

Incense from Sheba for the Jerusalem Temple

לָמָּה-זֶה לִי לְבוֹנָה מִשֶּׁבַּא תְּבוּא וְקִנְיָה הַטּוֹב מֵאַרְץ מְרָחֵק (ירמיהו 1:20)

“Why do I need frankincense that comes from Sheba and the goodly fragrant cane from a faraway land?” (Jer 6:20 ALTER)

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Abstract

In Eilat Mazar’s excavations in the Ophel in Jerusalem, a partially preserved inscription engraved on the shoulder of a pithos was found in 2012 in a context dated to the 10th century BCE. Although close to a dozen interpretations of the inscription have been offered over time, its reading remains highly disputed. All of these interpretations consider the script to be Canaanite. In this study, it is argued that the inscription was engraved in the Ancient South Arabian script and that its language is Sabaeen. The inscription reads “]šy ladanum 5.” The aromatic ladanum (*Cistus ladaniferus*), rendered as *lḏn* in the inscription, is most probably שְׁחֵלֶת (*šḥēlet*), the second component of incense according to Exod 30:34. The inscription was engraved before the locally made vessel was fired, leading to the conclusion that a Sabaeen functionary entrusted with aromatic components of incense was active in Jerusalem by the time of King Solomon.

Keywords: Ophel; ladanum; South Arabian; Solomon; Sabaeen; aromatic; temple.



1. Introduction

In 2012, during Eilat Mazar’s excavations in the Ophel—between the City of David to the south and the Temple Mount to the north (Fig. 1)—the partial remains of seven pithoi were found about 80 m to the south of the southern wall of the Temple Mount. The pithoi, found inside Building II, belong to two neckless subtypes typical of the Early Iron Age IIA (Mazar 2015: 467). One of them bears an inscription and is of Subtype B, which has an elongated horizontal rim. On the basis of architectural and ceramic analysis, the excavator dated the building and the pithoi to the Early Iron Age IIA2, ca. mid-10th century BCE (*ibid.*, 468).¹ A meticulous stratigraphic and ceramic analysis of the findings was recently published by Winderbaum, confirming the building’s date (Winderbaum 2022: 158–159, “Phase 0”), as well as the dating of the inscribed pithos to the same period.²

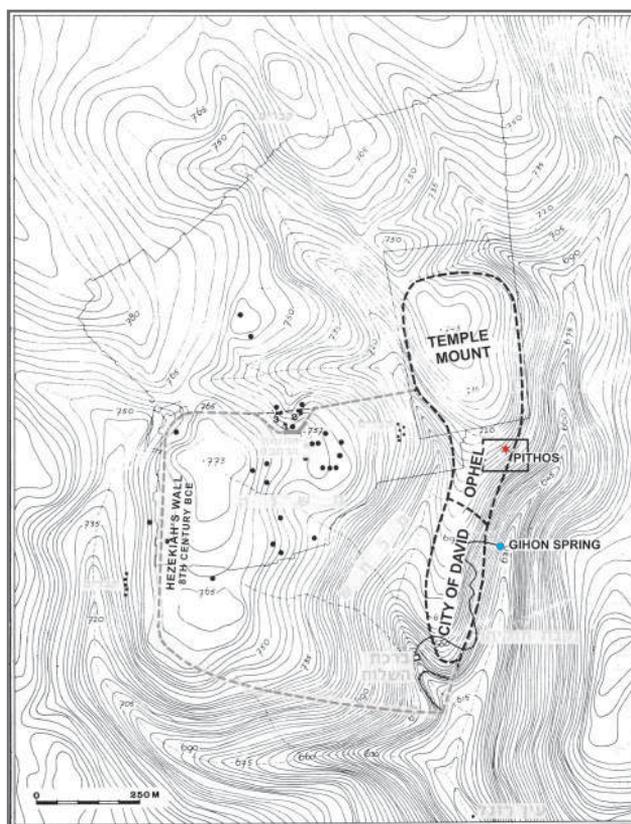


Fig. 1. A plan of Jerusalem in the 10th century BCE.

- 1 For the dating of the Iron Age IIA to ca. 980–840/830 BCE, see Mazar (2005).
- 2 See especially Winderbaum’s detailed comparison of Type PT3a pithoi (No. 24) across various sites in Judah (Winderbaum 2022: 177, Fig. 12b). A different opinion was expressed by Finkelstein (2022).

The inscription is located below the pithos's rim; it was engraved before firing, and seven of its letters have survived (Fig. 2). Since the *editio princeps* of the inscription (Mazar, Ben-Shlomo, and Ahituv 2013; Mazar 2015: 467–468), close to a dozen researchers have offered different readings and interpretations; however, the reading and meaning of the inscription remain controversial.³ The common denominator of the previous interpretations of the inscription is that the script is Canaanite. Instead, in this article, I will argue that the inscription was engraved in the Ancient South Arabian (henceforth ASA) script in its earliest phase, dated to the beginning of the first millennium BCE and that its language is Sabaean.

