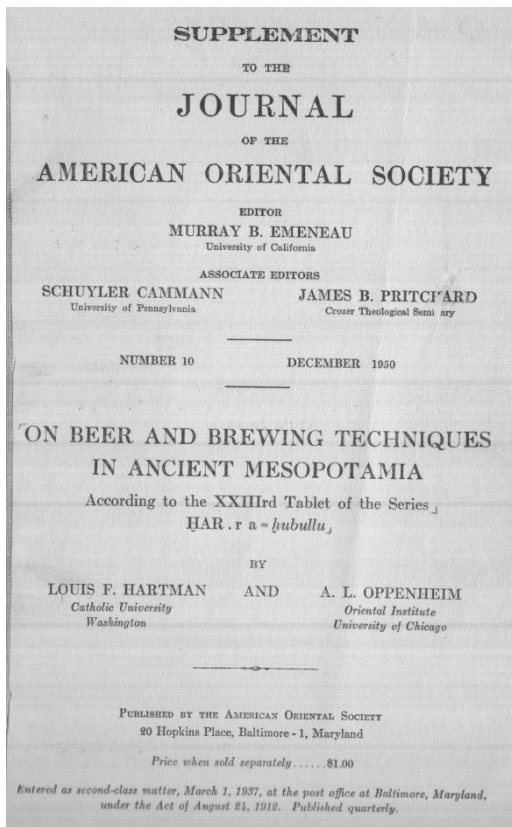


Editorial notes by Jim Braum, PhD

(1) Please note that the following excerpt regarding the production of beer in ancient Mesopotamia has been directly copied from "On Beer and Brewing Techniques in Ancient Mesopotamia" by Louis F. Hartman and A. L. Oppenheim, from the Supplement to the Journal of the American Oriental Society (Number 10, December 1950) for the sole purposes of teaching, scholarship and research under the doctrine of "fair use" as codified in section 107 of copyright law (www.copyright.gov/fls/fl102.html).

(2) Siduri is both a character in the Epic of Gilgamesh as well as a Babylonian goddess of wisdom (George A., 2003, The Babylonian Gilgamesh Epic: Introduction, Critical Edition and Cuneiform Texts, Oxford University Press, Oxford, UK). Siduri is typically characterized as a "maker of wine" (Sandars N., 1960, The Epic of Gilgamesh, Penguin Books Ltd, London, England). However, Siduri is also called a *sabitu*, or **Ale**-wife and possessed the traditional equipment (*kannu* or potstand, and *namzitu* or mixing bowl) of a **brewer** (Harris R. 2000, Gender and Aging in Mesopotamia: The Gilgamesh Epic and Other Ancient Literature. University of Oklahoma Press, Norman, OK), suggesting that Siduri was also associated with the production of **beer**. In Hartman and Oppenheim's seminal 1950 work "On Beer and Brewing Techniques in Ancient Mesopotamia" we learn: (1) the *sabitu*(*sabitu*) was a female brewer that possessed the containers *kannu* and *namzitu*, (2) in ancient times the brewer's craft was the only profession which derived divine protection and social sanction from female deities: Ninkasi, Siris and Siduri (if we now also include George's characterization of Siduri as a Babylonian goddess); essentially forming an ancient goddess beer trinity, with Ninkasi covering the production of beer (see "Hymn to Ninkasi", an ancient recipe for the production of beer, Genouillac TCL XV 20 and Zimmern VS X 156), Siris used in a metonymic way to refer to beer, and Siduri covering the enjoyment of beer (in-so-far as the ale-wife may, at least in part, be referring to the consumption of beer when she advises Gilgamesh: "*Fill your belly. Day and night make merry. Let days be full of joy, dance and make music day and night.*" Jacobsen, 1949, Mesopotamia: The Good Life, in Before Philosophy; The Intellectual Adventure of Ancient Man, by Frankfort, Wilson and Jacobsen, Penguin Books, Baltimore, Maryland), and (3) the *sabitu* or female brewer disappeared with the dynasty of Hammurabi, around the 17th century BC, which not only indicated a change in the social structure in Mesopotamia but also marked a development which took the brewer's craft out of the hands of women.

(3) In the interests of trying to keep the file size down I have included scans of double page spreads. However, I apologize for the resulting relatively small size of the text in this PDF.



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Louis F. Hartman, Catholic University, Washington, D. C.	
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A. L. Oppenheim, Oriental Institute, University of Chicago	
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ACKNOWLEDGMENTS

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L. Hartman would like to express his gratitude to the authorities of the Metropolitan Museum, New York, for granting him permission to copy and publish the tablet. In particular to Miss Hannah McAllister and to Mr. Charles Wilkinson of the Department of Near Eastern Art, sincere thanks are due for the courtesy they have shown to the author, and for furnishing him with photographs of this text.

A. L. Oppenheim has to thank Dr. F. W. Geers, who has contributed more suggestions and criticisms than the author was able to acknowledge in the text. He has also had the benefit of consultation with Dr. B. Landsberger and his assistance in the reading of damaged passages. Dr. Landsberger's learning has contributed several very important points of information. These have duly been credited to him.

L. HARTMAN
A. L. OPPENHEIM

I

THE NEW TEXT: Met. Mus. 86-11-386

LOUIS F. HARTMAN

The Metropolitan Museum of Art in New York acquired this tablet through a dealer in 1886, and nothing is now known of its exact provenance. However, since it is inscribed in typical neo-Babylonian script, we may safely assume that it was written somewhere in southern Mesopotamia during the fifth or fourth century B. C.—copied, of course, at that time from a much older text. Its excellent script and the fine texture of its clay make it probable that the tablet was made for one of the temple-school libraries.

Somewhat more than one third of the original tablet is now lost. The portion that still remains measures from 10 to 12 cm in height and from 6 to 10.5 cm in width. It is of some importance to establish, as far as possible, the size of the complete tablet as it first existed, for from this we can conclude the approximate number of lines that are now missing from our text. The obverse side is flat, but the reverse is noticeably convex. Hence, like so many other tablets of that period, this tablet was originally thickest at its center and became thinner towards all four edges. The center of thickness is still within our present fragment. From its position we can be absolutely sure that the tablet originally contained three double (Sumerian and Akkadian) columns of text on each side. The first and sixth double columns, which were respectively on the obverse and reverse of the left-hand side of the tablet, are now almost entirely lost. But they must have been of the same width as that of the other columns. Therefore, the original width can be ascertained as 13.5 cm. The original height cannot be determined with such accuracy. On the reverse the greatest thickness seems to be at about the 21st line of Col. V, that is, between the words UD and *is-qu-ug-qu*. Accordingly, the original height was about 15 cm, and about nine or ten lines are now missing at the bottom of this column. Thus, there are about 44 lines in each double column. Allowing some space for a colophon at the end of Col. VI, the original tablet probably had about 260 lines of text.

1

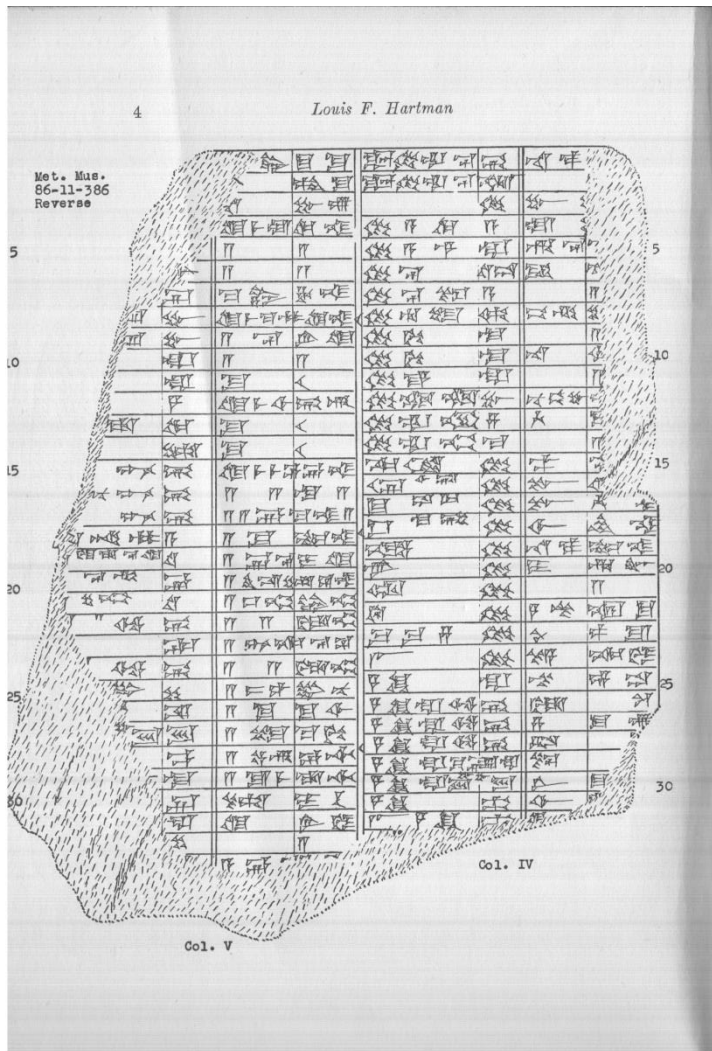
Every tenth line was marked with an 'angle-wedge' (*Winkelhaken*). If our supposition is correct that there were 88 lines in Col. I and II, and 10 lines missing at the top of Col. III, then the first preserved of these special wedges marks the line of *sa. hi.* in as the 100th line of the original column.

At the time when this tablet was written it was fire-baked to a hard consistency. This gave it a lovely reddish-brown color, but also rendered it quite brittle, so that it cracks quite easily. Despite the care which it receives in the museum, it is now in a worse condition than it was when I first copied it in 1939.

Met. Mus. 86-11-386
Obverse

Col. III





II
The XXIIIrd Tablet of the Series $\text{HAR} \cdot \text{ra} = \text{hubullu}$

A. LEO OPPENHEIM

1. Introduction

Until now, our knowledge concerning the contents of the 23rd tablet¹ of the series $\text{ur}_3 \cdot \text{ra} = \text{hubullu}$ ² was based on a fragmentary tablet in the British Museum (K 4351)³ and on the information contained in the commentary-series $\text{HAR} \cdot \text{GUD} = \text{imrú} = \text{ballu}$ and the so-called *Vorläufer* texts. The Kuyundjik tablet K 4351⁴ (published in IIR 30 no. 5, transliterated and translated by A. Goetze in MVAeg XXXII/1 65 ff.) yields about 26 complete equations and approximately as many fragmentary lines. The commentary-series (cf. note 5 for the sources) discusses (in its 6th tablet, according to the reconstruction by Dr. Landsberger which I was able to use) the tablets 22-25 of the main series, dedicating only 52 lines to our tablet.⁵

For these reasons the present tablet, Metropolitan Museum 86-11-386, with its 140 (partly broken) entries, constitutes a very welcome addition to our knowledge of native Mesopotamian lexicography. Unfortunately, nearly half of the equations on the new tablet duplicate those of the British Museum text so that about half of the original contents of the 23rd tablet still remains unknown. Nevertheless, the Metropolitan Museum text does yield a number of new equations, additions to and corrections of previous readings, and—above all—valuable information concerning the reading of certain logograms which the scribe of this tablet (in contradistinction to that of the Kuyundjik text) has obligingly preserved in his frequent glosses.

The commentary-series and the Sumerian *Vorläufer* texts allow us to reconstruct the sequence of subjects which were treated in the 23rd tablet of the series. The commentary discusses the following groups of equations in this order: flour (*zid*), bread (*ninda*), beer (*kaš*), liquid dishes (*tu₇*). This sequence does not correspond to that contained in the two extant copies of our tablet which is: [break], beer, [break] ŠIM, ŠIM (for ŠIM + GAR cf. p. 19 f.), *sún-mash*, *tita₇-mash*, green-malt, goats, [break], flour, bread, [break]. It should, however, be stressed that devia-

tions from the sequence of entries in the main series can be observed in various instances in the commentary-series.

The two largest tablets of the *Vorläufer* type, Chiera OIP XI 12 and 15,⁶ treat in their 12 columns the following subject matters (after 3 introductory lines mentioning water, bread, and beer): liquid dishes (*tu*), beer (*kaš* and *dida*), *šim*, flour (*zid*)—here, OIP XI 12 IV: 1-8 intercalates bran (*GAB*),—bread (*ninda*), fats (*i*), perfumes, etc. (*šim*), to turn eventually to fruits and various chemicals. Besides these Nippur tablets, we have copies from Larsa(?) (Van der Meer OECT IV no. 154, pl. XXXIV-XXXIX), from Babylon (L. Matouš LTBA I no. 80) and from Susa (Van der Meer DP XXVII no. 54). The last two are too fragmentary to be compared, but the former sets out with *tu*, and *kaš* to turn then to the groups *šim* (cf. p. 19), *sún* and *DIM*.⁷ Obviously, the arrangement on the extant copies of the 23rd tablet of *ur*.*ra* = *hubullu* follows rather closely that of the *Vorläufer* texts, with the commentary showing a divergent order.

