AKKADIAN ANNAKUM: "TIN" OR "LEAD"?

BY

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In the 20th and 19th centuries B. C., an extensive trade took place between Assyria and Anatolia. An important commodity in this "Cappadocian" trade, which is well known from cuneiform documents discovered at Kültepe and at other Anatolian sites, was a mineral for which the texts employ the Akkadian term *annakum*.¹ The mineral *annakum* was exported in considerable quantity from Ashur to Kaniš (Kültepe). Opinions differ with regard to the interpretation of this term, some Assyriologists claiming that *annakum* denotes "lead", whereas others pronounce themselves in favour of the rendering "tin".

H. Zimmern, *Akkadische Fremdwörter als Beweis für babylonischen Kultureinfluss* (2nd ed., 1917), 59, translated "tin". B. Landsberger, *Assyrische Handelskolonien in Kleinasien* (AO 24:4 [1925]), 22: "Neben Stoffen bildet den wichtigsten Handelsartikel das Blei (*anakum*, welches Wort aber vielleicht auch Zinn mit umfasst)." Subsequently, Landsberger arrived at the conclusion that *annakum* denotes tin exclusively; see *Or N. S.* 12 (1943), 149—150, and (*apud* H. G. Güterbock) *Or N. S.* 15 (1946), 486, with references. A. Goetze, *Kleinasien* (2nd ed., 1957), 78 and 120, follows Landsberger in rendering *annakum* as "tin".

W. von Soden, *Akkadisches Handwörterbuch* (Lieferung 1, 1959), 49 s. v. *anāku(m)*, suggests that the term denotes "tin" and, presumably, also "lead", an opinion shared by R. J. Forbes, *Metallurgy in Antiquity* (1950), 257—258.

¹ The form *annakum* has been chosen as conforming with the usage of the letter SH. 868, published with this article. It may also be noted that in Old and Middle Assyrian, *annakum* is subject to vowel harmony (nom. *annukum*, gen. *annikim*), which shows that in these dialects the -a- was short. Babylonian lexical and other texts frequently provide the form *anāku(m)*; see W. von Soden, *Akkadisches Handwörterbuch* (Lieferung 1, 1959), 49 s. v. *anāku(m)*.

OBVERSE

** ERASURE ?

Fig. 1 a: SH. 868 obv.

um-ma m[Bi](?)-še-en-le

a-bu-[ka-a]-ma

5. *[i]t-ti Ku-[sa]-[n]a-ri-im-ma*

^{GIS}*ši-ni e-ri-iš-ma*

ù 5 *li-mi* ^{GIS}*ši-ni*

ú-ša-bi-lam

ù *li-[ša]-[n]a-am* <<[ši-ni]>>

10. *ša* ^{GIS}*ši-ni ú-še-ep-pé-eš*

ù *an-na-ku-um a-na qa-[ti]-ja*

ú-ul i-ba-aš-ši

REVERSE

Fig. 1b: SH. 868 rev.

(Reverse.)

[an]-na-ka-am ša e-ri-šu
ma-ri la i-ka-al-la-a

15. ù an-na-ka-am ša ma-ri
i-na-ad-di-nu [ki]-ma

20 li-mi ṣa-bi-im

[a-na] ja-ši-im MU PÀD

[a-n]a [da]-ri-iš UD-mi-im

20. [a-]na a-bi-ka gi-mi-il-ma

an-na-ka-am ma-li

e-ri-šu

[a]-r-ḫi-iš ma-ri li-ša-bi-lam-ma

[ù^{GI}] šī-[n]i lu-še-pt-iš

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(Translation.) Say to *Ku(?)*[- x]-*ú(?)*: thus (says) *Bi(?)šente*, your father². I requested (*šinū*)³ from Kusanarim, and he⁴ sent me five thousand (*šinū*), and I shall have a "tongue"⁵ for the (*šinū*) manufactured; but there is no "tin"⁶ at my disposal. Surely my son⁷ will not withhold the "tin" which I requested? And the "tin", which my son gives, (should) correspond to (the requirements of?) twenty-thousand troops. Reveal a name for me (and so) please your father for all time to come! The "tin", as much as I requested, may my son send me quickly so that I may have the (*šinū*) manufactured.