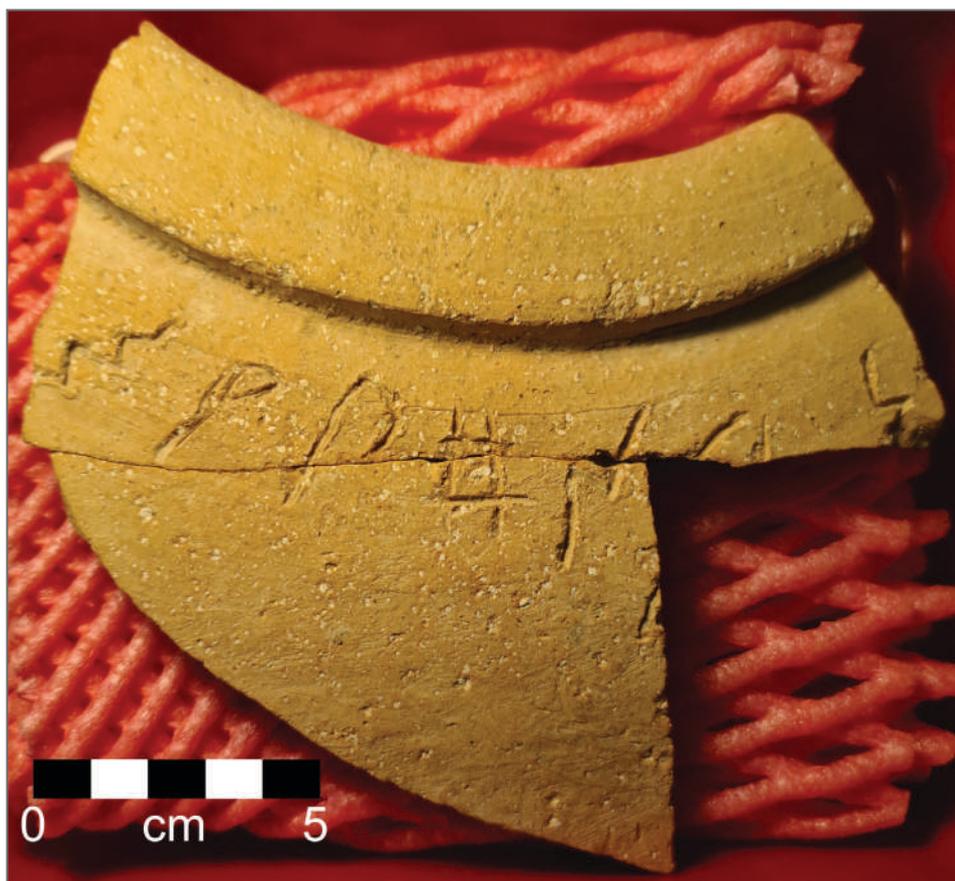


Fig. 2. The 10th-century BCE inscribed pithos from the Ophel (photo: Daniel Vainstub; all rights reserved © Dr. Eilat Mazar; after Mazar 2015).

³ For a summary of these proposals with the respective references, along with a meticulous paleographic analysis of the inscription, see Hamilton (2015: 131–154).

2. The Text (Fig. 3)

On the left (from right to left):]šy ldn ḥ “[]šy ladanum 5”
 On the right (from left to right):]n ?

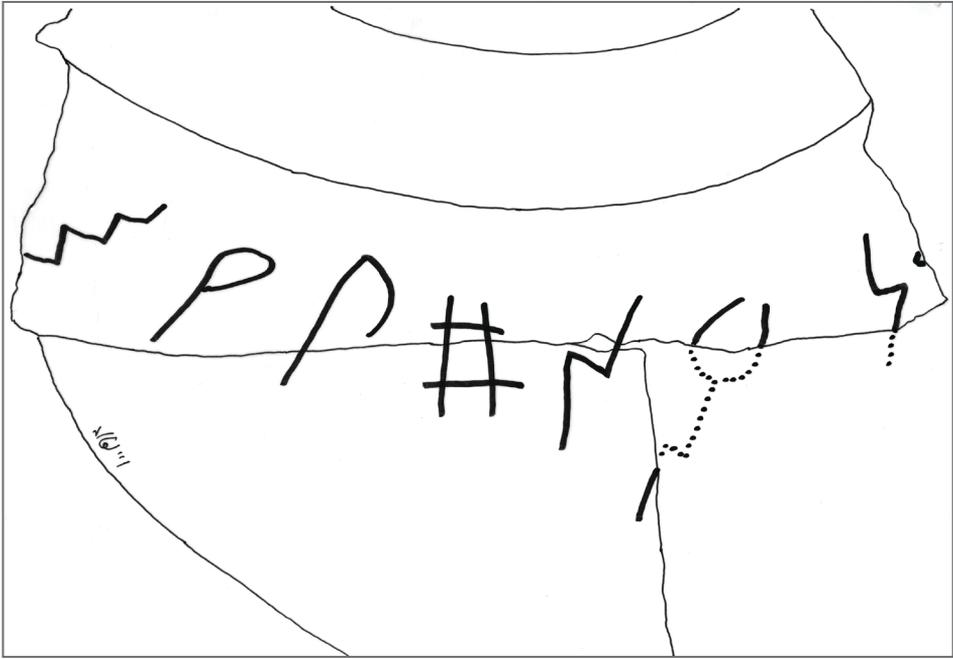


Fig. 3. The inscription (illustration: Daniel Vainstub).

3. Paleography

3.1. The ASA script

Our knowledge of the ASA script and the languages spoken and written by the civilizations that developed in the southwest corner of the Arabian Peninsula as of the end of the second millennium BCE has expanded enormously in recent decades. The reasons for this are three: (1) The intensive archaeological excavations in the area, which have yielded stratigraphically datable inscriptions (Piotrovskij and Sedov 1994: 204–206; Avanzini 2004: 10; Stein 2010: 46, n. 196); (2) the establishment of the online *Corpus of South Arabian Inscriptions* (CSAI) and *Sabäisches Wörterbuch* (SabaWeb); and (3) ¹⁴C dating of palm-leaf stalks and wooden sticks engraved with ASA inscriptions (Drewes et al.

2013; Stein, Jocham, and Marx 2016). The results of these analyses have had a significant impact on ASA epigraphic research, not only because they shed light on its two different branches but also because they have enabled the chronological rearrangement of ASA inscriptions on a firm radiometric basis rather than on their paleographic development alone.

This last point is of great importance for the present study. Before the abovementioned ¹⁴C analyses, most ASA inscriptions were dated to the 8th century BCE; now, it has become clear that the two branches of ASA script—the monumental, generally called *musnad*, and the minuscule, generally called *zabūr*—were in use in the southwest corner of the Arabian Peninsula as early as the 11th century BCE (Stein 2013b; Maraqtan 2014: 41–55). Our inscription is paleographically consistent with the most ancient known phases of ASA epigraphy, generally denoted A1 and A2 and spanning the late second millennium and the end of the 9th century BCE (Pirenne 1956: 109, Pl. II; Drewes et al. 2013; Stein 2013b: 187–189; Stein, Jocham, and Marx 2016; Arbach 2017: 94–95). This dating also fits Sedov’s findings in the ancient city of Raybūn in Ḥaḍramawt, including pottery sherds bearing painted ASA letters. These finds derive from a layer radiometrically dated to a time between the last quarter of the second millennium and the first quarter of the first millennium BCE, and the letters were most probably written before the end of the second millennium BCE (Sedov 1997: 46–47, 54–55, Pls. 38–40; Stein 2013b: 189).

3.2. General description of the script of the inscription

Extant ASA inscriptions engraved on pottery vessels’ shoulders before firing and dated to the 11th–9th centuries BCE are relatively few.⁴ Apart from the š, which has a minor anomaly, all the surviving letters of the inscription display the stance and characteristic features of Phase A of ASA script. It seems that the engraver did not copy the letters individually from another source but wrote them fluently, executing each stroke quickly and decisively. He did not insert divider strokes between the words as is usual in ASA inscriptions, although a few inscriptions without dividers are known (e.g., Maraqtan 2014: 30).