2. The Technology of the Brewer

The words listed in the 23rd tablet are technical terms of the most difficult nature. The majority of them refers to the preparation of alcoholic beverages from cereals, a domain of ancient Near Eastern technology which has repeatedly been the subject of special studies by Assyriologists⁸ and Egyptologists.⁹

Through more than three millennia, an extensive and complicated nomenclature (in Sumerian and in Akkadian) was evolved by the brewers, which is highly difficult, if not impossible, to render into a modern language. Technical processes that are apparently quite simple (in the eyes of a philologist), as, e. g., the mixing of crushed materials into a liquid, are subject to exceedingly exact terminological differentiations according to the nature or the size of the material, methods of mixing, numerical relations, timing, special circumstances, etc. This holds true also for the designations given to the manifold methods applied to the germinating of the cereals, to the techniques in which the malted grain was treated, to the ways in which the fermentation process was introduced and regulated, and so forth. Each of these specific processes (and many others) was essential if a brew was to be manufactured which was

clearly defined in taste, strength, and color. And each of these steps was identified by a specific technical term. Certain characteristic manipulations often gave their designations to special beers that were their product. Thus we have a number of beers which take their names from such specific activities of the brewer as *pašú*, *hašlat*, *LABku*, *hiqu*, *mišhu*, *billitu*, etc.¹⁰ Further complications are caused by regional and diachronic differences in this nomenclature which the peculiar nature of the cuneiform source material (as to its distribution in time and provenience) accentuates to a large extent.¹¹

A thorough discussion of the technical terminology of the brewer would require a detailed study of the numerous administrative documents bearing on the transactions of the (temple-) breweries from the time of Lugalanda to that of the Seleucids. The evidence scattered throughout numerous religious, literary, and epistolary texts would have to be integrated into such a study. As a basis, however, a comparative technological investigation of Near Eastern brewing methods would have to be made, in order to create a frame of reference in which to incorporate the material yielded by the cuneiform texts. A purely philological approach cannot lead to valid results. Much as I should have liked to embark upon such a line of research, other duties have prevented me from doing so. In order to be able to place the present tablet at the disposal of the Assyriologists within the limits of an article, I have restricted my commentary to the text (notes 48-108) to philological remarks, by-passing any systematic discussion of the terminology of the Mesopotamian brewer.

But even for such a limited goal, some form of a synthesis is indispensable. In the following pages I offer some more or less pertinent remarks on the Mesopotamian methods of brewing in which I shall distinguish between what is documented and what is the result of my interpretation of the extant data. At the same time, I shall attempt to point out the main unsolved problems in this field of research.

In Mesopotamia, as well as in Egypt, the characteristic tool of the brewer is the earthen vat in which he mixes his brew. This is clearly borne out by the Egyptian hieroglyph for the word *'ftj* 'brewer' which shows the craftsman bent over such a container straining the mash through a basket-shaped sieve.¹² The few

existing pictorial representations of a brewer at work on Mesopotamian cylinder seals (cf. pl. I nos. 5, 6) are much less revealing in this respect. In the cuneiform system of writing, however, this basic tool of the brewer plays an important role. Here, the brewer as well as a characteristic product of his activity (not the finished beverage, cf. presently) are referred to by a group of pictograms which all show pointed earthen containers with inscribed signs obviously indicating their content.

These signs, their combinations and relationship, and the changes they underwent in the course of the development of the cuneiform system of writing seem to offer us some insight into what may, somewhat presumptuously, be termed the history of the brewer's craft in Mesopotamia. That is, if one is to draw technological conclusions from changes which may perhaps be solely paleographic. Such deductions are necessarily precarious and should only be proposed if they can be backed by analogies and parallel developments which a comparative investigation into the techniques of brewing may offer.

There are two graphic changes to be discussed in this context: one which concerns the pictogram for the container and the other affecting the sign which ancient scribes inscribed into this pictogram. The cuneiform system of writing uses consistently one and the same sign to refer to the brewer and to a specific substance (probably a given aromatized preparation, cf. p. 11) which apparently is considered his main and characteristic product. This sign depicts—up to the period of Urukagina—a container with pointed bottom (Sumerian: *kaš*) in which is inscribed the sign GAR (cf. Deimel SL² no. 435). The final brew—made most likely of an infusion of the mentioned substance in water—is denoted by a sign which again pictures an earthen container often provided with a spout.¹³ While the sign for the beer remains unchanged throughout the entire development, a change took place with regard to the first mentioned sign (KAS+GAR). This happened in the second half of the third millennium, between the period of Urukagina and that of the kings of Agade. This *kaš*-vessel was then replaced by the pictogram of a container of the same shape which, however, is provided with some additional lines to the left (and later, to the lower) side of its pointed bottom.¹⁴ The inscribed sign is not changed.¹⁵

It is, of course, very difficult to venture an explanation for the small square attached to the bottom of the container which changes the sign *kaš* into *šim*.¹⁶ The latter, as is well known, refers to aromatic matters of various kinds so that one is tempted to interpret the change reflected by the just described paleographic shift as due to the introduction of a new technique into the craft of the brewer. Two suggestions concerning the possible nature of such an innovation may be offered here: the brewers of the Akkad period could have changed the old ways of preparing beer by making use of certain spicy ingredients in order to improve the taste of their product, ingredients which had, hitherto, been prepared by the craftsman working with the *šim*-container. It is also possible that the latter has taken over the preparation of alcoholic beverages of a novel taste making use of the specific technique of his own profession. His work consisted mainly in the grating of aromatic substances and their mixing into liquid or fatty carriers for the preservation of their specific smell or taste.¹⁷ It seems not unlikely that he used thermic processes for this end and this might well be the clue to the solution of the difficult problem posed by the form of the *šim*-container. The excrescence to one side of the pointed bottom could be taken to represent a low earthen stove provided, on one side, with a pot-rest on which is placed a container with pointed bottom.¹⁸ The application of heat is not unknown to the technology of the brewing of beer.

As matters stand, this technological interpretation of the shift from the *kaš*-vat to the *šim*-vat can hardly ever be proved philologically; yet, it appears to offer a possible explanation for the change in paleography.

The sign which the Mesopotamian scribes inserted in the pictogram for the brewer's vat (be it written *kaš* or *šim*) has equally been subjected to a graphic differentiation. From the Fara texts on to those of the latest Neo-Babylonian period, the brewer, and the above-mentioned characteristic product of his craft are denoted by the sign KAS, later by ŠIM, with inscribed GAR, but there are not infrequent instances in which the GAR is replaced by A. This change is attested in Assyrian and Babylonian texts of the late period. Cf. for Assyria the fragment of a legal text, Ebeling KAV 122: x + 4 with a *lú . gal . ŠIM + A* as first witness, and the well-known Assurbanipal passage, Rm IX: 50, referring to the

lú.ŠIM+A as selling beer to the victorious Assyrian soldiers. The Babylonian references are to be found in the letter, Thompson CT XXII 31:8, and the contracts Strassmaier, Dar 317:6, 8 and Figulla, UET IV 23:1, 4. The craftsman referred to in these passages is clearly the brewer, but the reason for the paleographic change remains unknown. This interchange of GAR and A represents a puzzling phenomenon. Still more startling is the pertinent observation that the scribes of the Cassite period tend, at times, to omit the inscribed sign altogether and to use the logogram lú.ŠIM to refer to the brewer. Cf. e.g. Clay, BE XIV 56a:7, PBS II/2 125:3 and especially such passages which mention the miller (*kazidakku*) side by side with the brewer: Clay, BE XV 153:2, the kudurru King, BBSt pl. 26:13 and the text Clay, BE XIV 42:3 (discussed by Torczyner, *Tempelrechnungen* 89).¹⁹

It is important to note that exactly the same variants may be observed with regard to the writing of the name of the goddess Siris, the deified alcoholic beverage produced by the brewer. The form ⁴ŠIM+GAR (reading s i . r a . á š) occurs on the 5th tablet of the series ea = ⁴Á = *náqu* (AO 7661, published in Thureau-Dangin, TU no. 37) col. I rev line 48, as well as in the Old-Babylonian list of gods, AO 5376 (published by Genouillac in *RA* XX 98 f.) col. VII:45. The variant ⁴ŠIM+A is attested on the 6th tablet of the series *Šurpu* (cf. IV R 56b:55) discussed on p. 14, and the writing without any inscribed sign in various passages, cf. e.g. the series An = *Anum*, CT XXIV 10:25 (with the gloss s i . r i . i s).

With regard to the designation of the preparation b a p p i r (p. 14) (Akk.: *bappiru*) we meet the same uncertainty.²⁰ The text AO 7661 (col. I rev lines 44-45) offers ŠIM as well as ŠIM+GAR with this meaning. The latter is also attested in the Syllabary B¹ (quoted after Van der Meer, OECT IV) line 77. This syllabary, however, gives the combination ŠIM+A (reading d u . u m . g a l) for the brewer called *sirašû* (line 77). Against this ŠIM+A we have the writing ŠIM+GAR for the brewer in the text AO 7661 (cf. above) from which we learn the Sumerian readings l u . u m . g i and (variant) n i . i n . g i (shortened to n i . i n in CT XLI 47 f. line 80). The Akkadian equivalent in AO 7661 I:46-47 is again *si-ra-šu-ú*, restored by Dr. Landsberger according to CT XII 24:49 [*si-ra-š*]u-ú.

This uncertainty concerning the writing of the sign for the brewer, his divine patron, and one of the essential ingredients of his brew seems to reflect a specific technological situation. One gains the impression that the insertion of a sign into the ŠIM is meant to reflect a differentiation between two slightly different techniques. Since the *bappiru*-wort is nearly always written with inscribed GAR this substance might be considered characteristic for a new or foreign (cf. note 22a) technique while the designation of the brewer by means of a *nisbe* (*sirašû* 'he of the *sira/is*-drink') might be taken as stressing the special nature of his product²¹ as against the products of other types of brewers.

It is hardly possible to hazard a guess as to the nature of this dichotomy in the brewing technique of most ancient Mesopotamia. The reading n i n d a for the sign GAR may perhaps yield a clue. Since the pioneer work done by Hrozny (cf. note 8) it has been taken for granted that the inscribed sign for bread establishes *bappiru* as 'Bierbrot' (cf. also Goetze in *MVAeG* XXXII/1 74). The use of bread-shaped cakes made of malted barley which are to be crushed and soaked in water for the preparation of beer, is well attested for Egypt;²² but for Mesopotamia the tablet published and discussed in the present article does not necessitate such an interpretation. The following indications concerning the nature of the substance called b a p p i r seem to be relevant: the Cappadocian tablet Smith, CCT I 23:20-21 and the Nuzi text Lacheman, HSS XIII 28:1-3 count *bappiru*. It is stored in sacks and has to be crushed or ground before use (cf. the Hittite evidence presented by Goetze, op. cit. 71 f.). This indicates that b a p p i r was manufactured in hard and sizable lumps formed like bread-cakes since the addition of the sign GAR (= n i n d a 'bread') does point in that direction. It is hardly possible that this wort consisted of aromatic matters only because their nature does not require the just deducted typical form of the b a p p i r-substance. If, however, the b a p p i r consisted of some base preparation into which such aromatic ingredients were incorporated by means of some thermic process, the cake form seems to be rather adequate for production, storage, and handling.

The history of the brewer's craft in Mesopotamia discussed above evidently has been characterized by many technical 'revolutions.' The situation in the third millennium is further complicated by

the evidence which comes from iconographic sources. Plaques and cylinders of early Mesopotamia bear witness to the existence of a specific technique of brewing which yielded a beer to be drunk only by means of a reed or a tube to prevent the hulls of the malted barley from spoiling the pleasure of the drinker. Such representations are preserved from the Jemdet-Nasr period to the time of the Dynasty of Agade which, however, does not necessarily reflect an actual technological situation throughout this span of time.²² The scene seems to have acquired secondary connotations²³ which, together with the conservatism of the artist, may have caused it to outlive by far its value as evidence for the development of Mesopotamian brewing. There are indications that the specific technique which necessitates the use of reeds or metal tubes was native in the (mountain) regions to the northwest of Mesopotamia, as it is well attested²⁴ for Asia Minor, Syria, etc. Whether this technique which seems to have been brought into Mesopotamia from the northwest has caused the above-assumed co-existence of two brewing techniques or not, is difficult to establish.

A further indication for a radical change in our field of technology can be found in the disappearance of the feminine element which coincided with the end of the Old-Babylonian period. The brewer's craft is the only profession in Mesopotamia which derives divine protection and social sanction from a goddess—in fact, from two female figures of the pantheon: ^dNin . KA.SI and ^dSiris.²⁵ This special position of the craft one can hardly fail to connect with the well-known social and economic role of the *sabītum* 'female brewer'²⁶ in the Old-Babylonian period. This woman (SAL. ka š. tin . na) who prepared and sold—together with her husband, the *sabūm*, *sabbūu*, *sibū* (lú . ka š. tin . na)—a special type of beer in her tavern, disappeared with the dynasty of Hammurabi,²⁷ which does not only indicate a change in the social structure of the country but marks also a development which took the brewer's craft out of the hand of women.²⁸

A last but apparently far more important technological change occurred sometime between the end of the Cassite and the beginning of the Neo-Babylonian period. The techniques of preparing alcoholic beverages from the farinaceous grains of the domesticated cereals seems to have been abandoned and a beer was brewed which had nothing but the name (*šikaru*, ka š) in common with that

of the preceding period. From the administrative documents of the Neo-Babylonian time which record materials given to the lú . ŠIM+GAR (rarely ŠIM+A) we have to deduce that they prepared an intoxicating drink from dates.²⁹

After these rather precarious excursions into the realm of speculation, we turn to a brief discussion of the all-important process in the Mesopotamian brewery of the third and second millennium. This is the preparation of malt won from barley (rarely from emmer-wheat), the main and most complex job of the brewer or of a specialized brewery-worker (cf. notes 37 and 81), which consisted in the application of moisture and warmth to the cereals. The treatment is designed to provoke germination, that is, to change the starch of the grain into maltose sugar.