² *abum* "father", a term implying that the recipient of the letter was politically dependent on the sender. Cf. *Sh. T.*, 36 with n. 38. Correspondingly, the sender refers to the addressee as *mārī* "my son" (lines 14, 15 and 23).

³ *GIŠši-ni*. The text shows that *šinum* (*šinum?*), here occurring in the pl. obl. case (*šini*), is a wooden object (evidence: the determinative sign *GIŠ*) available in large quantities (evidence: the sequel [lines 7—8]). The term is unknown to me. It may perhaps be connected with *GIŠši-in-ni* (*ARM* 1, 29, 15), for which G. Dossin (*op. cit.*, p. 73) has proposed the rendering "my lance"; but it should be noted that the scribe of SH. 868 is careful to indicate doubling of consonant. I would hesitate, therefore, to identify the term *GIŠši-ni* as a form of *šinnum* "tooth", although there is evidence to show that, metaphorically, *šinnum* could denote a cutting instrument.

⁴ *I. e.*, the king of Kusanarim.

⁵ *li-[ša]-[n]a-am*, lit., "a tongue". In technical terminology, *lišānum* could denote part of an axe, as in an Old Akkadian text from Susa (*MDP* 4, Pl. 2, iii): 1 *ḫu-zi-nūm šu* 4 *EME-su* which I. J. Gelb (*MAD* 3 [1957], 164) would translate "1 ax with 4 blades". (Cf. F. Thureau-Dangin, *SAK* [1907], 178, d. iii 14: "ein Beil mit vier Schneiden"). [May the "tongue" of an axe not be, rather, the spike behind the socket in a technique of casting known from the Early Dynastic III Period onwards? An "axe with four tongues" would be exemplified, thus, by the axe-head shown by R. Maxwell-Hyslop, *Iraq* 11 (1949), Pl. XXXVI, Fig. 11.] In the present case, it is my assumption that *lišānum* denotes a pointed object, for which the metal *annakum* is perhaps needed, to be joined with a wooden part mentioned in lines 6 f.; but I fail to appreciate why *lišānum* should occur in the singular when *šinū* is consistently referred to in the plural. — <<[ši-ni]>>: eliminated from the text on the assumption that the scribe wrote this word precipitately, omitting by error the determinative pronoun *ša* and the determinative sign *GIŠ*, and that this error was rectified in the following line. Damage of the surface makes it difficult to determine whether in line 9 an attempt has been made to erase the signs [ši-ni].

⁶ *annakum*: rendered tentatively as "tin". For reasons leading to the choice of this translation, in preference of "lead", see the Concluding Remarks.

⁷ See note 2.

(Commentary.)

1. *Ku(?)*-xl-ú(?). Inspection of the cleaned tablet necessitates revision of *Sh. T.*, 92, where it is stated that this letter is addressed to Kuwari. As the copy will show, the traces of the signs do not authorise this statement. For *Ku-*, it would be possible to read *Lu-*. [x] = [bi]? It is uncertain whether the third sign of the name is in fact Ū; comparison with occurrences of the sign Ū in lines 8, 10 and 12 will show that in the *ductus* of this scribe, the horizontal strokes of this sign were closer to one another, as indeed they are in most documents of this period. The faint vertical stroke before the horizontals may be accidental or due to a scribal habit; cf. the identical feature in the sign BI, line 17. (Suggestion: *Ku?*-[bi]?-[a]?, with which compare *Sh. T.*, 98 s. v. Kubija and 100 s. v. Tulpija.)
3. ^m[Bi](?)-še-en-te. This correspondent, whose name is apparently Hurrian, is not elsewhere attested in texts found at Tell Shemshāra; but it may be considered whether the sender of the letters SH. 802 and SH. 816 is identical with this person. In *Sh. T.*, 90, I have proposed to read the name of the sender of these letters as, respectively, Ūš-še-e[n-de?-en] and ^mŪ[š-š]e-en-[de](?)-en; but it would be equally well possible to read the name as *Be-še-en-de-en*, the sign BAD having the syllabic values *be* and *iš* (cf. W. von Soden, *Das akkadische Syllabar* [1948], No. 42, and *Sh. T.*, 90 n. 63). As differences in consonantal voicing were irrelevant in the Hurrian phonemic system, it may be necessary to postulate the existence of a Hurrian name *Pišente(n)*, of which *Pešente(n)* may be a variant. (From the point of view of the system of writing, the vowel of the first syllable may be normalised as either /i/ or /e/ inasmuch as BI may represent *pí* as well as *pé* [von Soden, *Syll.*, No. 140], and BAD is attested with the values *pí* and *pé* [*op. cit.*, No. 42; for an occurrence at Shemshāra of BAD = *pé*, see *Sh. T.*, 86, note to l. 55]).
- 5 f. [i]t-ti e-ri-iš-ma. The verb *erēšum*, to my knowledge, is not otherwise attested with *itti* introducing the person from whom an object is requested. Cf. *CAD* 4 (1958), 285, s. v. *erēšu* A, at end: "Though *erēšu* is normally used with the object demanded and the person of whom it is demanded both in the accusative, the latter is occasionally found in a construction with *ištu* or *išti* (OA, OB Agušaja), *ašar* (EA, Nuzi), and *ana* (EA, NB)." The translation of the present passage presupposes that *erēšum* is here construed with *itti* to denote requisition from someone, viz., the king of Kusanarim, for the reason that the latter appears to be the agent of