In essence, the epigraphic horizon of our inscription is that of the *musnad* script engraved in stone in Phase A1. However, the difference in the engraved material caused some variations. Due to its softer material, our inscription’s script

⁴ See owners’ names inscribed, sometimes before firing, on vessel shoulders in Yalā (Simpson 2002: 157). Their dating to the 12th–9th centuries BCE was contested by Stein (2013b: 189, n. 5), who agrees with Garbini that they should be dated to 850–580 BCE. See also later inscriptions on pottery vessels’ shoulders from Mārib (Jamme 1962: Inscriptions 833–838; Ayoub 2007: 321–322, Pls. 53, 56, 57).

is more cursive and lacks the rectangularity of the monumental inscriptions. Consequently, some of the variations are reminiscent of the *zabūr* forms:⁵ the right angles of the *n* have become acute, and the upper stroke of the *l* bends down.

As the two rows of the inscription are written at the same height, we cannot determine which was written first and if they indeed belong to a single inscription written in boustrophedon. Although in boustrophedon ASA inscriptions, the first row is usually written sinistroversely, the opposite is sometimes the case, especially in the earliest examples (Maraqten 2014: 45).⁶

The inscription is dextroversely. The one exception to this rule is the surviving letter *l* on the right edge of the sherd, which is sinistroversely. As the letter is separated and does not seem to continue the line, it is most probably the last and only surviving letter of another, sinistroversely written row. Nevertheless, we cannot rule out that this is the first letter of the next dextroversely word, which was mistakenly inscribed in mirrored form. Such errors sometimes appear in ASA inscriptions, possibly due to confusions associated with the boustrophedon writing practice, where the scribe intermittently writes non-symmetrical letters in opposite directions.

3.3. Detailed description of the script

3.3.1. Š

The letter *š* is a little anomalous due to an extra angle. This error may have been caused by the rapid zigzag sliding of the stylus in the soft clay. Examples of *š* with extra strokes in the minuscule script have occasionally been observed on wood or palm-leaf stalks (e.g., Maraqten 2014: ATHS 46). In later periods, different forms of the letter with more angles were used in various Ancient North Arabian scripts (see Macdonald 2000: 34, Column s²; 2015: 37, Column s²).

5 On the development of the *zabūr* letters from cursive patterns of *musnad* ones (Stein, Jocham, and Marx 2016: 264) and some transitional forms, see Ryckmans (1993: 20; 2001: 226, Fig. 1). See also Stein (2013b: e191–194) and the correspondence table of both scripts (ibid., 194, Fig. 3) according to the currently accepted chronology: Column I shows the earlier forms of *zabūr* letters at the beginning of the 10th century BCE, which in general look like cursive forms of the contemporaneous *musnad* letters.

6 Good examples of Phase A1 Sabaean inscriptions are provided by Höfner and Solá Solé (1961: Inscriptions Gl 1561, 1567).

3.3.2. Y (Table 1)

The *y* has a large head that occupies almost half of the letter's height. This feature characterizes the letter in Phase A, and the head will become smaller in the following phase.

Table 1. Samples of *y* in *musnad* (after Wissmann 1982) and *zabūr* (after Maraqtan 2014).*

	<i>Musnad</i>			<i>Zabūr</i>		
Ophel	GI 1561	GI 1563	Lundin 16	ATHS 46	ATHS 52	ATHS 38

* On the dating of the *musnad* letters to the 10th–8th centuries BCE, see Stein (2013b: 189), and on the dating of the *zabūr* letters to the 10th–8th centuries BCE, see respective comments in Maraqtan (2014).

3.3.3. L (Table 2)

The head of the letter is bowed, giving it a “hooked” appearance that resembles the *zabūr* examples more than the *musnad* ones.

Table 2. Samples of *l* in *musnad* (after Wissmann 1982) and *zabūr* (after Maraqtan 2014).*

	<i>Musnad</i>			<i>Zabūr</i>		
Ophel	GI 1763	GI 1686	Lundin 16	ATHS 38	ATHS 6	ATHS 44

* On the dating of the *musnad* letters to the 10th–8th centuries BCE, see Stein (2013b: 189), and on the dating of the *zabūr* letters to the 10th–8th centuries BCE, see respective comments in Maraqtan (2014).

3.3.4. D (Table 3)

The *d* follows the letter's classic form in Phase A and the first part of Phase B, except that its horizontal strokes, which were inscribed after the vertical ones, protrude on both sides. These protrusions seem to be the result of the fluent character of the writing, with the stylus driven quickly and decisively on the soft clay, as is

sometimes observed on pottery vessels inscribed before firing.⁷ Notably, these protrusions are also anomalous for common reading of the letter as a Canaanite *h*. Moreover, a Canaanite *h* is normally written with three horizontal strokes; 10th–9th-century BCE examples with only two horizontal strokes are known only very sporadically in the offspring scripts.

Table 3. Samples of *d* in *musnad* (after Wissmann 1982) and *zabūr* (after Maraqten 2014).*

	<i>Musnad</i>			<i>Zabūr</i>		
Ophel	GI 1719	GI 1563	GI 1686	ATHS 44	ATHS 46	ATHS 52

* On the dating of the *musnad* letters to the 10th–8th centuries BCE, see Stein (2013b: 189), and on the dating of the *zabūr* letters to the 10th–8th centuries BCE, see respective comments in Maraqten (2014).

3.3.5. N (Table 4)

The lower angle of the *n* is not a right angle, as is usual in the inscriptions engraved on stone, but undulates downward, like in some examples of handwritten inscriptions on palm-leaf stalks.

Table 4. Samples of *n* in *musnad* (after Wissmann 1982) and *zabūr* (after Maraqten 2014).*

	<i>Musnad</i>			<i>Zabūr</i>		
Ophel	GI 1561	GI 1719	GI 1686	ATHS 6	ATHS 38	ATHS 44

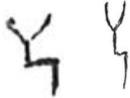
* On the dating of the *musnad* letters to the 10th–8th centuries BCE, see Stein (2013b: 189), and on the dating of the *zabūr* letters to the 10th–8th centuries BCE, see respective comments in Maraqten (2014).

⁷ For example, the letter *b* in Ryckmans (1944: 177, Pl. XXIX:2) and the letters *q* and *y* in Jamme (1962: 246, Pl. 52). While swift writing on soft clay sometimes caused inaccuracies in joining strokes, it also caused splits between strokes that otherwise would have been joined, as in the letters *b* and *y* in inscription UAM 298 in CSAI.