The alcoholic beverages made of cereals without malting were greatly improved by the sweet and specific taste of the maltose sugar (cf. note 38). It has to be kept in mind, that the malting of barley (and emmer) was not invented as a preparatory process to be utilized at a certain stage of the brewing of beer. In fact, malting belongs to an important technological stage in the development of methods for the preparation of vegetable food stuff without the application of fire. On that level of the history of food-technology, seeds and other hull-protected (or bitter tasting) fruits (like acorns, e.g.) were made palatable and easier to digest by prolonged soaking in water (with or without added chemicals such as lye, salt, etc.). This was done for immediate consumption and also to prepare food for preservation in various forms. Hulled barley soaked in water begins to sprout and tastes sweet after having been dried. These sprouted grains are either preserved as such or ground into groats or flour, or also made into a dough and baked as cakes. In these forms the nutritional value of the farinaceous grains is highly increased. This makes malted cereals an ideal food for journeys; stirred into a pulpy dish (cf. note 75) or used as a basis for beverages prepared by infusion they improve the taste of the dull and primitive fare of groats and 'Dauerbrot.'³⁰

The use of such cereal preparations is illustrated in certain conjuration texts which reflect the customs of a past hidden for us in the darkness of the preliterate period. Cf. e.g. the text Ebeling, KAR 22:18-19 where the ritual prescribes how the evil demon is to be furnished with provisions in order to insure his departure on a

long trip: *šu-di-e* NÍG.ĪAR.RA munu₄ ŠIM+A ninda *ab-la tu-ša-da-šu* 'provide her with travel-provisions (consisting of) groats, green-malt, ŠIM+A and dried bread.' The writing ŠIM+A is clearly another case of confusion concerning the infixed sign which should be GAR (= ninda). We see here clearly that neither the malt nor the *bappiru* is in this context destined for the brewing of beer; both are simply food-preserves made of malted cereals without (*buqlu*) and with added aromatic matters (*bappiru*) to be eaten as such or prepared by infusion in water. The Lamashtu series enumerates under similar circumstances groats (NÍG.ĪAR.RA), green-malt, *bappir* (written ŠIM+GAR), parched barley (*še.s.a.a*) and dried bread (*ninda.hád.da*), cf. IV R 55: rev. 29b (also Myhrman in *ZA* 16, 192). The same series (IV R 56: 55b, cf. Myhrman, *ZA* 16, 162) refers to groats, green-malt, and *bappir* (ŠIM+GAR) for a similar purpose in a phrase which is discussed at length in note 39. Mention should finally be made in this context of the rituals in King, BMS 53: 18 (and Ebeling, KAR 267: 12 = TuL I 141) referring to *zíd.munu*,²¹ and *ninda.kaskal* 'bread for travelling' (cf. note 30).

Malt products were also given out as part of wages paid in kind to the workmen and serfs of the temple administration. Here, however, the extant evidence clearly shows a change in eating habits: the distribution of green-malt, etc., is very frequently attested in the pre-Sargonic period, but becomes rarer in that of the Third Dynasty of Ur and disappears thereafter in practice but not in name (cf. note 76). All this shows that malted barley developed from a seasonal delicacy—note the name of the fifth month in the calendar of Lagash: *iti.munu₃.kú* 'month of the eating of green-malt'—to a food-preserve and eventually to the basic substance used by the Mesopotamian brewers.²² The shift from food to drink could well have been caused (as parallel developments indicate) by the preference of the primitive cuisine for soupy cereal dishes which were often seasoned by sour fermentation.²³ The problem pertaining to fermentation will be discussed presently.

At this point of my presentation, I would like to survey briefly the pertinent Sumerian and Akkadian terminology. The germinating of the grains is called *parāhu*, and it is done in a container for which the designation *naprahtu* is attested in Old-Babylonian

(cf. Lutz, Univ. of Cal. PSPH XII Ashjaly 35:7) as well as in Neo-Babylonian texts (cf. Strassmaier, Nbn 558:13). Cf. also the vocabulary passage (D. T. 52 published in V R 42 no. 1: rev. 28 plus K 945:12 published in *RA* XVII 119) *duk.níg.dúr.búr.tur.ra* = *nap-ra-ah-[lum]*.²⁴ After water and slow heat have done their work, the green-malt (Sum. *munu*, i. e. DIM₄+ŠE, also *munu*, i. e. DIM₄; Akk. *buqlu*)²⁵ is to be dried which has mainly the purpose of stopping the progress of growth, thus preserving the maltose sugar at a maximum. The drying is done by spreading (Akk. *šešū*)²⁶ it in the hot sun or by roasting it (Akk. *nāpu*) in a kiln. Then the malt is crushed (Sum. *gaz*, Akk. *hašālu*)²⁷ with pounders called *bukannu* in a Neo-Babylonian tablet (Ungnad VS VI 182:24) containing an inventory of the tools of the brewer (*á-di-e*, ll. 23-24). The same text mentions also the sieve (*nappū*) which is perhaps used to separate the crushed hulls from their sweet²⁸ content. Where this process is omitted, the resulting beer has to be drunk by means of a tube (cf. p. 12).

The malt thus won seems to have been treated in two ways: it was either kept in earthen containers (cf. e. g. from the Cappadocian tablets Contenau, TCL IV 87:27, 28, Thureau-Dangin, TCL XIV 53:14, Lewy, TCL XX 181:15, 16, etc.) and sacks (Lewy, TCL XX 181:20-21) or baked with aromatic matters or the like into perhaps bread-shaped lumps or cakes which were called *bappir* in Sumerian (Akk.: *bappiru* (cf. p. 11)). The baking was done in a special kiln for which we have the designation *un.bappir* (cf. note 26 and p. 18). Green-malt, aromatized malt cakes, and hulled groats (i. e. *munu*, *bappir* and NÍG.ĪAR.RA)²⁹ were then probably soaked in water, a procedure termed *luhūmu*³⁰ and *nadū*.⁴⁰

The ways in which the Mesopotamian brewers dealt with the introduction and the control of fermentation constitutes the most difficult problem in this attempt to reconstruct their techniques. There is no textual evidence whatsoever and one can but discuss the various possibilities. The conversion of the starch contained in the above described mash can only be brought about by a special enzyme (maltase) contained e. g. in human saliva and certain animal fluids, and also by plants of the fungus family (yeasts) found on the ripe barley grains or simply present in the air. While fermentation of some kind is thus practically assured, there exist

many varieties of yeasts and consequently many types of fermentation which yield alcoholic beverages of very different taste and strength. To ensure that beverages of a specific quality are produced in the mash-tun, the brewer has to cultivate one variety of yeast either consciously or through the constant use of the same tools, especially of the same mash-tun. The latter method, primitive yet very efficient, offers perhaps the explanation why the Egyptian and Mesopotamian brewers carry their mashing container along (cf. note 12).⁴¹ It is not only the sign of their calling but the guarantor of successful brewing. In the cracks and recesses of the tun grows a microscopic fauna which produces that very variety of yeast which yields the beer which the brewer's customers expect him to brew. Technically more advanced is the method of preserving some of the dregs and sediments from a previous brewing (cf. note 44 for the designations of these substances) to add them (as a kind of leaven) either to the dough of the *bappir* or to the mash.

Since the type of fermentation is directly linked to the length of time for which the beverage can be stored (which, in turn, determines the pace and the quantities of the output), the control and the selection of the yeast could well have been one of the decisive technological advances in Mesopotamian brewing which we still have to coordinate with the extant philological and iconographic data.

To return again to the Mesopotamian evidence: the fermenting mash is placed in the mash-tun called *namzitu*⁴² where it is stirred by means of the mixer *anablatu* (VS VI 182: 24 and the inventory *ú-di-e šá dul-lu l ú. ŠIM+GAR-ú-tu* in Clay BRM I 92: 6). Eventually it is transferred to a container called *tēbibtu* 'clarifying vat,'⁴³ where the dregs and sediment⁴⁴ are allowed to settle.

The cleared brew is then filled into storage and/or transport-containers which are denoted by a complex terminology varying according to period and region. These terms cannot be discussed here, nor can mention be made of the manifold methods used to improve the taste of the beer by adding certain odoriferous plants,⁴⁵ or its strength by mixing various types of beer, or beer with water, etc.

3. Contents of the Tablet

The 38 lines which remain of the second column⁴⁶ on the obverse are devoted to an enumeration of various kinds of beers listed according to their color, strength, use, etc. Up to the second preserved line of column II, the logograms beginning with *kaš* (Akk. *šikaru*) are discussed. Their enumeration is resumed in line 9, after four lines dedicated to *kurun* and two to alcoholic beverages prepared from emmer (instead of barley).

After a break of about 10-15 lines, two entries of an obscure nature (for a proposed interpretation cf. note 62) appear whereupon the text turns to a discussion of the basic substances needed for the preparation of beer. These substances are enumerated in the following order: *ŠIM* (lines III: 3-7), *ŠIM* (variant: *ŠIM+GAR* i.e. *bappir*) (lines III: 8-14), *sún* (lines III: 15-25), *tita b* (lines III: 27-IV: 2) and *m un u*₄ (lines IV: 3-24).

The fact that these substances are discussed after *kaš* = 'beer,' that is, the ingredients after the finished product, could be taken as indicating a general principle of arrangement which governs the sequence of the five groups of entries just mentioned. If it can be assumed that the scribes actually proceeded in their enumeration from one technical stage (and its characteristic products) to the immediately preceding stage, we would win an important cue for the interpretation of these difficult terms. Since *m un u*₄, the last entry, refers clearly to the green-malt, the very first process in the brewing of beer, and since the two first entries denote the substances which directly yield the beer, one may feel justified in accepting the above characterized principle of arrangement at least as a working hypothesis. The following discussion will therefore proceed from *m un u*₄ to *tita b* and *sún*, and close with *ŠIM*, a sequence which reverses that of the text.

The tablet dedicates 22 lines to the green-malt (Sum.: *m un u*₄, written *DIM₄+ŠE*; Akk. *buqlu*, cf. note 7 and p. 14) thus taking up more lines than are given to the discussion of any other item of this group. These entries refer to the various methods used to promote the germination of the barley, to crush and process the germinated grains, etc.

The next group contains the logograms beginning with *tita b*. It should be mentioned that the *Vorläufer* text from Larsa, Van der Meer, OECT IV 154, omits this subject-matter altogether which

might indicate that *titab* was not an essential substance in the process leading from malt to beer. As to the nature of *titab*, two clues have to be taken into consideration: (1) the logogram *BARÁ.MUNU₄* (reading. *titab*) indicates that our substance consisted of green-malt which had been cleaned in some way (for *BARÁ* = *hālāṣu* perhaps 'to strain,' cf. note 56); and (2) the passage AO 2162 rev I: 9-10 (published by Thureau-Dangin RA VI p. 130) mentions, side by side, *udun.titab* 'kiln for the *titab*' and *udun.bappir* 'kiln for the *bappir*,' suggesting thus that the *titab* was a malt-preparation which was to be processed in a kiln⁴⁷ exactly as was the *bappir*. It cannot refer to the parching of the sprouted grains on a special malt-drier because *titab* was a liquid (or semi-liquid) preparation as can be seen from the occurrence of a *duk.titab* 'earthen container for the *titab*' (cf. simply Deimel, ŠL 344/25). In such a pot was probably stored a dough (or paste) made of strained (?) green-malt destined to be formed into cakes (?). The fact that one *Vorläufer* text (cf. above) omits all entries dealing with *titab* might be indicative of regional differences. Two of the nine entries dealing with *titab* show that the latter was treated in the same way as *munu₄*, cf. III: 28 with IV: 4 ('soaked') and IV: 1 with IV: 10 (*našpu*, cf. note 50).

We turn now to *sún* (Akk. *narṭabu*) which for philological reasons, refers to a semiliquid substance. Five of the eleven lines dedicated to *sún* mention adjectives and other qualifications that recur with *munu₄*; these adjectives refer to soaking (cf. III: 17 with IV: 5), beating and crushing (cf. III: 21-23 with IV: 12-14), while a comparison of III: 25 with IV: 15 demonstrates that *munu₄*, the green-malt, was the basic substance of *sún*. It cannot be decided at present whether *sún* and *titab* refer to two successive stages within one and the same manufacturing process, or to approximately the same stages, or technical levels, of two parallel processes in which the green-malt (*munu₄*) is transformed into substances (*titab* and *sún*) that are the bases of (slightly) different brews. The textual evidence is too slim to permit a decision. Yet—if an *argumentum ex silentio* is permitted—the former alternative seems to be supported by the fact that we read about a kiln for the *titab* (cf. above p. 18) but not about one for the *sún*.

The next two items belong to the last stage of the process of brewing. They pose, however, a very interesting problem. The Metropolitan Museum tablet divides the entries between III: 2 and III: 15 into two groups, which is clearly indicated by the fact that the sign is written in the right half of the Sumerian column in the lines 3 and 8. Each of these groups starts out with the sign *ŠIM*. The first group embraces the lines III: 3-7, the second the lines III: 8-14. The British Museum fragment, however, writes the sign of the second group as *ŠIM+GAR* (*bappir*) while the crucial lines 3-5 of the first group are lost there in a break.

It is important to note that also some *Vorläufer* texts list in the same context two identical *ŠIM* signs in successive lines, cf. Van der Meer, OECT IV 154 III: 3-4 and Chiera, OIP XI 12 III: 9-10. Another list shows—exactly as on our tablet—two groups of signs with identical 'headings' (that is: signs written to the right of the column), viz. Chiera, OIP XI 15 III: x-3 ff. In view of the already (cf. p. 9 f.) observed tendency of the scribes to omit or to interchange the sign inscribed in *ŠIM*, there arises the problem of the interpretation of the two successive signs *ŠIM* in the *Vorläufer* as well as in our tablet. The second *ŠIM* can definitely be interpreted as defectively written *bappir* (*ŠIM+GAR*) (cf. note 20a) on the evidence of the Kuyundjik tablet. For the first occurrence of the *ŠIM* two possibilities are open: the sign could be read *šim* 'wort' and taken as referring to some kind of aromatic substance used for the brewing of beer (cf. p. 9), but it could also stand for *ŠIM+A* (written defectively). The latter alternative, however, seems somewhat less likely, this combination being rare and attested mostly in late texts. Still, the fact remains that our tablet as well as the just quoted references to *Vorläufer* texts again reveal the existence of two types of aromatic ingredients or substances used for the brewing of beer, a situation which has already been pointed out on p. 11. The lists devote only a few lines to one of these substances (always written *ŠIM*—if the copies of Chiera, etc. are to be trusted) but many to the other *ŠIM* which appears once (on the Kuyundjik copy of our text) with the inscribed sign *GAR*.

With line IV: 25, the balance of the first column of the reverse (8 lines) turns to logograms of the *NIĜ.ĜAR*. (*RA*) group, which is dealing with various types of groats. After a break of about 10-15 lines, the tablet enumerates in its partly preserved 4th and

5th columns 33 entries each beginning with *zid* 'flour.' These logograms are listed according to the basic materials, qualifications of all kinds, and to the use for which the flour was destined. The next two entries enumerate dough, etc. (V: 34-35) and, in the very break which marks the end of the known text of the 23rd tablet, the topic *ninda* 'bread' is taken up.

4. Transliteration and Translation

The transliteration is based on the new tablet Metropolitan Museum 86-11-386 (referred to as "A" in the marginal indications) completed by the material contained in the Kuyundjik fragment (K 4351) (quoted as "B").