ušābīlam (l. 8). If *illi* renders the notion of acting in concert with someone ("I requested in agreement with K."), the verb *ušābīlam* is featured with a non-specified agent, which in my opinion is less likely.

5. *Ku-isa[-n]a-ri-im*. Geographical name occurring in the letter SH. 812 (*Sh. T.*, 77 ff.), 5 (*Ku-sa-na-ar-ḫi-im*), 7 and 12 (*Ku-sa-na-ri-im*). According to SH. 812, 12, the king of this country was a certain Naššumar.
-*ma* perhaps serves the purpose of emphasis ("it was from none other than K. that I requested").
6. *gišši-ni*: see note 3.
9. *li-ša[-n]a-am <<[ši-ni]>>*: see note 5.
14. *i-ka-al-la-a*. Final -*m* being consistently written in this text, it has been assumed that the final long -*ā* is not a product of the loss of -*m* in the ventive ending -*am*, but that a question is involved. The tenor of this sentence ("Surely it cannot be your intention to withhold the 'tin' which I have [already earlier] requested?") may suggest that SH. 868 is a dunning letter.
- 15—17. The translation of these lines is conjectural. *kīma* is rendered arbitrarily as "(should) correspond to (the requirements of?)." The translation does not account for the accusative case of *annakam* (l. 15), but it is suggested that the construction is anacoluthic.
18. MU PĀD. The rendering of PĀD as "reveal" is based on Th. Jacobsen's observation in H. Frankfort, S. Lloyd and Th. Jacobsen, *The Gimilsin Temple* (OIP 43 [1940]), 163 (cf. also p. 135). Sumerian pā(d) is rendered by Akkadian verbs conveying the notion "see" as well as by verbs with the notion "pronounce"; see also A. Falkenstein, *Die neusumerischen Gerichtsurkunden* (Bayerische Akademie der Wissenschaften, Philos.-hist. Klasse, Abhandlungen, Neue Folge, Heft 44), III (1957), 150 f. Compare, e. g., Gudea, Cyl. B, x 17, where pā(d) is used about tears being revealed from their normal state of obscurity within the eye; the series *ana illišu*, 3. tablet, iii 32 (B. Landsberger, in *MSL* 1 [1937], 44), where pā(d) is rendered by *alūm* "find" and denotes the idea of recovering or revealing someone from a state of hiding; Gudea, Cyl. A, xvi 15—17, where pā(d) is used about the discovery of previously unknown copper mines.—In translating *ana išim* MU PĀD as "reveal a name for me!", I have assumed that this is a request to rescue a name from oblivion: the recipient will reveal the name of the sender, and safeguard it for posterity, by despatching the consignment requested by the latter. In Gudea, Statue I, iv 5, and in the *utukku* text CT 16, 10, v 13

(lú mu-pà(d)-da nu-tuk "it has no one who pronounces its name"), pà(d) evidently conveys a similar idea of rescuing a name from oblivion. For a similar idea, compare perhaps the letter SH. 812, 37 (Sh. T., 80): *šum-ka a-na da-ar i-ša-ka-nu* "(so that) he may establish your name forever."—See also note 8.