3.3.6. Ḥ (Table 5)

The deciphering of this letter presented a considerable challenge to the scholars who have dealt with the inscription, as its remains do not fit the shape of any Canaanite letter (see Hamilton 2015: 146–148, 152). However, they do fit the typical shape of the ASA ḥ with its characteristic staggered tail veering against the text’s direction, in this case, to the left. Hence, despite its partial preservation, the surviving parts of the letter enable a reliable reconstruction, as the semi-rounded head with two strokes pointing up and the tail descending vertically to one side can only be those of a typical ASA ḥ. It is worth noting that the letter is about one-third larger than the rest. This is possibly connected with its being an abbreviation (see Section 4.2 below); alternatively, the letter’s long tail may be a forerunner of the tendency of some *zabūr* scribes to extend to the left, when the letter functions as a numeral (Maraqten 2014: 56).

Table 5. Samples of ḥ in *musnad* (after Wissmann 1982) and *zabūr* (after Maraqten 2014).*

	<i>Musnad</i>			<i>Zabūr</i>		
Ophel	GI 1686	GI 1763	GI 1686	ATHS 6	ATHS 46	ATHS 52
						

* On the dating of the *musnad* letters to the 10th–8th centuries BCE, see Stein (2013b: 189), and on the dating of the *zabūr* letters to the 10th–8th centuries BCE, see respective comments in Maraqten (2014).

4. Vocabulary

4.1.]šy

The fragmentary character of the word does not allow us to offer a confident reconstruction of it. Nevertheless, two reconstructions can be cautiously considered in view of the known ASA vocabulary: (1) A verb built on the root *mšw/y*, probably in the perfect tense third person plural (see Stein 2013a: §6.2.1, 6.2.4) and preceded by a personal name or in the internal passive. In the few occurrences of this root, it expresses the action of *taking along* or *leading* animals to sacrifice (*SabaWeb*, s.v. “mšw”). The word *mšwn*—possibly a cast on this root—engraved on bronze goblets offered in temples was used to designate the goblet itself (CSAI, s.v. “ms²wn”). Ryckmans (1979: 137, 147) interpreted the

term as *perfume vase* by comparing it to the Arabic نَشَأَ *to smell good* (see Kazimirski 1860: 1266–1267; Bron 2002: 37). (2) A verb or a noun cast on the root *ršw/y*, meaning *priest, to be a priest* (see SabaWeb, s.v. “ršw”; *Sabaic Dictionary*, s.v. “ršw/y”; *Dictionary of Old South Arabic*, s.v. “ršw/y”).

4.2. ḥ(ms)/ḥ(mst)

The letter ḥ serves as the common ASA abbreviation for the numeral *ḥms* (fem.) or *ḥmst* (masc.), meaning *five* (Höfner 1943: 13–17, 130–132; Stein 2003: 13–14). The use of abbreviations as numerals in Sabaeen monumental inscriptions is known from as early as the 7th century BCE (Stein 2003: 13; Maraqtan 2014: 55), rendering the present inscription one of the earliest examples of this practice. Obviously, the number expresses some standard and very common measure of volume, which was unnecessary to specify. Nonetheless, we can cautiously suggest that the measure corresponds to the Judahite *ephah*, ca. 20–24 liters (Zapassky, Finkelstein, and Benenson 2006: 1737). While the specific pithos in question is highly fragmented, similar, better-preserved pithoi have been shown to have a capacity of 110–120 liters (Singer-Avitz 2016: 497, Type SJ–XII), roughly corresponding to five *ephahs*, which is probably what the 5 in the inscription refers to.

4.3. lḏn

Ladanum (*Cistus ladaniferus*) resin is mentioned in ancient sources throughout the area.

4.3.1. Ancient South Arabian languages

Ladanum, spelled with *ḏ*, is the possible reading of an inscription fragment engraved in stone from Sūna in central Ḥaḏramawt. The inscription’s only surviving word is *lwdn*. The fragment was found by Wissman (1968: 44–45, Inscription Wi Sūna [e]) in an archaeologically undatable context and interpreted by Müller (1997: 205) as *ladanum*. The letter *w* in the inscription could be a *mater lectionis* for the vowel *a* or *ā*.⁸ Such use of *plene scriptum w* for an inner *a* or *ā* is known in non-Sabaeen South Arabian languages like Ḥaḏramitic (Robin 2001: 577).⁹

⁸ According to Müller, it represents an ASA form of the word with *w* or *u*.

⁹ The extent of the use of *matres lectionis* in Sabaeen is disputed (see Robin 2001; Stein 2003: 41–47; Stein 2013: 37). However, their more widespread use in other South Arabian languages is generally accepted (Robin 2001: 577; Stein 2013a: 37).

Ladanum also occurs in 11 ASA inscriptions but spelled with *d* rather than *ḏ* (*SabaWeb*, s.v. “ldn”). None of them is apparently older than the 7th century BCE. Two are considered Sabaeen (*Sabaic Dictionary*, s.v. “ldn”; *Dictionary of Old South Arabic*, s.v. “ldn”), one Qatabanic (Ricks 1989: 91), and the language of the others remains undefined (*CSAI*, s.v. “ldn”). All 11 occur on incense burners, consisting of *ldn* engraved on one of the vessel’s four sides. On each side of these incense burners, the name of another aromatic composing the burned incense was engraved. As both spellings obviously refer to the same aromatic, they probably reflect dialectical differences or a phonological development over the centuries, although a *ḏ* > *d* shift has hitherto not been attested in ASA languages.¹⁰

A close examination of the components of the incense burned in the Jerusalem Temple, a future task beyond the scope of this study, should take into consideration the combination of *ldn* with other aromatics mentioned on these South Arabian burners. These blends seem quite habitual, and most of their ingredients have good parallels in the Hebrew sources, as pointed out by Müller (1997) and Sima (2000: esp. 266–281) in their detailed studies. The eight aromatics whose names were written on the burners along with *ldn* are *ḥḏk*, *rnd*, *ḏrw*, *tyb*, *qst*, *qlm*, *lbny*, and *qnw*. Most of them can be identified with their Hebrew parallels: *rnd* is the biblical נֶרְדִּי (with metathesis); *ḏrw* is the biblical צִרְיִ; *qst* is קִשְׁטִי, one of the additional components of incense in the Second Temple period (*b Ker.* 6b); *qnw* is the biblical קִנְהָ (Exod 30:23; Jer 6:20); טוֹב in the expression קִנְהָ הַטוֹב (Jer 6:20) is possibly connected with *tyb*; and *lbny* is probably the biblical לְבוֹנָה.