The marginal indications refer with upper case characters to complete and with lower case letters to damaged passages. Omitted entries are indicated by "o." The sign "C" refers to passages which appear in the commentary series *HAR.GUD = imru = ballu*.

The asterisk (*) indicates lines which, on the tablet, are provided with the *Winkelhaken* with which the scribes marked every tenth line (disregarding the arrangement in columns).

The translations offered are, in many instances, little more than tentative because of the difficulty of the subject.

The *Apparatus Criticus* contains the variants and also the justification for the restorations and emendations proposed in the text. In the numbered notes an attempt is made to link the philological material of the present tablet to evidence coming from other sources.

An index of the Akkadian and Sumerian words of the text has been added for the convenience of the reader. It also contains references to the more important words and phrases discussed in the introduction and the notes.

TEXT

AND

TRANSLATION

22		Text		23	
		Col. II		Col. II	
	broken				
a	1	[]	[]
a C	2	[k a š. BALAG. NAR] ^a	II t[e]-g[i-i]	[(beer)]
A	3	KAŠ ^{ku-ru-um} GI ₅	ku-ru-un-nu	same (= beer) of the <i>teggû</i> ⁴⁸	
A C	4	KAŠ ^{UD} DIN ⁴⁹	II	kurunnu-beer	
A	5	KAŠ. DIN ^{II} UD	na-áš-[pu] ^b	same	
A	6	KAŠ. DIN ^{II} GI ₅	ú-lu-šin-nu ⁵¹	... ⁵⁰	
A C	7	[KAŠ]. ZÍZ ^{u(?) - lu(?) - ši(?) - in} Ā[M] ^c II	ú-lu-šin-ma-hu ⁵²	ulušinnu-beer	
A C	8	[KAŠ]. ZÍZ. ĀM ^{II} . ma ĥ	sa-a-mu	same	
A	9	[k a š]. s a ₅	kaš-ma-hu	ulušinnu-beer	
A	10	[k a š]. m a ĥ	ši-kar ši-in-nu-ú ^{d 53}	reddish	
A b	11	[k a š]. 2. t a. à m	ma-al-ma-lu ^f	excellent beer	
A b	12	k a š. 3. t a. à m	pi-lu-ú	beer (mixed) of two parts	
A b	13	k a š. 1. t a. à m	ši-kar šá-lul-ti ⁵⁵	beer (mixed) of three parts	
A b	14	k a š. šá. ZU+AB	ħar-šu	beer (mixed) of one part	
A b	15	k a š. n i g. 3. t a. b a ⁵⁴	ħi-i-qu ⁵⁷	beer from (?) the 'Nether-World'	
A b	16	k a š. s a g. g á l l a	la II	threefold (?) beer	
A b	17	k a š. s a g. g á l l a	dal-hu	beer with a 'head'	
A b	18	k a š. n u s a g. g á l l a	ma-zu-ú	beer with a 'head'	
A b	19	[k a š. l] ù. a ^e	II	beer without a 'head'	
a b	20	[k a š. l] ù. a ^h	II	beer made turbid	
a (b)	21	[k a š. l ù]. l ù. a ⁱ	II	beer which has been stirred	
a (b)	22	[k a š. s u r]. r a ^j	II	beer which has been made very (?)	
a (b)	23 ^l	[k a š. a. s] ù. s ù ^k	II ^l	turbid	
a b	24	[k a š. s i]. g a ^m	za-ku-ú	beer which has been []	same
a b	25	[k a š. x ^l]. ð i. ð é ⁿ	ši-kar ma-aq-qa-tum ^o	beer which has been diluted (?)	same
a b	26	[k a š. b a l]. b a l ^p	II	beer which has been [cla]rified	clear
a b	27	[k a š. s i z k u r]. s i z k u r ^p	II ni-qi-i	beer for infusion(s) ⁵⁸	beer for infusion(s)
a b	28	[k a š. s i z k u r]. s i z k u r	II nap-ta-nu ^q	beer for aspersions	same
a b	29	[k a š. b u r]. r a	II ni-qi-i	beer for the sacrifice	same for the sacrifice
a b	30 ⁵⁹	[k a š. b u r]. r a	II nap-ta-nu	beer for the sacrifice	beer for the (divine) repast
a b	31	[k a š. b u r]. s a g	II ni-qi-i	beer for the (divine) repast	beer for the sacrifice
a b	32	[k a š]. b u r. s a g	II nap-ta-nu	beer for the (divine) repast	same for the (divine) repast
a b	33	[k a š]. n i s a g ^r	II ni-sa-an-nu	beer for the main (divine) repast	same for the sacrifice
a b	34	[k a š]. g ú(?) . n i s a g ^r	II kan-nu	beer for the main (divine) repast	same for the (divine) repast
a b	35	[k a š. x]. z é ⁶¹	II ĥa-li-lí	beer for the n i s a g-offering	same for the nisannu-offering ⁶⁰
				34 beer for the... n i s a g-offering	same for the (libation?) jar
				35 []... ⁶¹	same

24	<i>Text</i>		<i>Translation</i>	25
a b 36	[kaš.x.zé].du ₁₀ .ga	II II <i>ta-a-bi</i>	36 [] sweet [...]	same same sweet
a b 37	[kaš.A.]SUD ^s	<i>hi-i-qu</i>	37 [st]steeped	mixed (beer)
a b 38	[]	II	38 []	same
Col. III				
broken				
a 1	sa.h[i.in] ^a	[]	1 ... ⁶²	[]
a 2 *	sa.hi.i[n.x]	[]	2 ... []	[]
a 3	ši[m]	[]	3 wort(?)	[]
a 4	šim.DI.a ^b	II	4 diluted(?) wort(?)	same
a 5	AMA ^a -ga-ri-inŠIM	<i>a-g[a-ri-in-nu]</i>	5 'mother-brew' ⁶³	<i>ag[arinnu-brew]</i>
a b 6	a.g.a.r.i.in	[II]	6 a g a r i n -brew	[same]
a b 7	si.bur ₃ bu-ru.da	<i>mir-[]^c</i>	7 ...	crushed(?)
a b 8	bappir ^d	<i>bap-[pi-ru]</i>	8 beer-bread	beer-bread
a b 9	bappir.UD.ta.b.ba	II <i>bar/maš-[]</i>	9 beer-bread which has been ...	same []
a b 10	bappir.šu.KIN ⁶⁴	II <i>si-ma-[]^e</i>	10 beer-bread which has been broken(?) up	same []
a b 11	bappir.pad.pad.da	<i>pi-is(?) -su(?) -su⁶⁵</i>	11 beer-bread which has been crumbled	...
a B 12 *	bappir.du-ur ₃ ur ₅ ^f	<i>raš-bu</i>	12 beer-bread which has been set out (in water?) ⁶⁶	wet(ted)
a B 13	bappir.há.d.a ^g	<i>ša-bu-lu</i>	13 beer-bread which has been dried	dry(ed)
a B 14	bappir.UD	<i>na-ás-pu</i>	14 whitish(?) beer-bread	...
a B 15	sún	<i>nar-ša-bu⁶⁷</i>	15 mash(?)	<i>naršabu</i>
a B 16	sún.a.sur.ra ⁶⁸	<i>ru-uf-lu-bu</i>	16 mash(?) soaked in water	wetted
a B 17	sún.a.sur.ra	<i>ri-si-it-tum⁶⁹</i>	17 mash(?) soaked in water	process (and product) of steeping
a B 18	sún.lál.lá ^h	<i>kar-ku⁷⁰</i>	18 mash(?) ...	soaked
a B 19	sún.a.l.a.g.a	II	19 mash(?) agitated by means of an al ⁷¹	same
a B 20	sún. ^{ka-alk} al ^f	<i>i-ši-tum⁷²</i>	20 mash(?) ...	...
a B 21	sún.dú.b.dú.b.bu	<i>nu-up-pu-šu-ti⁷³</i>	21 beaten mash(?)	whipped
a B 22 *	sún.a.l.g.a.z.z.a ⁷⁴	<i>haš-lu-ti</i>	22 crushed mash(?)	broken in small pieces
a B 23	sún.a.l.kum.ma ⁷⁴	II	23 crumbled mash(?)	same
a B 24	sún.š.u.a.g.a	<i>mar-su⁷⁵</i>	24 mash(?) (agitated) by hands	mixed
a B 25	sún.KA.LÁL.MUNU ₄	<i>ša pi-rik-ti</i>	25 mash(?) of ...	...
a b 26	zi.mu-nuMUNU ₄ ^{i 77}	<i>šim-[]^l</i>	26 'flour and green-malt'	(i) <i>šimannu</i> -ration ⁷⁶
a B 27	BÁRA ^{ti-tab} MUNU ₄ ^f	<i>ti-ta-pu</i>	27 t i t a b -mash(?) made of cleaned green-malt	<i>tiappu</i> -mash(?)
a B 28	titab.a.DI.a ^j	<i>ši-pu-tum⁷⁸</i>	28 soaked t i t a b -mash(?)	steeped
a B 29	titab.si.g.a ^k	<i>šu-lu-ku-tum</i>	29 cleared/clarified t i t a b -mash(?)	ready
a 30	titab.a.l.si.g.a	II	30 cleared/clarified t i t a b -mash(?)	[same]
a B 31	titab.a.l.bur.ra	<i>pi-tu-ti</i>	31 sprouted(?) t i t a b -mash(?)	opened
a B 32 *	titab.a.l.bur.ra	<i>PA-šu-ti</i>	32 sprouted(?) t i t a b -mash(?)	...

28			Text	Translation			29
b x + 1	[z í d	]	[	]	-x		
b x + 2	[z í d	]	[	]	-ti		
b x + 3	[z í d. u l u š i n (?)	]	[qí-im á-lu]-šín-ni				[flour of emm]er-wheat
b x + 4	[z í d.	]	[II (?)]
			Col. V	Col. V			
a b 1	[z í d. IŠ]		[ku]-uk-ku-šu ⁹⁴	1	[]	...
a b 2	[z í d.	]	[ha?]-am-šu	2	[]	...
a b 3	[z í d. s i m. m a] ^b		na-pu-ú ⁹⁵	3	[	]	sifted
a b 4	[z í d.	]	qí-me ši-di-tum	4	[	]	flour for provisions
a (b) 5	[z í d.	]	II	5	[	]	same
a (b) 6	[z í d.	]	II ^c	6	[	]	same
a b 7	[z í d. m a d]. g á d		ma-aš-ha-tum ⁹⁷	7	[	]	fine flour
a b 8	[z í d. d u b. d u] b. b u ⁹⁸		qí-me ma-aq-qí-tum ^t	8	[	]	flour for sacrificial purposes
a b 9	[z í d. d u b. d] u b. b u		II si-ir-qí ⁹⁶	9	[	]	same for (ritual) scattering
a b 10	[z í d. s u r]. r a ^a		II II	10	[	]	same same
a b 11	[z í d. s u r]. r a		SU-u ⁹⁹	11	[	]	the same (Sumerian) word
a b 12	[z í d. s i]. g a r ⁱ		qí-me ši-gar-ri	12	[	]	with (added) u
a b 13	[z í d. g á n]. d a. d i ⁱ		SU-u	13	[	]	flour for bar
a b 14	[z í d. x.] l i		SU-u	14	[	]	the same (Sumerian) word
a b 15	[z í d. a]. t a g. g a		qí-me me-e lap-tum	15	[	]	with (added) u
a b 16	[z í d. a]. n u. t a g. g a		II II la II	16	[	]	the same (Sumerian) word
a b 17	[z í d. u h]. t a g. g a		II ¹ kal-ma-tum II	17	[	]	with (added) u
a 18	[z í d. š] u (?) b a l a. g a		II šu-pil-tum	18	[	]	flour affected (touched) by
a 19	[z í d. G A R] ^{nin-da si-ki} UD		II KAL ^m si-i-ki	19	[	]	water
a 20	[ZÍD] ^{si-ig} KAL ¹⁰¹		II hi-iš-le-e-tum	20	[	]	same same not same
a 21	[ZÍD] ^{si(?)} kumUD		II is-qu-ug-qu ¹⁰²	21	[	]	same same by insects
a 22	[ZÍD]UD ^{II} si g a		II II dam-qu	22	[	]	same ... ¹⁰⁰
a 23	[z í d. x.] s a g		II tak-ka-si-e	23	[	]	flour ...
a 24	[z í d. x. s a g]. s a g s. g a		II II dam-qu	24	[	]	flour for sik i -bread
a 25	[ZÍD] ^{da-bil-in} ŠE ⁿ		II tap-pi-in-nu	25	[]	...
a 26	[ZÍD] ^{ku-ku-dja} IŠ o ¹⁰⁵		II ku-ku-ši	26	[	]	flour of crushed barley
a C 27	[ZÍD. IŠ. bu]-buBU ^s . BU ^s ¹⁰⁶		II tu-ma-gu	27	[	]	same fine
a 28	[z í d. x.] ^{s(?)} ERIM		II šap-ri-e-ti	28	[]	...
a 29	[z í d. x.] ^s . l a		II su-me-da-ti ¹⁰⁷	29	[]	...
a 30	[n í g. Š I D]. g á p		li-i-šú	30	[	]	same ...
a 31	[n í g. k i r]. r a ^q		ki-ir-šu ¹⁰⁸	31	[	]	same for the tumagu
a 32	[x. y. š] e		II	32	[	]	same ...
a 33	[n i n d a. x. y]		a-kal [x. y]	33	[	]	same ...
	broken						dough
							pinched off piece of dough
							same
							[] bread

5. Apparatus Criticus

Column II

- ^a Restored according to the commentary series: k a š. BALAG. NAR = šī-kar te-gi-i = k a š. []. Cf. also the passage K 4330: 27 (publ. CT XIV 8) which contains a gloss indicating the reading of the logogram: u r u d u. BALAG^u-NAR = ti-gu-u. Cf. note 48.
- ^b Restored according to the entries III:14, IV:1 and 10 of the present tablet.
- ^c The gloss is written between the 'a' and the 'an' of the sign Æ M. The proposed reading is required by the context and borne out, to a great extent, by the traces shown on the photograph.
- ^d Tablet B has 2.
- ^e Tablet B has šu-lu-ši.
- ^f Tablet B has mal-ma-li.
- ^g Restored according to the *Vorläufer* passage Chiera, OIP XI 17 II:12 d i d a. l ù. a. Cf. also below note 'm' to Col. II.
- ^h Restored after the photograph.
- ⁱ Cf. Deimel, ŠL 345/13b.
- ^j Cf. Deimel, ŠL 101/14.
- ^k Cf. Col. II: 37 and the pertinent note 's.' Note also d u k. a. s ù = mas-laḫ-tum 'sprinkling can' in the 10th tablet of our series (Landsberger *Afo* XII 137 line 24b, also there sub no. 7 and p. 140).
- ^l Tablet B has only two ditto-entries after ma-zu-ù in the Akkadian column, the Sumerian being broken off. For this reason the marginal indicators for the lines 22 and 23 have been put in parentheses.
- ^m For this restoration, cf. the bilingual hymn to Bêlit K 257: 25 (Haupt, ASKT p. 126 ff.) with the passage a. l ù. l ù. a. m u. n u. si. gi = me-e ad-dal-hu ul i-zak-ku-u which contrasts l ù (dalāhu) with si. gi (zakū). Cf. above line II:19.
- ⁿ There is space for more than one sign in the break.
- ^o Tablet B has ma-qa-ti.
- ^p These lines are restored according to the *Vorläufer* text Chiera, OIP XI 33 II: 6 and 8.
- ^q Tablet B has nap-ta-ni.
- ^r This sign is the itu + gunū, listed in Fossey, *Manuel* II 675 f.