19. For the phrase *ana dāriš ūmim*, see CAD 3 (1959), 114 s. v. *dāriš d*.⁸
20. *gamālum*, for which verb see CAD 5 (1956), 21—23, is rarely construed with the preposition *ana*; the CAD quotes only one reference (*l. c.*, 22, end of section b.), which is uncertain.
21. For *malī*, which occurs rather frequently in Mari, see W. von Soden, GAG § 48j, and A. Finet in ARM 15 (1954), 220 f. For an occurrence in a letter from Tell Shemshāra, see SH. 827, 7 (Sh. T., 72 n. 58).

(General Inferences.)

It seems certain that the sender of this letter requires materials for the manufacturing of weapons, and that these materials must be obtained from two different sources. From the country of Kusanarim he receives a large consignment of wooden objects (term: *šinū*); and from the addressee he requests a good supply of a mineral (term: *annakum*). It would appear that these are, as it were, raw materials which are to be somehow assembled before a finished product becomes available. I would tentatively

⁸ [A formally possible reading of UD-*mi-im* as *tam-mi-im* would completely change the interpretation of lines 18 f. *tammim* should then be construed as an imperative of the verb *tamūm* II, and two features would be of interest: the Assyrian vowel pattern (*tammī*, for Babylonian *tummi*), and the contraction of -*ia* to -*i*- (*tammiam* > *tammim*), both being phenomena for which parallels could be adduced from Mari as well as from other Shemshāra texts. However, if the reading *tam-mi-im* were admitted, the question would arise whether the logograms MU PĀD represent a mistake for an intended NAM.ERĪM (Akkadian *mamītum* "oath"), occasioned by a resemblance between ERĪM (written as NE+RU) and PĀD (written as ŠI+RU). For the phrase *mamītum tumnūm* "to put an obligation on someone by pronouncing an oath", see B. Landsberger, in *Türk Tarih Kurumu, Arkeologiya ve Etnografya Dergisi* 4 (1940), 28 f. Accepting this emendation would entail the following changes in the translation of lines 18 f.: 'For me, swear me an oath for all time!', implying that a permanent obligation would thereby rest upon the person taking the oath. For *ana dāriš*, as distinct from (*ana*) *dāriš ūmim*, see CAD 3 (1959), 113 s. v. *dāriš b*. In order to avoid emendation of the text at this point, the reading [*a-na*] *ša-ši-im* NAM¹.ERĪM¹ [*a-n*]a [*da*]-*ri-iš* *tam-mi-im* has been rejected in the running transliteration of the letter.]

suggest, partly in agreement with Dossin's rendering of *ši-in-ni* as "my lance" (see, however, note 3), that the term *šinum* may denote a wooden shaft for a spear or javelin. It is conceivable that metal, or a metal ore, is needed so that spearheads may be forged and finished weapons turned out.

Whether this metal is also essential for the manufacturing of a "tongue" (*lišānum*), or whether this work can be put in hand independently, is not apparent.

(Concluding Remarks.)

In the above translation of SH. 868, *annakum* has been rendered as "tin" in view of the following considerations. If the request for the mineral *annakum* is indeed caused by a desire to manufacture spearheads (or any other instrument of war), it is indicated that this mineral was meant to be added to copper so as to form the alloy bronze. Analyses of early copper alloys from Ur have shown that these contained a relatively high percentage of tin, whereas the lead content is comparatively very low⁹. The same applies to copper alloys from areas adjacent to Ur¹⁰. It may be of interest to quote somewhat extensively what H. J. Plenderleith has contributed to clarifying the problem, in his chapter on *Metals and Metal Technique* (in C. L. Woolley, *Ur Excavations*, Vol. II: *The Royal Cemetery*, Text [1934], 284—298), pp. 288 f.:

If the provenance of the copper ore and nickel remains in doubt, the origin of the tin is even more puzzling, and this is the case, indeed, with all ancient bronze specimens of whatever source. Tin occurs quite exceptionally, if at all, as native metal, and so native tin as a source for the 'bronzes' may be ruled out. The commonest ore is cassiterite (tin oxide), and this is both difficult to recognize and to reduce to metal. Copper and tin ores do not usually occur together, and it is unlikely that the Sumerians were able to obtain mixed ores in the necessary quantities from a mineral source of which we have no record to-day. 'Such (mixed) minerals are always of a complex character and would not give rise to such pure alloys as the early bronzes are found to be.' It seems, therefore, that the early bronzes have been made by smelting malachite (or other oxidized copper ore) with cassiterite and that these ores were mixed together either accidentally or by design.