4.3.2. Arabic

The presence of ladanum in Arabic lexicography is especially important for our study because of its geographical proximity to South Arabia and the affinity of Arabic with the ASA languages. The classical Arabic lexicons and dictionaries render the term with *ḏ* and an *alif* representing a long *ā* after the *lām*: اللادْنُ, اللادْنَةُ. Al-Muḥīṭ fī l-Luġha refers to it as a medicine. Tāj al-‘Arūs, Lisān al-‘Arab, and Al-Qāmūs al-Muḥīṭ also define it as a medicine and convey more information about it: They specify the diseases treated with it and relate that “in some isles in the sea,” ladanum sticks to the hair and beard of goats, when they eat from a plant called *qalsūs* (قلسوس) or *qastūs* (قستوس), obviously referring to the Greek κίστος. From this, we learn that ladanum is not the name of the plant, from which it is obtained, but the name of the substance. According to Lisān al-‘Arab, اللادْنُ is

¹⁰ However, some instability of *ḏ* can be observed in partial shifts to *z* in Late Sabaeen (Lipiński 1997: 121–122; Stein 2013a: §2.2.4.2) and Ḥaḏramitic (Beeston 1984: 68, § H 2:2).

not an original Arabic word but was incorporated into Arabic from Persian. All of this information seems to point to a well-known substance that was not native to the inner parts of the Arabian Peninsula but was produced in a neighboring region and traded and transported through the peninsula. We should probably reach the same conclusion from the words of Abū Ḥanīfa ad-Dīnawarī (9th century CE), who stated in his renowned *Book of Plants* that ladanum (لادن) “doesn’t grow in the land of the Arabs” (Hamidullah 1973: entry 977).

Some lexicons from the 19th century onward render the word with *d* rather than *ḍ* (لادن, لادنة): Dozy (1881b: 524),¹¹ Bocthor (1871: 3), and Lee (1844: 327–328; see also Löw 1881: 127, 195). These lexicons, like the Arabic lexicons and dictionaries composed in recent centuries in connection with the word spelled with *ḍ*, refer to it as a resin burnt as incense or used as a perfume.

An important contribution to the clarification of the subject is made by the writings in Arabic of the prominent Persian physician Avicenna (originally Ibn Sina, 980–1037 CE). He discloses the existence of numerous varieties of ladanum, coming from different sources, which may be the reason for the diversified terminology. Under the entry *cistus* (قسوس) in his *Canon of Medicine* (Ibn Sīnā 1877: 422–423; Ibn-Sina 1998: 366–367),¹² he points out that there are three types of *cistus*, and “one of its varieties is called ladanum (اللاذن). Actually, *cistus* is either the same drug as ladanum or something different. However, *cistus* and ladanum are identical with each other in many respects.” He also points out that it was customary to mix the ladanum with honey wine: “Lādhan is mixed with honey wine and painted to remove the scars.” Under the entry *ladanum* (لادن), Avicenna (Ibn Sīnā 1877: 351; Ibn-Sina 1998: 403–404) states that it is a liquid substance originating in *cistus* shrubs. He speaks of the phenomenon mentioned in other sources, too, of ladanum that sticks to the hair and beards of goats when they graze next to these shrubs. He talks once again about the various types of ladanum, their different qualities, and their origins (Cyprus and “the south”).

4.3.3. Aramaic

In Aramaic, ladanum occurs in Syriac as ܠܕܢܐ, ܠܕܢܐܘܪܐ, and ܠܕܢܐ and is identified with the plant ܡܘܨܘܨܐ (the Syriac spelling of the Greek κίστος; Sokoloff 2009: 674). It also occurs in Mandaic as ܠܕܢܐ (Drower and Macuch 1963: 227). Among the Jewish Aramaic dialects, only one occurrence of ladanum

11 However, Dozy’s statement should be regarded with caution since it is mainly based on sources originally written in Latin characters (Dozy 1881a: x–xi; Daumas 1845: 302).

12 The Arabic citations are from Ibn Sīnā (1877), and their English translations are from Ibn-Sina (1998).

is known in the Babylonian Talmud (*Ketub.* 77b), where לְדַנָּה—variant version לְדַנָּה (Sokoloff 2002: 618)—refers to a medicine for skin disease in a context unrelated to incense or perfumes.

4.3.4. Akkadian

In Akkadian, ladanum occurs as an aromatic named *ladinnu*, *ladnu*, or *ladunu* (*CAD*, s.v. “ladinnu”); it is preceded by the determinative ŠIM used for introducing aromatic and resinous plants. It was included in the tribute of King Rezin of Damascus to Tiglath-Pileser III (744–727 BCE) in 738 BCE (Tadmor and Yamada 2011: 38).¹³

4.3.5. Classical sources

Ladanum is widely attested in ancient Greek and Latin sources, such as Herodotus, Pliny the Elder, and Plutarch, in different spellings: λήδανον, λάδανον, *ladanum*, *ledanum* (see Newberry 1929: 87–94).¹⁴ These sources supply rich and diverse data, of which the following points should be stressed:

Ladanum was derived from plants that grew in different regions, such as the major Mediterranean islands and “Arabia,” which seems to have entailed differences across regional subtypes. These differences presumably affected the resulting products and their uses, inducing the use of regional epithets like “Cypriote ladanum” or “Arabian ladanum” (Newberry 1929: 90).

- 1) The plant from which ladanum was obtained is called in Greek κιστος or κιθτος; the gathering of ladanum from the hair and beards of goats that grazed on them, especially in Cyprus, is similar to the procedure described in the Arabic sources (above), fostering a connection across the regions.
- 2) Ladanum is a resin used for incense, medicine, or perfume.
- 3) The use of ladanum as incense in “Arabia” is stressed by Herodotus (*Hist.* 3.112): “ledanon (λήδανον), which the Arabians call ladanon (λάδανον) ... there is nothing that the Arabians burn so often as incense (μύρων)” (see also Newberry 1929: 88, n. 1). Referring to the specific type of South Arabian ladanum, Herodotus (*Hist.* 3.107) states that “Arabia is the most distant to the south of all inhabited countries, and this is the only country which produces frankincense (λιβανωτός) and myrrh and casia and cinnamon and ladanum (λήδανον). All these except myrrh are difficult for the Arabians to get.”

¹³ Inscription 11, line 6: “20 talents of ladanum (*la-du-nu*).”

¹⁴ According to Newberry, the symbolic object the Egyptian pharaohs held in their left hand was a special instrument for collecting ladanum.

5. Possible Identification in Hebrew Sources

In light of the decipherment presented here, it is striking that ladanum is not recorded in any Hebrew source in a form etymologically related to its Arabian Peninsula name, whether as *ldn* or as *lzn* after the expected *d > z* shift. Hence, a question arises: Does the Bible use a Hebrew name built on a different etymon for the aromatic, and if so, what is it?

The identification of the aromatics recorded in the Bible is a trying task that has occupied commentators, translators, and researchers for generations. In their search for identifications, special attention was paid to the opinion of medieval Jewish exegetes like Rav Saadia Gaon (882–942) and Maimonides (1138–1204), who, in addition to their knowledge of the Bible and its world, were fluent in Arabic and its terminology, although they often differed on identifications. In medieval and post-medieval times, two identifications for ladanum were proposed: שְׁחֶלֶת and חֶלְבֵנָה.