- ^s Cf. above note 'k' to Col. II and the commentary line quoted in note 50.

Column III

- ^a Restored according to the *Vorläufer* text Chiera, OIP XI 12 III:18 which has sa.ḫi.in immediately preceding šim. Six entries before sa.ḫi.in this list has ka.š.bur.sag which corresponds to lines II:31 or 32 of our tablet.
- ^b It is possible that one has to assume here a mistake of the scribe and to read, according to III:28, šim.a.DI.a.
- ^c It is possible to read here *mir*-[qu] on the basis of the adjective *mirqu* used in the Middle-Babylonian texts to qualify flour (cf. Torzcyner, *Tempelrechnungen*, index s. v.). Note also the 'Glass' text Thompson, pl. 2: 64 *abunuknū mi-ir-ḳū* 'crushed lapis lazuli.' The restoration *mir*-[su] seems less likely.
- ^d The tablet B has ba.ppir (i.e. ŠIM+GAR) as against the šim of the present tablet. For a discussion of the problems connected with this variant, cf. p. 19.
- ^e The first sign on our tablet could be 'dil' while the tablet B shows what seems to be: x-[i]l(?)-[u](?).
- ^f Tablet B omits the gloss.
- ^g Tablet B has ḫá.d.d.u. Cf. the corresponding entry from the 10th tablet of our series (Van der Meer, Kish no. 71 rev. line 360) i m. ḫ á d. a = šá-bu-lu.
- ^h Tablet B has sún.a.lá.lá.
- ⁱ Tablet B has i-si-ma-[nu], tablet A most likely sim-[ma-nu]. Cf. note 76.
- ^j Tablet B has titab.a.sù.a.
- ^k Tablet B has titab.si.g.a.
- ^l Tablet A omits in this line the sign DIM₄+ŠE (perhaps in order to shorten the line).
- ^m Tablet B has si-ik-ru-tu.
- ⁿ Tablet B has šu-lu-ku-tum 'ready.'

Column IV

- ^a Tablet B has titab.a.l.silá.
- ^b Tablet B munu₄.gu.li.
- ^c Cf. line III: 25.

- ^d The reading *p/bu-gut-tum* is likewise possible.
^e Restored according to K 4315:14 (publ. II R 39 no. 4).

Column V

- ^a Restored according to the passage quoted in note 'n' of Col. II.
^b Restoration proposed on the basis of the passage CT XLI 49, II: 18-19 *si-imNAM = II (= na-pu-ú)*.
^c Tablet B omits this or the preceding entry.
^d Restored according to the well-established logogram *zíd.m a. a. d. g á* or *zíd. m a. d. g á* (cf. Thureau-Dangin, *RA* XXI 134 note 5). Read in the *Vorläufer* Chiera, OIP XI 18 II: 12 *zíd. m a. a. d (!). g á (!)*.
^e Restored according to the *Vorläufer* Chiera, OIP XI 18 II: 11.
^f Tablet B has [] *ma-qi-ti*.
^g Tablet B has *sis-qi*.
^h Cf. the pertinent entry of Deimel, *ŠL* 536/134.
ⁱ Restoration based on the Akkadian column.
^j Restored according to the *Vorläufer* Chiera, OIP XI 18 II: 13.
^k The lines 19-20 form one entry as the scribe of tablet A indicated by omitting the dividing lines after 19 and 20 (Dr. Landsberger). Cf. also lines II: 11-13.
^l Tablet A erroneously repeats the first *ditto*-sign.
^m Following a suggestion of Dr. Geers, one has to correct the Akkadian entry into II <a>-*kal si-i-ki* with the sign 'a' omitted by haplology.
ⁿ Restored on the basis of the equation *ZÍD.ŠE = tappinnu* for which I refer simply to Deimel, *ŠL* 536/227 (cancel op. cit. 381/83, 536/235).
^o For this and the preceding line, Dr. Landsberger has referred me to a pertinent passage of the series DIR—*siaku = watru* which he has reconstructed by combining the lines 26-30 of the only partly preserved second column of the text Poebel, PBS V no. 106 with a *Vorläufer* of the mentioned series, i. e. with Poebel, PBS V no. 131 utilizing a series of vocabulary passages quoted below:

25	da-bi-in	ZÍD.ŠE	[<i>tap-pi-nu</i>]
26	mi-il-la	ZÍD.1[Š]	[<i>ku-ku-šu</i>]
27	ku-ku-da	[ZÍD.1Š]	[II]

28	zi-si-[ig]	[ZÍD.KAL]	[<i>hi-iš-ir-e-tum</i>]
29	ti-da-[ab]	[ZÍD.x]	[<i>ti-ta-pu</i>]
30	zi-ku-u[m]	[ZÍD.KUM]	[<i>is-qu-qu-um</i>]

Notes: To line 25 cf. PBS V 131 II: 15 and our text V: 29; to line 26 cf. PBS V 131 II: 16 and Rm II 40 (publ. CT XIX 37) line 6 which shows [ZÍD^{mi-il-la}DA = *ku-uk-ku-šu*; furthermore the *Chicago-Syllabary* line 84 mi-il = 1Š = *ku (!)-uk-ku-šu (!)* and V: 5 of our text; to line 27 cf. Rm II 40: 7 (publ. CT XIX 37) with [ZÍD]^{ku-uk-šu}DA = II (i. e. *ku-uk-ku-šu*) which is not in harmony with our line V: 30 [ZÍD]^{ku-uk-uš}IS = *ku-ku-šu*. Cf. also the passage K 4359 rev II: 9 (publ. CT XII 50) with ZÍD.1Š^{mi-il-la}UD = [], where the broken Akkadian translation contains a word from the root *h.l.š* as is indicated by the meaning of the Sumerian entries of the entire 'group' (probably a form of *hálšsu* 'to clean, strain,' cf. note 56). Line 28 is solely based on V: 24 of our text, line 29 partly on our III: 27. Line 30 is at variance with our V: 21 which refers by *isququ* to ZÍD.UD instead of to ZÍD.KUM.

^p Cf. Deimel, *ŠL* 597/249b for this restoration.

^q Restored according to the *Yale Syllabary* line 22 gi-ir = KIR = *ka-ra-šu šá* IM.

6. Index of Discussed Words

The arrangement of the Akkadian words is strictly alphabetical, that of the Sumerian according to syllables and alphabetical.

1. Akkadian Words

<i>agarinnu</i>	note 63	<i>giršu (kiršu)</i>	note 108
<i>akal riqqi</i>	note 39	<i>hálšsu</i>	p. 18, note 'o' col. V
<i>*bappirú (not 'brewer')</i>	note 21	<i>halla</i>	note 33
<i>bappiru</i>	p. 10, 12, 10, note 35	<i>harsu</i>	note 56
<i>báqilu</i>	note 81	<i>hásálu</i>	p. 15
<i>baqlu</i>	note 34	<i>háslu</i>	note 74
<i>billu (billitu)</i>	note 108	<i>hatú (ša murši)</i>	note 83
<i>buqlu</i>	note 35	<i>hatápu (ša še'i)</i>	note 47
<i>dašápu II</i>	note 38	<i>hatápu (ša titappi)</i>	note 47
<i>diku</i>	note 74	<i>hibištu</i>	note 17
<i>*editum</i>	note 72	<i>hiqu</i>	note 67
<i>elú III (ša titappi)</i>	note 47	<i>húššutum</i>	note 'o' col. V
<i>eppešat mirsim</i>	note 75	<i>hutulum</i>	note 83
<i>garišátu (pl.)</i>	note 108	<i>ir'u</i>	note 86

