used to feed cattle. The word is also found in CA. In Ḥaḍramawt, the spathe is called **qurrāf** (Landberg, *Hdr*, 309).

‹ṭry› **ṭārī / ṭārīʾ** : toddy. Unrecorded for Arabic, same Hind. origin as English 'toddy'.

‹znbl› plur. **zanābil** : large wicker-baskets. Common word in the Yemen and elsewhere. More typical of al-Ḥiswah is **laghāt** (q.v.).

BIBLIOGRAPHY

Abbreviations :

Arabica : see LANDBERG

ASBD : see BĀ DHĪB

GD : see LANDBERG

Hdr. : see LANDBERG

Tak. : see MARÇAIS, W. and A. GUÎGA

AL-AṢMAʿĪ, ʿA. M. (d. *ca.* 231/828)

1907. *Kitāb al-naḥl*. Ed. by A. Haffner. Beirut.

BĀ DHĪB, ʿA. S. (= ASBD)

1991. *Al-Nabātāt al-ṭibbiyyah fī 'l-Yaman*. Ṣanʿāʾ, 113-115.

BEAUSSIER, M.

1958. *Dictionnaire pratique arabe - français* ... Nouvelle édition, revue, corrigée et augmentée par M. Mohammed Ben Cheneb. Alger.

CHEHABI, M.

1957. *Dictionnaire des termes agricoles français-arabes*. Beirut (2nd ed.)

DOWSON, V.H.W.

1957. 'Palm Wine in Libya'. *Tropical Agriculture*, XXXIV / 4, 295-309.

DOZY, R.

1881. *Supplément aux dictionnaires arabes*. 2 vols. Leiden.

FAURE, R.

1968. *La Palmeraie de Tafilalt (stricto sensu). Etude d'un secteur d'irrigation traditionnelle au Maroc*. Unpublished 'Thèse de 3ème cycle' [Name of University not mentioned].

FISCHER, Th.

1881. *Die Dattelpalme*. Petermann's Mitteilungen Erganzungsheit n° 64.

GROHMANN, A.

1922. *Südarabien als Wirtschafsgebiete*. Erste Teil. Wien.

HUNTER, Capt. F.M.

1877. *An Account of the British Settlement of Aden in Arabia*. London.

IBN SĪDAH, ʿA. b. ʾIs. (d. 458/1066).

n.d. *Kitāb al-Mukhaṣṣaṣ*. 5 vols. Beirut.

KAZIMIRSKI, A. de B.

1860. *Dictionnaire arabe-français*. 2 vols. Paris.

LANDBERG, C. de.

1898. *Arabica*. N° V. Leide. (= *Arabica*)

1901. *Etudes sur les dialectes de l'Arabie méridionale. I. Ḥaḍramoût*. Leide. (= *Hdr*)

1920-1942. *Glossaire Datînois*. Leide. (= *GD*)

LANDSBERGER, B.

1967. *The Date Palm and its by-products according to the Cuneiform sources*. Graz (= Archiv für Orientforschung, Beihefte 17).

LANE, E.D.

1863-1893. *Arabic - English Lexicon*. Edinburgh.

LETHIELLEUX, J.

1948. *Le Fezzan, ses jardins, ses palmiers. Notes d'ethnographie et d'histoire*. Tunis.

MARÇAIS, W. and A. GUÎGA. (= Tak.)

1958-1961. *Textes arabes de Takroûna*. II. Glossaire. 8 tomes. Paris.

MUNIER, P.

1973. *Le palmier-dattier*. Paris.

PIAMENTA, M.

1990-1991. *Dictionary of post-classical Yemeni Arabic*. 2 vol. Leiden.

POPENOE, P.

1922. 'The Pollination of the Date Palm'. *Journal of the American Oriental Society*, XLII, 343-354.

ROSSI, E.

1939. *L'Arabo parlato a Ṣan'â'*. Roma.

SERJEANT, R.B.

1988. Yemeni Merchants and Trade in Yemen 13th - 16th Centuries; in D. Lombard and J. Aubin (eds.) *Marchands et hommes d'affaires asiatiques dans l'Océan Indien et la Mer de Chine 13e-20e siècles*. Paris, 61-82.

STACE, E.V.

1893. *English-Arabic Vocabulary*. London.

YULE, H. & A.C. BURNELL. (= Hobson-Jobson).

1886. *Hobson-Jobson. A Glossary of Colloquial Anglo-Indian Words and Phrases*. London, New York (ed. 1985).