5.1. שְׁחֶלֶת (*š^ahēlet*)

Before discussing the possible identification of ladanum with שְׁחֶלֶת—the second component of incense according to Exod 30:34—in medieval and post-medieval sources, it is worthwhile stressing how שְׁחֶלֶת is referred to in Roman and Byzantine rabbinic sources. In a *baraita*¹⁵ quoted in the Babylonian (*Ker.* 6a) and the Jerusalem (*Yoma*, 4:5) Talmuds, שְׁחֶלֶת is called צִפְרֵן (*šippōren*), literally, *finger nail*. The epithet *finger nail*, possibly since it is a tangible noun, was used by all the ancient translators to translate the biblical word שְׁחֶלֶת simply as *nail*. Thus, Onkelos translated it as טוּפְרָא, and the Septuagint translated it as ὄνυχα, from where it was translated and passed into modern languages. Additional information on שְׁחֶלֶת from the Babylonian Talmud (*Ker.* 6b) is that it originated in a plant (גידול קרקע; see Kapach 1997; *contra* Amar 1996: 131).¹⁶

The identification of ladanum with שְׁחֶלֶת, the second among the four components of the incense mentioned in Exod 30:34, was made in the following medieval and post-medieval sources:

- a. Some manuscripts of the *tafsir*, the emblematic translation by Rav Saadia Gaon of the Pentateuch into Arabic written in Hebrew characters. The original work of Rav Saadia is lost, and its copies differ in the translation of

¹⁵ A quotation from the *Tanayim* (sages who lived in the Roman period) included in the Talmud written in the Byzantine period.

¹⁶ Amar identified it with sea shells called *nails*. However, he later changed his mind and tended to associate שְׁחֶלֶת with a vegetal origin (Amar 2002: 81). Felix (1997: 11, n. 3) also asserts that שְׁחֶלֶת originated in marine “nails.”

the word שְׁחֻלֶת. In some of them, including the most important manuscript EBP II C in the Russian National Library in St. Petersburg, written in Egypt in about 1010 CE (see Schlossberg 2011: 138–141), the word is translated into Arabic as אַטְפָּרָא or אַלְאֲטְפָּאֵר reflecting أَظْفَارٌ, meaning *nail*, following the abovementioned rabbinic sources and the Onkelos translation.¹⁷ However, the following important manuscripts of the *tafsīr* translate שְׁחֻלֶת as *ladanum*:¹⁸ (1) a Samaritan manuscript (Zewi 2015: 343, לְאֲדָן), most probably written around 1300 CE (Zewi 2015: 42–50); (2) the Jewish polyglot printed in Constantinople in 1546 CE (Soncino 1546, לְאֲדָן); (3) the Christian polyglot published in Paris (Le Jay 1645: 359, لَا دָنָא); (4) the Derenbourg edition (Derenbourg 1893: 126, לְדָן; see Schlossberg 2011: 133).

- b. An Arabic translation of the Pentateuch included in the London Polyglot printed in 1657 (Walton, Hollar, and Lombart 1657: 361) translates שְׁחֻלֶת as لَا دָן.¹⁹
- c. The testimony of Rabbi Jonah Ibn Janah (ca. 990–ca. 1055 CE), which stated that “there are (people) that interpreted” שְׁחֻלֶת as the aromatic called in Arabic לְאֲדָן (Bacher 1896: 340).
- d. The “Targum Pseudo-Jonathan” or “Targum Yerushalmi” of the Pentateuch translates שְׁחֻלֶת in Exod 30:34 as כַּשֵּׁת, presumably a transcription of *kist(os)*, the plant from which *ladanum* was extracted. The authorship, the place, and the time of the composition of this Targum are widely disputed (Fassberg 2021: 12–16; McDowell 2021: 121–126). Its final edition should be dated after the Islamic expansion, but the question of whether it contains earlier materials remains open (Fassberg 2021: 16). Recently, some researchers argued that it was composed, or at least finally edited, in Italy in the 12th century CE (Gottlieb 2021; McDowell 2021).
- e. Samuel Bochart (Paris 1599–1667) attests that most translations he collected of the Hebrew שְׁחֻלֶת into Arabic rendered it *ladanum*. He specifies that this is the case in translations given both in Arabic characters—most probably intended for Arabic-speaking Christians—and Hebrew characters, obviously intended for Arabic-speaking Jews (Bocharto 1675: 803).

17 In his commentary to *Mishna Keritot* 1:1, Maimonides uses the same word to translate or explain שְׁחֻלֶת.

18 The manuscripts are ordered chronologically rather than by their relative importance.

19 On the sources used by the translators, see Miller (2001: 466–468, 474–478).

5.2. חֶלְבָנָה (*ḥelbānâ*)

חֶלְבָנָה is the third ingredient of the incense mentioned in Exod 30:34. In his commentary to *Mishna Keritot* 1:1, Maimonides mentions this proposal as being known in his days, but he rejects it (see also Löw 1881: 127).

6. חֶלְבָנָה as the Most Probable Hebrew Term for Ladanum

As we have seen above, most attempts to identify חֶלְבָנָה in both medieval and post-medieval times, as well as modern ones, were based on the epithet *nail* rather than on the word itself. The Hebrew חֶלְבָנָה surely is not connected with the Akkadian *sāḥlû* (CAD, s.v. “sāḥlû”),²⁰ Ugaritic *šḥlt* (DUL, s.v. “šḥlt”), or Rabbinic Hebrew חֶלְבָנָה (Ben Yehuda 1948–1959: 7023–7024). These various terms refer to a herb with edible seeds and shoots that is widespread in the region and has never been connected with incense or perfumes.

On the other hand, in Rabbinic Hebrew and Aramaic, the root *šhl* shows a consistent semantic meaning that can help clarify the issue discussed here. In Rabbinic Hebrew, the root has a relatively broad and well-grounded semantic meaning that expresses the action of drawing out something from water or some kind of liquid, filtering, or dripping (Ben Yehuda 1948–1959: 7024–7025).²¹ The same is the case with Aramaic, spanning a wide spectrum of dialects from the Persian period to the Roman and Byzantine periods;²² the Arabic root شَخَّل has the same basic semantic meaning.²³

Therefore and in view of the foregoing discussion, it seems that we need to consider the likelihood that חֶלְבָנָה is not the name of a plant but a noun founded on the root (**šhl* >) *šhl* meaning *filtered*, or *what was filtered or pulled out of a liquid*,²⁴ applied to an aromatic that, unlike the other components of the incense in use in the Jerusalem Temple, needed to undergo treatment with a liquid and then be filtered or strained. The aromatic that fits this definition is ladanum, which was normally treated with honey wine but in Jerusalem, because of religious restrictions, was treated with an alternative type of wine, strained, dried, and then added to the incense. As said above, Ibn Sina points out that it is customary to mix the ladanum with honey wine and paint it to remove the scars, an action

20 The comparison of Akkadian *šeḥlātu* with the Hebrew חֶלְבָנָה in CAD is unfounded.

21 On the preservation of ancient words and roots not included in the biblical canon in Rabbinic Hebrew, see Vainstub et al. (2022: 103–104 and references therein).