<p>34</p> <p style="text-align: center;">A. Leo Oppenheim</p> <p><i>isimanû</i> note 76</p> <p><i>isguqu</i> note 102, note 'o' col. V</p> <p><i>kankannu</i> note 43</p> <p><i>karâku</i> note 70</p> <p><i>karâku III/2</i> note 70</p> <p><i>karâku (mê)</i> note 70</p> <p><i>karâzu (sa fifti)</i> note 'q' col. V</p> <p><i>karku</i> note 70</p> <p><i>kirsu (girsu)</i> note 108</p> <p><i>kukku</i> note 104</p> <p><i>kukuštu</i> note 94</p> <p><i>kukušu</i> note 94, note 'o' col. V</p> <p><i>kurunnu</i> note 49</p> <p><i>kusipêti sa samni</i> note 103</p> <p><i>labâmu I, II</i> note 39, p. 15</p> <p><i>lamâmu I, II</i> note 30</p> <p><i>lêmu I, II</i> note 39</p> <p><i>lîhim</i> note 39</p> <p><i>lubummâ</i> note 39</p> <p><i>makraku</i> note 70</p> <p><i>malmala</i> note 53</p> <p><i>marâsu</i> note 75</p> <p><i>marânu</i> note 75</p> <p><i>maslahu</i> note 'k' col. II</p> <p><i>magbatu</i> note 97</p> <p><i>mazû</i> note 42</p> <p><i>mê (karâku)</i> note 70</p> <p><i>mê (šapâku)</i> note 70</p> <p><i>mêzû</i> note 68</p> <p><i>mešû</i> note 36a</p> <p><i>mirqu</i> note 'c' col. III</p> <p><i>miris karâni</i> note 75</p> <p><i>mirsu</i> note 75</p> <p><i>mušku</i> note 86</p> <p><i>mundi kundâi</i> note 92</p> <p><i>mundu</i> note 92</p> <p><i>muraqîtu</i> note 17</p> <p><i>muraqqû</i> note 17</p> <p><i>(gan) nablalu</i> p. 16</p> <p><i>nadû</i> p. 15</p> <p><i>nameitu</i> p. 16</p> <p><i>nappašu</i> note 73</p> <p><i>nappahtu</i> p. 15</p> <p><i>nappû</i> p. 15</p> <p><i>narfabu</i> p. 18, note 67</p> <p><i>(karpas) narfabu</i> note 67</p> <p><i>narfab bappiri</i> note 67</p> <p><i>na-RU-tum</i> note 50</p> <p><i>našpu</i> note 50</p> <p><i>nâšu</i> note 29</p> <p><i>nip'u</i> note 95</p> <p><i>niqu</i> note 106</p> <p><i>pa'anu</i> note 45</p> <p><i>pappasu</i> note 89</p> <p><i>parâbu</i> p. 29, note 35</p> <p><i>pešu III/II</i> note 100</p> <p><i>pirbu</i> note 34</p> <p><i>pušikku</i> note 73</p> <p><i>gadûtu</i> note 44</p> <p><i>rabbû</i> note 103</p> <p><i>raqqû</i> note 17</p> <p><i>raqû II</i> note 17</p> <p><i>rasânu</i> note 69</p> <p><i>râsinûtu</i> note 69</p> <p><i>rafîbu II</i> note 67</p> <p><i>riqqû</i> note 17</p> <p><i>(akal) riqqû</i> note 39</p> <p><i>rêsinu</i> note 69</p> <p><i>rêsinûtu</i> note 69</p> <p><i>risindu</i> note 69</p> <p><i>risittu</i> note 69</p> <p><i>risnu (rasânu)</i> note 69</p> <p><i>ruštu</i> note 17</p> <p><i>sabbû</i> p. 12</p> <p><i>sabitum</i> p. 12</p> <p><i>sabâm</i> p. 12</p> <p><i>sabûtu</i> note 32</p> <p><i>sabîndu</i> note 62</p> <p><i>sabmu</i> note 62</p> <p><i>sasqu</i> note 92</p> <p><i>sibû (profession)</i> p. 12</p> <p><i>sibû (drink)</i> note 32</p> <p><i>sibûtum</i> note 32</p> <p><i>simanû</i> note 76</p> <p><i>SIM-âi</i> note 45</p> <p><i>sirasûtu</i> note 28</p> <p><i>sirašû</i> p. 11, note 21</p> <p><i>sirašû (SIM+A)</i> p. 9</p> <p><i>sirašû (SIM+GAR)</i> p. 10</p> <p><i>sirašûtu</i> note 21</p> <p><i>sirâde</i> note 29</p> <p><i>sirqu</i> note 92</p> <p><i>sisqu</i> note 92</p> <p><i>sumedâti</i> note 107</p> <p><i>šapû</i> note 78</p> <p><i>šipâtu</i> note 78</p>	<p style="text-align: center;">On Beer and Brewing Techniques in Ancient Mesopotamia 35</p> <p><i>širpu</i> note 78</p> <p><i>šudê (šadû II)</i> p. 14</p> <p><i>ša i'karânišu</i> note 29</p> <p><i>ša našbêšu</i> note 29</p> <p><i>ša naššîšu</i> note 29</p> <p><i>ša tabtišu</i> note 29</p> <p><i>šâllapittu</i> note 69</p> <p><i>šulultu (šikaru)</i> note 55</p> <p><i>šanû</i> note 78</p> <p><i>šapâku (mê)</i> note 70</p> <p><i>šapiltu</i> note 84</p> <p><i>šejû</i> p. 15</p> <p><i>šikar šalulti</i> note 55</p> <p><i>šikar teggî</i> note 'a' col. II</p> <p><i>šikin nâri</i> note 70</p> <p><i>šinnû</i> note 53</p> <p><i>šupiltu</i> note 100</p> <p><i>šursummu</i> note 44</p> <p><i>takkasu</i> note 103</p> <p><i>tappinnu</i> note 104, note 'o' col. V</p> <p><i>têbîbtu (vat)</i> p. 16</p> <p><i>têbîbtum (Old-Babyl.)</i> note 43</p> <p><i>têbîbtu (Mari)</i> note 43</p> <p><i>têbîbtu (Neo-Babyl.)</i> note 43</p> <p><i>tiqqû</i> note 48, note 'a' col. II</p> <p><i>tittappu</i> p. 17 f.</p> <p><i>tumûgu</i> note 106</p> <p><i>fabâti</i> note 33</p> <p><i>fâbu II</i> note 38</p> <p><i>fâbu III/II</i> note 38</p> <p><i>ulušinnabûbu</i> note 51</p> <p><i>ulušinnu</i> note 51</p> <p><i>ušu</i> note 53</p> <p><i>upru</i> note 44</p> <p><i>usurrû</i> note 53</p> <p><i>zidubdubbu</i> note 98</p> <p><i>zisurrû</i> note 99</p> <p>2. Sumerian Words</p> <p>a-geštin-na note 33</p> <p>a-geštin-na kala-ga note 57</p> <p>a-šâm note 68</p> <p>AMA.SIM note 63</p> <p>AMA.SIM+GAR note 63</p> <p>ba-ba-za note 89</p> <p>BALAG.NAR (tigi) note 'a' col. II</p> <p>bappir pp. 11, 19</p> <p>bappir (SIM) p. 10</p> <p>bappir (SIM+GAR) p. 19</p> <p>BARA p. 18</p> <p>bu-bu note 93</p> <p>*buluḡ₇ (read munu) note 7</p> <p>bûr note 47</p> <p>dabin note 'o' col. V</p> <p>DIM p. 17, note 7</p> <p>DIM,+SE p. 17, note 7</p> <p>duk note 13</p> <p>duk a-sû note 'k' col. II</p> <p>duk nig-dûr-bûr tur-ra p. 15</p> <p>duk titab p. 18</p> <p>dungal p. 10</p> <p>é lû-kaš-tin-na(m) note 27</p> <p>esi (GIS.KAL) note 73</p> <p>gaz p. 15, note 74</p> <p>GIS.KAL (esi) note 73</p> <p>bu-tu-ul note 83</p> <p>bâd-a note 'g' col. III</p> <p>bâd-da note 'g' col. III</p> <p>ĪAR-ra (ur-ra) p. 5</p> <p>im bu-tu-lum note 83</p> <p>iti munu-kû p. 14</p> <p>(i)zi(d) note 76</p> <p>kaš.A.DI note 57</p> <p>KAŠ.TIN (kurun) note 49</p> <p>kaš-tin-nam note 27</p> <p>KAŠ+GAR pp. 8, 56</p> <p>kašbir note 55</p> <p>kuksu note 'o' col. V</p> <p>kukuda note 'o' col. V</p> <p>kum note 74</p> <p>kurun (KAŠ.TIN) note 49</p> <p>lû gal.SIM+A p. 9</p> <p>lû kaš-šâm note 68</p> <p>lû kaš-šâm-šâm note 26</p> <p>lû kaš-sur-ra note 68</p> <p>lû kaš-tin-na p. 12, note 49</p> <p>lû KUL.LUM note 21</p> <p>lû SIM p. 10</p> <p>lû SIM (for SIM+GAR) note 20</p> <p>lu SIM+A pp. 9, 56</p> <p>lû SIM+GAR p. 19</p> <p>lû tin-na note 49</p> <p>lumgi (SIM+GAR) p. 10</p> <p>lû note 'm' col. II</p>
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(zid) mad-gá	notes 94, 97	SIM for SIM+A	p. 10
manu	notes 7 and 76	SIM+A	note 23
mil(la)	note 'o' col. V	SIM+A (dumgal)	p. 10
milla (ZID.IS)	note 105	SIM+A (bappir)	p. 14
milla munu ₄	note 104	4SIM+A (sira/is)	p. 10
mug	note 85	SIM+GAR	p. 10
munu ₄	note 7	SIM+GAR (bappir)	pp. 14, 19
munu ₄	p. 17	SIM+GAR (lumgi)	p. 10
munu ₄ -é-a	note 82	SIM+GAR (nin)	p. 10
munu ₄ -gaz	note 37	SIM+GAR (ningi)	p. 10
munu ₄ , ma ₄	note 81	4SIM+GAR (Siraš)	p. 10
munu ₄	p. 14, note 7	šu-KIN	note 64
munu ₄ -é	note 81	šu-bal	note 100
munu ₄ , ma ₄	note 81	šú	note 39
nin ₄ (SIM+GAR)	p. 10	títab	p. 17
4Nin-KA.SI	p. 12	tóg a.DI.a	note 78
ninda	p. 14	ud-da-zal-li	note 79
ninda-durú-durú	note 30	udun-bappir	p. 18
ninda-bàd-(da)	note 30, p. 14	udun-lú-kaš-tin-na	note 26
ninda-kaskal	p. 14	udun-titab	p. 18
ningi (SIM+GAR)	p. 10	ur ₂ -ra (HAR-ra)	note 2
NIG.HAR.RA	note 92	zal	note 79
sa-šì-in	note 62	ZID.DA	note 'o' col. V
SAL.kaš-tin-na	p. 12	ZID.IS (milla)	note 105
si-gi (zakú)	note 'm' col. II	ZID.IS bu ₂ -bu ₂	note 106
si-il-lá	notes 50, 80	ZID.KAL	note 'o' col. V
sg KAL.ba-dù	note 73	ZID-kaskal	note 96
4Siraš	p. 10	ZID.KUM	note 'o' col. V
sira/is (SIM+A)	p. 10	zid ma-ad-gá	note 'd' col. V
4Siris	p. 12, note 25	zid mad-gá	note 94
4Siris (SIM)	p. 10	zid-munu ₄	p. 14, note 76
sún	p. 18	zid-nu-sim	note 95
šim	p. 19	zid-ša-munu ₄	note 88
SIM+gunú	note 16	zisig	note 'o' col. V
SIM (bappir)	p. 19	zikum	note 'o' col. V
4SIM (Siris)	p. 10		

7. List of Illustrations

The illustrations have been selected for two reasons: first, in order to demonstrate the spread of the brewing technique described on pp. 11 f. (nos. 1-4, 7-10), and secondly, to show the few extant representations in Mesopotamian iconography which illustrate the activity of the brewer (nos. 4-5, 11).

My thanks are due to Dr. Edith Porada for her assistance in selecting these illustrations, and to my wife, Mrs. Elizabeth Oppenheim who has made the drawings.

PLATE I

1. From a painted vase of the First Early Dynastic Period, found in Khafaje.
OIC no. 20, fig. 50.
2. From a seal found in Tell Asmar (Akkad Period).
After H. Frankfort, *Cylinder Seals* pl. XV no. 1.
3. From a seal of the Third Early Dynastic Period found in Ur.
C. L. Woolley, *The Royal Cemetery (UE II)* pl. 194, no. 22 (U. 12374).
4. From a seal of the Second Early Dynastic Period in the Morgan Collection, New York.
Edith Porada, *Corpus of Ancient Near Eastern Seals in North American Collections*, Vol. I no. 112.
5. From a seal of The Akkad Period.
Ménant, *Pierres Gravées I* 166 no. 104.
6. From a seal of the Akkad Period in the Collection de Clercq.
After W. H. Ward, *The Seal Cylinders of Western Asia* 153 no. 403.

PLATE II

7. From an early Syrian seal in the Morgan Collection, New York.
Edith Porada, *Corpus I* no. 1094.
8. From a Syrian seal in Berlin.
A. Moortgat, *Vorderasiatische Rollsiegel*, no. 526.
9. From a seal-imprint on a tablet from Nuzi.
Edith Porada, *Seal Impressions of Nuzi (AASOR XXIV)* pl. I no. 18.
10. From a seal of the Akkad Period in the Morgan Collection, New York.
Edith Porada, *Corpus* vol. I no. 249.
11. From a stone slab found in Niniveh.
Botta et Flandin, *Monument de Niniveh* vol. II pl. 146.
12. From a painted Egyptian stele of the 19th-20th dynasty.
W. Spiegelberg and A. Erman, *Grabstein eines syrischen Söldners aus Tell Amarna*, *ZAS* 36 pl. XVII.

PLATE III

Met. Mus. 86-11-386 (obverse) in photograph

PLATE IV

Met. Mus. 86-11-386 (reverse) in photograph

NOTES

¹ According to the enumeration proposed by L. Matouš (*LTBA I 8*), this would be the 22nd tablet of the series. However, with the publication of the Kish material by Van der Meer (Tablets of the HAR.RA = *bubullu* Series in the Ashmolean Museum, *Iraq VI 144 ff.*) it has become evident that the two tablets which Matouš set aside (his 20th and 21th) to cover the subject matter indicated by the *Vorläufer* texts and the commentary-series are insufficient. The fragment Kish 88: 1 has yielded the first line of a tablet which enumerates the names of cities, countries, etc., and thus it is necessary to regard the present tablet as the 23rd of the series; that is, between the 19th tablet (dealing with wool and garments) and our tablet there must be THREE tablets on which topographical and geographical terms are treated, viz., the 20th tablet, treating of houses, fields, etc., the 21st, treating of cities, countries, etc., and the 22nd, treating of rivers, canals, etc., and stars.

As Dr. Landsberger informs me, he realized the necessity to change the numbering of the tablets of our series as early as 1936, on the basis of the evidence contained in the fragment Matouš, *LTBA I no. 85*.

² For the reading *u_r* of the sign *UR* (= *bubullu*), cf. K 2024 rev. I: 12 and 17 (published *RA XVI 82*) and Langdon's note op. cit. 80 n. 1. The reading **r* given in Deimel, *SL 401/22* after VAT 10222 has to be corrected into *u_r* according to a collation made by Dr. Ebeling for the "Chicago Assyrian Dictionary."

³ The unpublished fragment K 4251 (available to me in a copy made by Dr. Landsberger) belongs to the tablet K 4351, as Dr. Landsberger has recognized, although it cannot be directly joined to it. Cf. below, note 59.

⁴ Dr. Geers collated this tablet and his findings have been used for the transliteration of the text.

⁵ Only five of these entries concern lines on our tablet, viz. II: 2, 4, 7, 8, and V: 31. The number of commentary lines dedicated to specific subject matters varies greatly: 21 lines are given to entries beginning with *u*, 'soup,' 16 to *ka š* 'beer,' 13 to *n i n d a* 'bread' and two only to *z i d* 'flour.' It is not within the scope of the present article to discuss the 47 commentary lines which have to be distributed within the lacunae left by the extant tablets. The reconstruction of the 23rd tablet of the series *u_r.ra = bubullu* on the basis of these entries and of the words contained in the pertinent *Vorläufer* texts cannot be undertaken here; its place is in the publication of the entire series.

The commentary to our tablet is preserved mainly on the texts K 260 (published by Langdon with other fragments of the same tablet in *RA XIV 24*), K 4239 (published by M. Jastrow in *ZA IV 157*, its duplicate Rm 2, 556 in *RA XVII 187*; cf. also Ehelolf-Meissner in *ZA XXXIX 35*), and K 2740 (published by Meek in *RA XVII 127*).

⁶ Fragmentary texts of this type from Nippur are: Chiera, *OIP XI 16-20, 22, 26-27 and 33*.

⁷ The signs listed in Deimel, *SL* (3rd edition) as **b ul u g*, and **b ul u g*, are written respectively as *DIM₁* and *DIM₁+ŠE*. Their reading is based upon a suggestion of Hrozný in *WZKM XX 102 f.* which has been accepted by all Assyriologists. However, the lines III: 26 and IV: 22 of the present tablet have established that these signs have to be read *m u n u* (also *m a n u*, cf. note 76) with the index figures '4' and '3' (for respectively *DIM₁+ŠE* and *DIM₁*). The pre-Sargonic passage quoted in Deimel, *SL 60/40* makes it necessary to posit secondary values *m u n*, which should receive the same index figures as *m u n u*, and *m u n u*.

⁸ Mention should be made here of: F. Hrozný, *Das Getreide im alten Babylonien* (Sitz. Ber. Kais. Ak. d. Wiss., Wien; Phil. Hist. Abt. 173/1, Vienna 1913); O. Schroeder, *bappirātu* in *OLZ XIX* (1916) 40-41; H. F. Lutz, *Viticulture and Brewery in the Ancient Orient*, Leipzig 1922; E. Huber, *Bier und Bierbereitung bei den Völkern der Urzeit I, Babylonien und Ägypten*, Berlin 1926, and also *Bier und Bierbereitung in Babylonien* (*RLA II 25-28*); A. Goetze, *MVAeG XXXII/1 64 ff.* In a forthcoming edition of an Old-Assyrian historical inscription excavated in Kültepe, to be published in collaboration with Dr. Kemal Balkan, Dr. B. Landsberger is going to discuss certain aspects of our problem.

⁹ Cf. simply A. Lucas, *Ancient Egyptian Materials and Industries* (3rd edition), London 1948, 16 ff. where some Egyptological literature is quoted.

¹⁰ These terms are used in the Neo-Babylonian documents and discussed in my *Material Culture of the Neo-Babylonian Period on the Basis of its Documents* (in MS).

¹¹ A similar situation is encountered in the technical terminology referring to the milling of cereals, the tanning of hides, etc., whenever one has to deal with a vocabulary created by a technology which is primitive in the sense that the 'know-how' attitude and not the 'know-why' attitude is the basis for the development of manufacturing techniques. In fact, such industries as brewing, the making of cheese, tanning, etc. are today still largely on the level of this primitive technology, where specific and unique circumstances determine the quality of the product and often successfully resist modern chemical analyses.