⁹ See H. J. Plenderleith, in C. L. Woolley, *Ur Excavations*, Vol. II: *The Royal Cemetery*, Text (1934), 290 (Table I).

¹⁰ See H. J. Plenderleith, *op. cit.*, 291 (Table II).

Dr. [T. A.] Rickard (who inclines to the mixed-ore theory) has expressed the opinion that the ores were not smelted at Ur at all—'a fluvial region devoid of mineral resources.' He considers that the metal came from somewhere in the upper country of the Caucasian highlands. As regards the early 'bronzes', he considers that the variability in the tin content is so great as to indicate inadvertency, the inference being that tin was an accidental constituent of the ore smelted. The opposite view is taken by Dr. Constance Elam, who regards the making of bronze as the direct result of a discovery which was probably in the first instance accidental; she gives credit to the early metallurgist for adding tin, in whatever form, with intention and knowledge of what he wanted to produce. 'Traces of tin might be inadvertent but scarcely as much as 11 per cent.'¹¹ In seven of the sixteen bronzes which have been analysed dating from 3500—3000 B.C.¹² the quantity of tin lies over 10 per cent.

As forming a basis for comparison with the analyses which have been obtained from the Ur metals it may be of interest to consider some of the physical properties of the various alloys which can be manufactured by adding tin in increasing amounts to copper. The best bronzes contain 10—15 per cent. of tin, higher quantities of tin resulting in increased hardness and brittleness until alloys are obtained which are pale yellow or white (speculum metal, 25—30 per cent. tin) which are used in the Far East for the manufacture of mirrors. Percentages of tin lower than 10 and in diminishing amount to 1 per cent. or less yield alloys which are eminently suitable for domestic wear and ornaments but are not so reliable for the fashioning of weapons . . .

Having regard to all the evidence it is probable that cassiterite was recognized as a substance which, when added to malachite before smelting, possessed the virtue of improving the quality of the product ('bronze'), making it more amenable to clean casting and the fashioning of tools and weapons.

If the general inferences of the text SH. 868 are correct, it would be eminently reasonable to assume that *annakum* denotes "tin", or "tin oxide (cassiterite ore)", in a non-specific state of purity¹³, whereas a request for lead would make much less sense.

¹¹ P. 288, note 1, adds: Tin has since been found present to the extent of 20.2 per cent. in a dagger, No. 88, B. M. L. II, Table I.

¹² These dates should now be reduced by about five hundred years.

¹³ Differences in purity of ores and metals account for varying prices in the Cappadocian trade; see, e. g., A. Goetze, *Kleinasien* (2nd ed., 1957), 78, and J. Lewy, *JAOS* 78 (1958), 92 with n. 12.

This letter is significant, therefore, for two reasons. It may contribute new evidence to Akkadian lexicography with regard to our appreciation of the term *annakum*. It may, further, be of interest for the history of early metallurgy in hinting that supplies of tin were available in Southern Kurdistan, even though the mines where the ore was obtained may have to be sought beyond the higher ranges of the Zagros Mountains. As a companion piece to bronzes discovered at Tell Shemshāra, it is of particular interest. The excavations conducted in 1957 produced a shaft-hole axe (SH. 87)¹⁴ and three spearheads (SH. 88—90) from graves datable to the early 2nd millennium; the extended excavation in 1958 provided evidence to show that such weapons may well have been cast by smiths working at Shemshāra (ancient Šušarrā), in the form of a stone mould (SH.² 22) for casting of a socketed axe-head, of a type somewhat similar to that represented by SH. 87. It is much to be desired that the Shemshāra bronzes may be subjected to adequate analysis to determine the properties of the alloys.

¹⁴ As stated in *Sumer* 13 (1957), 218, this item is practically identical with the shaft-hole axe shown by R. Maxwell-Hyslop, *Iraq* 11 (1949), Pl. XXXVIII/7. SH. 87 has now been cleaned and is on display in the Iraq Museum, Baghdad.