22 In Aramaic, the root *šhl* typically translates the Hebrew root *mšy* *drawing out from the water* (see CAL, s.v., “šhl”).

23 On the correspondence of Hebrew *š* with Arabic *ش*, see Vainstub (2017: 66).

24 This possibility was first proposed by Bochart in the 17th century (Bocharto 1675: 804) and many years ago in the Ben Yehuda Dictionary (1948–1959: 7024, n. 1 right): “And probably also the words חֶלְבָנָה and חֶלְבָנָה are cast on this basic meaning.”

very similar to the customary procedure with שְׁחֻלָּת (b. Ker. 6b), although Ibn Sina refers to medical use while the Jewish sources refer to incense. Moreover, the statement in the same Talmudic source that שְׁחֻלָּת must be prepared with a special type of wine was perhaps because of the need to find an alternative for honey wine, whose use in the Temple was prohibited by Pentateuchal law (Lev 2:11). This assertion has recently been strengthened by a new study (Drori et al. 2021) on the wine used in the treatment of שְׁחֻלָּת and called יין קפריסין, namely *Cypriot wine*. According to this study, this was a locally produced wine, based on a procedure developed in Cyprus that resulted in a wine with high alcohol and sugar levels, much like honey wine, but without the additive that would have disqualified it from service in the Temple. Although the interpretation of the word קפריסין in this source is contested,²⁵ the observation that both the ladanum and the שְׁחֻלָּת require treatment with a special wine makes a strong case in favor of their identification with each other.

Among the researchers of recent generations, Abrahams (1979) and Walker (1979: 144–145) identify the biblical שְׁחֻלָּת with ladanum. Additionally, according to Walker, the epithet *nail* for שְׁחֻלָּת may be consistent with its identification with *Cistus ladaniferus*, as the markings of the petals of the plant look like nails and are probably the source of the epithet.²⁶

It should be noted that one small unprovenanced incense burner in the National Museum of Yemen in Sana'a has the name of the aromatic *slht* engraved on one of its sides, alongside *rnd*, *lbny*, and *qst* engraved on the other three (Pirenne et al. 1977: I.275–278). The publishers paleographically date the burner to the 4th–3rd century BCE and link *slht* with the Arabic سلبحة (see Lane 1968: 1404). Although *slht* could be connected to שְׁחֻלָּת after metathesis, their similarity is likely a coincidence. The name of this perfume in Arabic, in fact, expresses its resemblance to stripped-off bark (ibid.), which is the basic meaning of the root *slh* in Arabic *to strip off* (ibid., 1403) rather than the result of a metathesis (see Müller 1997: 207; Sima 2000: 277).²⁷

25 Although some researchers interpret קפריסין as *Cyprus*, others interpret it as the plant *capparis* (*Capparis zoharyi*). The second interpretation is supported by the fact that in the other occurrences of קפריסין in rabbinical sources, it unequivocally refers to a plant or a specific part of a plant. *Cyprus*, in these sources, is referred to as קיפרוס. See a detailed description of both views in Krispil (1987: 1120–1147, esp. 1122–1131) and Amar (2002: 130–133).

26 A possible connection between ladanum and the biblical לט (Gen 37:25, 43:11) is occasionally proposed (see Löw 1928: 362–363; Felix 1997: 85–88) without justification, apart from the superficial similarity of the sound (Amar 2002: 86; Sima 2000: 273–274, n. 63).

27 Both scholars interpret *slh* to mean *Cinnamomun aromaticum*.

7. Conclusions

The discovery of the Ophel inscription marks a turning point in many fields. Not only is this the first time an ASA inscription dated to the 10th century BCE has been found in such a northern location, but it is also a locally engraved inscription, attesting to the presence of a Sabaeen functionary entrusted with incense aromatics in Jerusalem. This Sabaeen functionary was close to the local potter who made the pithos and engraved the inscription in his Sabaeen language on the vessel's shoulder before it was placed in the kiln. The pithos containing the ladanum was intended for the administrative and governmental area of the city, near the royal palace complex and less than 300 m from the Temple.²⁸ This reconstruction is in line with a biblical account reporting the visit of a Babylonian delegation to King Hezekiah (726–697 BCE); according to this account, aromatics and “the goodly oil” were included among the goods stored in the royal treasure house (2 Kgs 20: 12–13; Isa 39: 1–2 ALTER). The inscription testifies not merely to commercial ties but to close relations between the two kingdoms. This concurs with other information given by the historian Josephus Flavius. According to Josephus (*A.J.* 8.174), the first opobalsamum plants came to Israel from the Kingdom of Sheba during Solomon's reign as a gift to the king, and from this time onward, they were cultivated locally in two places, geographically and climatically similar to Sheba: ‘En Gedi and Jericho (*A.J.* 14.54, 15.96; *B.J.* 1.138, 1.361).

The same ASA script was used in all the countries neighboring South Arabia (Müller 1994), and the shortness of the Ophel text does not allow us to determine its language. However, as the 10th-century BCE South Arabian political scene is well known, there seems to be little doubt that the writer of this inscription was a Sabaeen. At this time, the Kingdom of Sheba was the dominant power in South Arabia, with a flourishing economy based on the irrigated cultivation of incense and perfume plants and their marketing over long distances by means of camel caravans (De Maigret 2007-2010; 2016: 18-19, 20, 32; Japp 2007: 352; 2014: esp. 304–311).²⁹

The Ophel inscription is the most ancient ASA inscription found so far in the Land of Israel. Nevertheless, little by little, later ASA inscriptions begin to emerge in the area. Three dated to the 7th–6th century BCE were found in Jerusalem in the City of David excavations, not far from the Ophel. Like our inscription, they too are on locally made pottery (Shiloh 1987; Höfner 2000). A few more

²⁸ On the elite character of the area, possibly related to the palace, see Winderbaum (2022: 150, 159, 162, 164, 170).