¹² Cf. Borchardt in *ZAS XXXV 128 and XXXVII 83*. In the latter study a rare hieroglyphic writing for the brewer is quoted which shows a man standing beside a square trough on legs, in the attitude of one mixing a brew. The very same utensil, with a man standing in the same position, appears on the Assyrian relief Botta and Flaminio, *Monument de Niniveh II pl. 146* (cf. Pl. II no. 11) and thus establishes the meaning of this scene of the life in a military camp which is usually interpreted as illustrating the preparation of a meal.

¹³ A similar spouted container—written, from the Gudea period onward, with an inscribed A 'water'—is used to refer, in a general way, to pots and other containers of earthenware. Cf. Deimel, *SL 214b* and *SL² no. 431*. Cf. also Fossey, *Manuel II 557 f.*

¹⁴ Cf. the sign forms shown in René Labat, *Manuel d'épigraphie akkadienne* (Paris 1948) nos. 122 ff., taken from Falkenstein, *Arch. Texte aus Uruk*, nos. 171-172.

¹⁸ It may be pointed out that the inscribed GAR maintained its natural position (i.e. within the body of the SIM-container) until the Old Babylonian period (cf. Fossey, *Manuel* II no. 16451-16464, 16482-16506), after which it was transferred to the right section of the sign. Certain late texts (cf. e.g. Clay, *BRM* IV 7: 4, 7, 26, 40 and Langdon, *OECT* I pl. 20-21 (W.-B. 10) rev. 12 and 30) look as if the scribe had written KAŠ.KŪ instead of SIM+GAR.

¹⁹ There exist two variations of this sign (cf. Fossey, *Manuel* II 498 f.), one with and one without the so-called *gunū* strokes. Their function in this sign remains, unfortunately, obscure but it is worthy of note that they are used to accentuate the attachment at the bottom of the container.

²⁰ Connected with these activities are the words *raqqū* and *muraqqū*/*muraqqūtu* which denote the craftsman, and *riqqū*, referring to his product. Cf. the pertinent Sennacherib passage *CT* XXVI pl. 1 ff. VIII: 71-73 'olive oil I made into an ointment (*ár-raq-qa-a a-na ru-uš-ti*) by grating into it cuttings (*bibištu*) from . . . plants.'

²¹ For an illustration of a low stove with a pot-rest on one side, cf. e.g. W. Hough, *Fire as an Agent in Human Culture* (Washington, Smithsonian Inst. Bull. no. 139) pl. 13 no. 1.

²² Some isolated Neo-Babylonian references for 1 ú.SIM (instead of 1 ú.SIM+GAR) should be mentioned here: Nbn 1038: 6, 1112: 2.

²³ For the use of simple signs instead of composite ones, cf. the remarks of Poebel apud Hallock, *AS* VII 10 (note 13), 51, and 78.

²⁴ The Akkadian word for 'brewer' is *sirašū* as Dr. Landsberger has pointed out to me, and not **bappirū*. *Sirašū* is rather rare; a unique Old-Babylonian reference appears in the letter Dossin, *TCL* XVII 75: 5, while the texts from Nuzi show several instances for *sirašū* 'brewer', cf. Chiera Nu 404: 36, HSS XIV 46: 17-18, etc. The abstract *sirašūtu* is attested in the Old-Babylonian legal text *CT* VI 23c: 4 (cf. note 81) (*ma-as-sa-as si-ra-[š]u-tim*) and in the literary Kuyundjik text published in *II R* 60 no. 1 II: 13 (cf. Langdon, *Babyloniaca* VII 225).

The word *sirašū* is used in certain syllabaries (K 2021a published in *V R* 16 rev. II: 41, and in the 1st tablet of the series *LÚ = ša*, col. III: 20, cf. Meissner, *BAWb* I p. 226) to render the Sumerian 1 ú.KUL.LUM, for which cf. also the Neo-Babyl. inscription, Clay, *YOS* I 45 II 26.

²⁵ Cf. Lucas, *Materials* (3rd ed.) 17; also H. Larsen, *On Baking in Egypt during the Middle Kingdom*, *Acta Archaeologica* VII 51 ff.

²⁶ In *Assurbanipal* II 2-3 Th. Bauer proposed to interpret the sign-combination SIM+A in analogy to SIM+GAR, that is, as referring to a liquid extract ('*flüssige Bierwürze*') which was used to produce a beer somewhat different from that which was made of 'Bierbrot' (SIM+GAR). Although such a brewing-technique is well known (the liquid malt solution is called 'wort' in English), there is no textual evidence in support of this explanation.

²⁷ For the cultic implication of this scene within the ancient Near East, cf. O. E. Ravn in *Acta Orientalia* X (1931) 1 ff. and, recently, A. Moortgat, *Tammuz, der Unsterblichkeitsgedanke in der altorientalischen Bildkunst* (1949) 19 f.

²⁸ Cf. for Mesopotamia Frankfort *OIC* XVII fig. 35, and for Asia Minor the remarks of K. Bittel in *AJO* XIII 300 f., and of Weidner in *AJO* XIV 97 (concerning a metal tube found in Alaca Hüyük). Furthermore W. Spiegelberg and A. Erman, *Grabstele eines syrischen Söldners von Tell Amarna*, in *ZAS* XXXVI 126 ff. (pl. XVII); F. Ll. Griffith, A drinking siphon from Tall al-'Amarnah, in *JEA* XII (1926) 22 ff., and, as Dr. K. C. Seele indicated to me, Vandier d'Abbadie, *Catalogue des Ostraca figurés (Documents et Feuilles* II/2, Le Caire 1937) no. 2315 and p. 76 f. For a survival of this custom, cf. W. Theobald, *Das mittelalterliche Kelchröhrchen* in *FF* XII (1936) 157.

²⁹ For these goddesses cf. the references given in Deimel, *Pantheon* nos. 2605 and 2936-40, also Tallquist, *Stud. Orientalia* VII p. 409 and 448 f. The sex of 4N in KA.SI is clearly established by the well-known passage of the myth of Zū (Jensen, *KB* VI/1 54) and by the lists of gods (cf. *AKF* II 72 and note 8). Late priestly speculations which equate her with various male deities give no cause to assume that the 4N in KA.SI also was conceived as male (suggestion of Dr. Landsberger).

A difficult Sumerian hymn to this goddess is preserved in Genouillac, *TCL* XV 20 and Zimmermann *VS* X 156. It contains a number of important allusions to the activities of the brewer. Since 4N in KA.SI and 4Siris are, at times, identified, there is no reason to assume that the latter should not be female. In so far as 4Siris is used to refer to a metonymic way to beer (Dr. Landsberger suggested such an interpretation of the name of this deity; cf. already Hrozny, *OLZ* V (1902) col. 142), the cuneiform texts employ it as a masculine noun.

³⁰ For the role of the *sabitum* (SAL ka.š.tin.na) cf. the Codex Hamm. § 108, 109, 111 and Goetze, *The Laws of Eshnunna* (Sumer IV p. 74) § 15.

The *sabūm* and the *sabitum* as well as their product, the *sibum*-drink are discussed by Landsberger, *ZDMG* 69 504, Zimmermann, *ZA* XXXII 166. Mentioned as tools of this type of brewer are: the containers *kannu* and *namšutu*, and the kiln *u.dun.lú.ka.š.tin.na* (Langdon, *UM* X/2 18: 34, beside the *u.dun.pa-ša-ri* "kiln of the potter"). Cf. also note 36a. The beer produced by this brewer and beer vendor (as such called *lú.ka.š.šám.šám*) is used pharmaceutically, cf. *ka.š.awilša-bi-i* in Lutz, *AJSL* XXXVI 80 ff. line 54 (in line 99 of the same tablet: *ka.š.si-bi*) and Thompson, *AMT* 68: 1 rev 2.

³¹ The Mari text Dossin, *TCL* XXII 28 shows that the *sabitum* belonged also to the social structure of Mari. The letter (of Shamshi-Adad to his son Yasmah-Adad) speaks of deserters who fled to Mari and lived there a loose life (lines 17-19) 'they go into the house of the *sabitum* for (their) amusement (*a-na mi-lu-li-im*). The tavern (*6.lú.ka.š.tin.na*) as the meeting place of lawless elements, is also attested in the Neo-Babylonian tablet Tremayne, *YOS* VII 77: 5. (The writing *ka.š.tin.nam* for the beer is attested in Clay *BRM* IV 6: 29.)

³² Another, isolated, reference for women as brewers appears in a text from Nuzi, Chiera 507, which lists female workers (among them *uš-ba-ra-du ša gi-e* in line 16, *te-e-ni-du* in line 12) and mentions in line 19 SAL NN *si-ra-su-ú* [..].

²⁰ The role of the date for the preparation of an alcoholic beverage in the Neo-Babylonian period can be illustrated by such passages as GCCI II 56: 4 (s u₁₁.l u m. m a a-na ši-kar ina IGI PN lú.SIM+GAR), Clay, PBS II/1 131: 2-3 (dates given a-na na-di-e ši-kar); Thompson, CT XXII 51: 4 (s u₁₁.l u m. m a ina pap-pa-su lú.SIM+GAR-ú-tu); furthermore Strassmaier, Nbn 616: 12, 864: 3, 871: 1-3, 912: 4, 1011: 2, 1035: 11, Dar 2: 6; Lutz, Univ. of Calif. PSh IX/1 I 30: 1-4, 32: 1-2, etc. For ka š.s.a.g made of dates cf. also Clay, BIN I 113: 10; Krückmann, TuM II/III 232: 1-2 (with added ka-si-ta). The use of cereals for the preparation of alcoholic beverages did not, however, disappear in the Neo-Babylonian period as can be seen from the following references to beer made of barley in Ungnad, VS VI 85: 4, Strassmaier, Nbn 386: 2, 12, etc., or to beer of emmer-wheat in Contenau, TCL XII 1: 8, 2: 1, 3: 1.

It should be noted that various types of 'date-wine' were produced in this period, cf. the drinks called *sirid* (made of Dilmun dates, dried figs and raisins) in Contenau, TCL XII 1: 4, and *nāšu* for which, according to Dougherty, GCCI II 63: 22-23, the very same ingredients were used. The latter beverage (Ungnad, *Glossar* to NRV I p. 115 offers the misleading translation 'Punsch') seems to have been sold by street vendors as is indicated by the formation of the name of profession *amūša nāšū* (cf. e.g. Dougherty, GCCI II 6: 7, and the references quoted by Thureau Dangin in *Rit. acc.* 80 note 2). There exists a group of Neo-Babylonian names of this type, such as *ša šikarāni-šu* (Ungnad, VS VI 276: 23) *ša fabtūpi.a-šu* (Ungnad, VS III 82: 13), *ša na-ab-bi-e-šu* (*JRAS* Cent. Suppl. (1924) 46 f. line 42 and Contenau, TCL XII 7: 21), etc., which require the translation 'he with his wine/salt/naḫbū-containers' all referring most likely to street vendors of such commodities. For other occurrences of names of this type cf. my remarks in *Ancient Oriental Texts relating to the Old Testament* (ed. J. B. Pritchard) p. 278 n. 8.

²¹ This commodity is referred to by *ninda.durú.durú.na* (cf. my remarks in AOS XXXII index s.v.), *ninda.ḫád.da* (Ebeling, KAR 66: 16) and *ninda.ḫád* (Zimmermann *Rit. Tafeln* no. 60: 18, 19). The group *ninda.kaska1* is better read *nig.kaska1* (cf. also Weidner BoSt VIII 107 n. 11) 'provisions for a journey.' Cf. also note 96.

²² For this Sumerian expression (and the pertinent loan word in Akkadian (i) *simanú*) cf. note 76.

²³ Indications for seasonal brewing work can be found—according to Landsberger, JNES VIII 264 n. 72—in the name of the month *sibātum* i.e. 'brewing of the *sibum*-beer' (*sabātum* in the texts from Nuzi).

²⁴ The phenomenon of non-alcoholic fermentation (cf. A. Maurizio, *Die Geschichte der gegorenen Getränke*, 1933, passim) was known in Mesopotamia, cf. the role of cheese and similar products. For acetous fermentation reference should be made to *uṣu* 'vinegar' (and curdled milk) discussed by Zimmermann, OZL XXV (1922) col. 229 and Goetze, MVAeG XXXII/1 77.

Another word for vinegar is *balla* (cf. Meissner, BAWb I pl. 46) from the root *ḫu* 'to be sour.' A weak vinegar used as a refreshing drink (cf. Ruth 2: 14, Mark 15: 36, and John 19: 29, 30) is said to be called

fābāti (a.g.eštīn.na). It should be mentioned in this context that the texts from Nuzi refer to a barley dish as *fābāti* (cf. Lacheman, HSS XIII 214: 38, 234: 10, 412: 12 and passim in unpublished texts) probably because it was prepared by sour fermentation.

²⁵ The connection between *parūbu* 'to sprout' and *buqlu* 'green-malt' is illustrated by the following quotation from a list of synonyms: *ba-aq-lum = II (= pi-ir-bu)* K 4375 published CT XVIII 2, III: 26. Note the two equations of the series *á = A = náqu* (BM 93038 rev. II: 22-23, published in CT XII 17) [*BAR*] = *šur-ru-bu šá šikari* and = *pur-ru-bu šá šikari* which seem to indicate that the root *p.r.b* refers to the fermentation process rather than to that of sprouting. The above quoted *pirbu* would then have to be regarded standing for *pir'u*.

²⁶ For *buqlu* cf. the remarks of Goetze (MVAeG XXXII/1 64 f.) and Meissner (BAWb I 17 f.). To the same root belong *bāqilu* 'malster' (references in BAWb I p. 17), *baqlu* (cf. note 34), and *biqlitum* (in the present text col. IV: 8).

Buqlu and *bappiru* appear frequently side by side; cf. for the Cappadocian texts J. Lewy in MVAeG XXXIII 147 note b; for the Hittite texts Goetze, MVAeG XXXII/1 6; and for those from Nuzi Lacheman, HSS XIII 301: 25-26, 323: 11-12, 347: 48, 412: 25, etc.