²⁹ Currently, the most widely accepted account stipulates that the first states and civilizations in the area had emerged as early as the end of the second millennium BCE and were founded on the cultivation and long-distance Transarabian trade of aromatics and camel caravans (Korotayev 1995: 80; Avanzini 2015: 6, 14, 23, 25).

inscriptions, mostly dating from the 5th century BCE onwards, have been found across the region, including Transjordan and the Gulf of Eilat (Stein 2017).³⁰

The Ophel inscription has also made an important contribution to our understanding of the geopolitics in the region in the 10th century BCE. Three crucial factors were at play in this century.

- 1) During the rule of the 21st Dynasty (1069–945 BCE), Egypt, the regional power, was weak and divided and lost control over the commercial routes in the region.
- 2) King Solomon expanded his sovereignty to the south as far as the Gulf of Eilat and northern Sinai, taking control of the trade routes connecting the Arabian Peninsula with the Mediterranean through the Negev (Fig. 4). The biblical account of this development (1 Kgs 9:18, 26–28; 2 Chr 8:17–18) is supported by archaeological evidence of an impressive network of strongholds in the Negev Highlands and the ‘Arava Valley, including the fortress of ‘En Ḥaṣeva midway between Jerusalem and the Gulf of Eilat (Cohen and Yisrael 1995; Cohen and Cohen-Amin 2004: esp. 133, 154–158, 8*–12*). This network was completely destroyed in 923 BCE by Pharaoh Shoshenq I, the founder of the 22nd Dynasty, in the fifth year of King Rehoboam, son of Solomon (1 Kgs 14:25–28; 2 Chr 12:1–12).
- 3) By the end of the second millennium BCE, nations arose in the southwest corner of the Arabian Peninsula with a prosperous economy based on the cultivation of perfume and incense plants and the ability to cross the deserts with camel caravans. During the first half of the first millennium BCE, the dominant state among these nations was Sheba (Korotayev 1995: 80–81; Avanzini 2004: 10, 35–36).³¹

30 To these should be added a Sabaean inscription dated to ca. 600 BCE tells of a Sabaean trade expedition to Gaza and “the towns of Judah.” The inscription was acquired in the antiquities market but allegedly comes from the Jawf region (Bron and Lemaire 2009).

31 See also Avanzini (2016: 46–49) for a discussion regarding the rise of kingdoms in the area at the beginning of the 1st millennium BCE, related to the specialized cultivation of aromatics by irrigation and the long-distance trade in them.



Fig. 4. Trans-Arabian trade routes to the Mediterranean.

Our inscription should be seen in this context. The combination of these three factors not only made a relationship between Sheba and the Kingdom of Solomon possible but also rendered it essential and highly profitable for both. They also frame our inscription chronologically: Its *terminus a quo* is the massive construction works in the Ophel in the mid-10th century BCE during King Solomon's times, and its *terminus ad quem* is Sheshonk's campaign in 923 BCE, which put an end to Israelite control of the trade routes from the Arabian Peninsula to the Mediterranean.

The Ophel inscription makes an important contribution to the age-old question of the likelihood of a visit by a delegation from the South Arabian Peninsula to King Solomon in the 10th century BCE as related in 1 Kgs 10 and 2 Chr 9;³² or, in other words, it provides a hook for determining if there is a kernel of historical truth to this biblical account. Scholars who answered the question positively even before the extensive new research of South Arabia that had begun in the 1990s (e.g., Eph'al 1984: 63–64; Lemaire 2014: xii, and references therein) and others who have based their opinions on the data of the last two decades, will find strong support of their opinion in the inscription.³³

³² Echoed also in Ps 72:10.

³³ Thus, for instance, Stein (2017: 113) states that "the cultural-historical and chronological context makes it possible to assume that a Sabaean delegation visited Palestine in the 10th century BCE readily available" Furthermore, in note 71, Stein (2017) underscores the unsustainability of the rejection of this possibility,

A few years ago, a groundbreaking study (Namdar et al. 2013; Gilboa and Namdar 2015) found evidence of cinnamon in small Phoenician flasks discovered in several sites in Israel and dating to the 11th–10th century BCE, possibly even earlier (Gilboa and Namdar 2015: 268). As the source of this cinnamon—a lucrative spice—was most probably South or Southeast Asia, the question of the beginning of the long-distance trade between the Indian Ocean in the east and Egypt in the west and its routes was reopened. Furthermore, these questions intensified four years ago with the discovery of evidence of cinnamon at Tel Megiddo, northern Israel, dated to the Middle Bronze Age, ca. 1650–1550 BCE, about six centuries before the previous findings (Linares et al. 2019). With these, we should also consider the peppercorns used for the mummification of Ramesses II in 1213 BCE, also originating in South Asia (Gilboa and Namdar 2015: 272; Linares et al. 2019: 82). These still unanswered questions should be taken into account when we come to consider the proposal made in this study. Many theoretically possible routes have been proposed for the trade between Southwest Asia and the Levant from the Bronze Age onward (Gilboa and Namdar 2015: 275–276; Linares et al. 2019: 81–82). One of these is the maritime route, sailing around the Arabian Peninsula and along the Red Sea. This is a valid possibility also for the trade route between Sheba and Israel in the 10th century BCE, which could be traveled by sea as far as Eilat and continued northward by land via the ‘Arava Valley in line with the biblical account (1 Kgs 10:11, 22; 2 Chr 9:10, 21) and the abovementioned archaeological finds from the Negev Highlands and the ‘Arava Valley.³⁴

Our inscription marks the starting point of what was to be a lengthy supply line of aromatics from Sheba to the Temple of Jerusalem, as expressed by two prophets. Thus, in Isaiah (60:6 ALTER),³⁵ it is said that “a tide of camels shall cover you, dromedaries from Midian and Ephah, they shall come from **Sheba**. Gold and frankincense they shall bear and the Lord’s praise they shall proclaim,” whereas Jeremiah (6:20 ALTER) reprimanded “Why do I need frankincense that comes from **Sheba** and the goodly fragrant cane from a faraway land?”

which is based on the argument that the ASA civilization rose only in the 8th or, at the earliest, in the 9th century BCE, an untenable argument today, as archaeologically and epigraphically it is now well attested that this civilization emerged by the end of the second millennium BCE.

34 ‘En Ḥaṣeva should most probably be identified with the biblical “Tamar in the wilderness in the land” (1 Kgs 9:18 ALTER; Aharoni 1963: esp. 33). For an updated study on the trade roads in southern Israel, connecting South Arabia with the Mediterranean in the Iron Age, see Ben-David (2022: esp. 179–180). Ben-David also indicates distinct South Arabian findings in ‘En Ḥaṣeva, dated to the 11th century BCE (p. 180).

35 Although it dates from the Persian period.

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