²⁷ Cf. Landsberger, MSL I 199 note 1.

²⁸ For *bašulu* in this meaning cf. Geller, AOTU I/4 310 line 24. Note the profession *m u n u, g a z* in Hussey, HSS III no. 21 rev. III: 2, etc.

²⁹ The adding of the sweet malt is referred to in a series of expressions which all mean 'to sweeten' or the like. Cf. Ungnad, VS VI 182: 6 *i-ba-al-la-al-ma ú-ṭa-ab-ma* 'he will brew and make sweet' which illustrates the meaning of the Neo-Babylonian guarantee clause *pu-ut ṭu-ub šá k a š. b i a* in Ungnad, VS V 109: 8, IV 200: 11; Dougherty, YOS VI 241: 14; Strassmaier, Nbk 233: 7. Note furthermore Geller, AOTU I/4 279 line 37 *ku-ru-un-na ina šu-ṭub-bi-šu*; also King, BMS 2: 29 *du-uš-šu-pu ši-kar aš-na-an*, and Enūma Eliš III: 135 *ši-re-ša mat-qu*. The Sennacherib passage CT XXVI 37 VIII: 76 G.EŠTIN *du-uš-šu-pu* has therefore to be corrected into KAS.DIN *du-uš-šu-pu* because the adjective 'sweetened' can only refer to beer and not to wine.

³⁰ A similar combination is listed in the Old-Babylonian administrative document Alexander, BIN VII 113: 1-3 viz.: *NIG.HAR.RA si g, SIM si g* (probably *SIM* for *SIM+GAR*) and *m u n u*.

³¹ The latest discussion of the difficult verb *labāmu* is that of von Soden in *Symb. Koschaker* 202 f. He defines the meaning of *labāmu* as 'begiessen, besprengen, sprengeln' adducing some references to prove his point. Among them is the passage in CT XXXVIII 23: 9-17, a ritual for the inauguration of a new well that ends with the words: *mēpi-šu-nu-ti ana ʾNN ana ʾNN etc. tanaqqūi me-e šu-nu-ti te-li-bi-im* which have to be translated: 'this water you shall (first) pour as a libation to the god NN, to the god NN, etc. and (then only) you (yourself) may taste of this water' (cf. the pertinent Sumerian phrasing *a.d.ú1.ta...ba.ra.a.n.š.ú.d.è* for *šú = lēmu*, cf. Deimel, SL 545/13). Clearly, *labāmu* cannot mean 'to sprinkle' but only 'to taste' in this phrase. This is also borne out by a passage in the Harper

letter ABL 747: rev. 4-10 which has never been correctly understood: 'all those who m n n . b . i . a ša mār ma-ki-ni il-bi-mu i. e. who have tasted the salt of the Yakin-tribe.' The idiom 'to taste the salt of a person (or group)' illustrates in the given context exactly the same social relationship to which the OT refers with the 'covenant of salt' (e. g. II Chron. 13: 5) and the classical world with *foedus salitum*. Cf. furthermore the Neo-Babylonian letter Thompson, CT XXII 14: 28-29 n i n d a riq-qu la i-i-bi-in 'he shall not eat of spiced bread.'

The passage which is customarily quoted for *labāmu* as a technical term referring to brewing (cf. Goetze, *MVAG* XXXII/1 67) is IV R 54: 55b (already partly translated on p. 14). Here, the conjuror provides the demon with all the necessities for a long journey, such as good shoes, oil for anointing, and food. The latter is mentioned as follows: 'may the goddess Siris give you NIG.ĪAR.RA, may she fill your bags(?) with green-malt and bappir, may she give you (furthermore) a *narfabu* to *labāmu*!' Here, the meaning posited by v. Soden seems to fit the context rather well. In the Neo-Babylonian administrative text, such as e. g. Clay, PBS II/1 131: 5, BE IX 43: 12, and BE X 4: 15, we have *lubbumu* in a very similar meaning.

Can *lēmu* which is well attested in the meaning 'to taste (food or drink)' (cf. e. g. Thureau-Dangin, *RA* XXIII 27, Meissner, *AOTU* II/1 p. 52 n. 3, and *Orientalia* NS VII 397, also CT XIX 32 IV: 32-34 listing *li-e-mu*, *ba-ru-á*, and *še-bu-á*) be considered a doublet of the *labāmu* mentioned in connection with brewing? The basic meaning of *lēmu* seems to be 'to bite off, chew' rather than 'to taste' (cf. *lēmu* said of animals eating grass, Thompson, *AMT* 85, 1 II: 7-8) as is indicated by the phrase *lēmu ina pi* frequently attested in medical texts, and especially by the *lēmu* II which refers to the preparation of remedies by the physician (cf. e. g. Thompson, *AMT* 25, 6 III: 12, 75 III: 21, etc.). The relation between *lēmu* and *lu'umu* corresponds exactly to that between *labāmu* and *lubbumu* (and, by the way, to *lamāmu* and *lummu*, cf. Meissner, *BAWb* II 43 and CT XLI 31: rev. 28 for *lamāmu* = *akālu*). For this reason *lubbumu* may be taken to denote the crushing, mashing, etc., of the bappir in the water preparatory to the fermentation process. The words *lubummā* 'uncleanliness, dirt' and *lūbim* 'mottled, spattered, etc.' fit rather well into the semantic reach of the root.

⁴⁰ For the use of *nadū* cf. Clay, *UM* II/1 131: 2-3 (dates given) *a-na na-di-e ši-ka-r*; also Holt, *AJSL* XX 215 no. 9: 3 *na-di-e dul-lu ša nam-si-tum*.

⁴¹ The so-called Mari ritual (Dossin, *RA* XXXV 2-3, I: 17-18) prescribes that the craftsmen of the temple (listed in the order: brewer, joiner, leatherworker, lú.TGG(!).DU, laundry-man) appear for the ceremony with their paraphernalia (*e-nu-ti-šu-nu á-ka-an-nu*). It is not impossible that the brewer appeared at such occasions with his vat. The Uruk ritual of the Seleucid period (Clay, *BRM* IV 7: 4, etc.) reveals the brewer as actively participating in ritual performances.

⁴² From *mazū* 'to mix, brew' (our tablet col. II: 20). Cf. for this verb Zimmern, *ZA* XXXII 167 f., and Weidner, *ZA* XLIII 117. Dr. Landsberger,

in the article mentioned in note 8, intends to demonstrate that *mazū* means 'to squeeze.' Cf. also note 68.

⁴³ The word *tēbitu* as designation of a container used by the brewer is mentioned in the Neo-Babylonian letter YOS III 149: 8-9 (*kan-kan-na ša te-bi-ib-tu*), in the texts Pohl, *An. Or.* VIII 35: 19-20 ('4 minas 25 shekels from the silver of the casing of the *kankannu* of the *tēbitu*' *man-di-ti ša kan-kan-na ša te-bi-ib-ti*) and Contenau, *TCL* XIII 156: 7-10 ('51 shekels of silver given for the repair of the casing of the *tēbitu* [the text actually has *te-eb-bi-ti*] of the brewers of the Lady of the (*bit*) *rēs*').

In all the quoted passages the word *kankannu* refers to the wooden stand on which the *tēbitu*-container was placed. The very same stand was also used for the mash-tun, cf. Strassmaier, *Nbn* 258: 15 ²⁴ *kan-kan-nu* ²⁴ *šá nam-si-tu*, and Camb 331: 13-14 ¹⁰ *kan-kan-nu šá nam-za-a-tá*. It is obvious that the word *kankannu* corresponds exactly to *kannu* for which the meaning 'potstand' has been established ever since Delitzsch, *HWB* 339b (cf. also Ebeling, *TuL* I 117, Landsberger, *AFO* XII 139 note 19).

While the *kankannu*-stands of every day life were made of wood (e. g. of willow wood (*hūlibu*) in Evetts, *Nrg* 23: 30, Clay, *BE* VIII/1 123: 4), those of the temple breweries were coated with silver (*mandūtu*). It seems that the storage containers were likewise placed on such stands because, in the Neo-Babylonian period, the word *kankannu* assumes (in the administrative texts) the meaning of storehouse for beer. Cf. e. g. the group of texts Clay, *BRM* I 90, 94, and 95, all headed by the line 'month . . . beer which entered in the *kankannu* (house)' (*šá a-na i-kan-kan-na i-ru-bu*), or Contenau, *TCL* XII 1: 13 (against E. W. Moore, *NBAD* p. 3; cf. also Landsberger, *JNES* VIII 274 n. 72).

Apart from this word *tēbitu*, we have in the Old-Babylonian legal document Ranke, *BE* VI/1 15: 16 another *tēbitum* denoting probably a specific purification ritual: 'the judges wrote this tablet in the temple of Shamash *a-šar te-bi-ib-tim*, on the place where the *tēbitu*-ritual (is usually performed).' Another and very technical meaning of *tēbitum* 'purification-ritual' is attested in the texts from Mari and Chagar Bazar (cf. Gadd, *Iraq* VII 26) discussed by J.-R. Kupper in *Studia Mariana* 99 ff.

The Neo-Babylonian occurrence of a word *tēbitu* (cf. Langdon, *VAB* IV p. 232 I: 31) in the phrase *quddušu tēbita* remains obscure.

⁴⁴ These dregs are denoted by *qadūtu* (*K* 4547 rev. II: 7 published by Langdon in *RA* XXVIII 129) or *šursummu* (*šu-ru-šu-mi* k a š in Thompson, *AMT* 82, 2: 13). The latter word occurs also in connection with wine (*CT* XXIII 12: 52), vinegar (Ebeling, *KAR* 202 rev. III: 21) and dates (*KAR* 202 III: 13). Cf. furthermore the equation in the list of synonyms, von Soden, *LTBA* II no. 2 II: 172, *up-ru* = *šur-šur-[mu]*, which explains *upru* as 'mud.'

⁴⁵ Cf. the pertinent but very difficult passage in the explanatory text Clay, *BRM* IV 32: 21 (also Thompson, *JRAS* 1924, p. 456) *pa-a-nu šá lú.SIM+GAR ana SIM-di šá ŠE.BAR á GAZI.SAR ištēnišū h e . b e . ma*.

⁴⁶ For a reconstruction of the destroyed lines of this and the preceding first column (about 50-55 lines) one has to utilize the 20 entries of the commentary series dealing with *tu*, as well as those *ka š*-entries (16 in

toto) which do not correspond to equations preserved in the lines II: 2, 4, 7 and 8.

⁴⁷ Cf. the equations DU = šu-lu-ú šá ti tab (K 4319 published in V R 11 I: 9-11), and (from the series á = A = náqu) bu-ár = BÚR = ba-ia-p[lu] šá ti tab (CT XII 13: 14b). For *bašápu ša še'i* 'to parch, speaking of barley' cf. Dossin, in RA XXX 92.

⁴⁸ For *šiggá* denoting a musical instrument cf. lately H.-G. Güterbock in ZA XLII 30 note 9.

⁴⁹ Cf. the following entry of the series di ri = siaku (5th or 6th tablet) on Br. M. 81-4-28, line 32 (published Pinches, JRAS 1905, after p. 829) ku-ru-un = KAŠ. DIN = ka-ás-din-na-ku = ku-ru-un-nu, ši-ka-ri, si-i-bu, ka-ra-nu, da-mu.

The reading kurun of the logogram KAŠ. TIN does not necessitate a change in the reading of the name of profession lú. (ka š). tin. na (m) (cf. p. 12, note 27).

⁵⁰ This equation and that in III: 14 render the UD of the Sumerian column with *našpu* in the Akkadian, while the lines IV: 1 and 2 show *našpu* (pl. *našpátum*) as corresponding to the adjectives a. l. si. ga and a. l. si. i. l. l. á of which the former is rendered elsewhere (in III: 30) by *šálu kutum* 'ready.' The word recurs in the medical text Thompson, AMT 51, 4: 3 describing a type of beer: di da na-ás-pi. Neither Thompson's guess in RA XXVII 132 note 4, 'foaming' nor Goetze's translation 'gedarrt' in MVAeG XXII/1 66 n. 4 (for which our text uses hād) seems to be acceptable.

The obscure word na-RU-tum in IV: 10 cannot be read *na-šub-tum because a plural is required in the context.

⁵¹ The text quoted in note 49 has in line 26: ú-lu-ši-in = KAŠ. ZIZ. AM = ka-ás II (= zi-iz) II (= a-a-nak-ku) = ú-lu-ši-in-nu.

⁵² The text quoted in notes 49 and 51 has in line 27: ú-lu-ši-in-maš = KAŠ. ZIZ. AM. MAŠ = II (= ka-ás) II (= zi-iz) an-ma-ša-ak-ku = ŠU-bu (i. e. ulušinmab-bu).

⁵³ This and the next two lines refer to beverages consisting of beer mixed with water(?) in the relations 2:1, 3:1 and 1:1. The distributive numerals *malmala* and *šinnú* recur in the text BM 41499: 5-6 (publ. CT XII 23) belonging to the series a = A = náqu in the equations: NINDA, with one inscribed horizontal wedge = ma-al-ma-la, NINDA, with two inscribed horizontal wedges = ši-in-nu-u, followed (lines 7-8) by two parallel entries which show *Winkelhaken* instead of the horizontal wedges.

Dr. Landsberger refers me to another reference for *šinnú* in the variant *šin-nu-ú ma(!)-ni-e* for 2 ma. a. a. á m '2 minas each' in the Epic of Gilgamesh (ed. Thompson p. 41 line 172 and pl. 25). Cf. for another distributive numeral of this pattern the Nuzi passage JAOS 55 pl. II no. 1 ú-šu-ru-ú MA. NA KUG. GI line 41, '10 minas of gold each,' and note the remarks of v. Soden, ZA 48, 8.

⁵⁴ For 3. tab. ba in the meaning 'threefold,' cf. from the 16th tablet of our series (published PBS XII/1 6: rev. 19) na. n un uz. 3. tab. ba = šip-ri-e-ti where, however, the Akkadian word does not render the Sumerian adjective. Dr. Landsberger indicated to me another instance

from our series (XIth tablet), K 8976: rev. 6 (Meissner, Suppl. pl. 15) with u r d u. 3. tab. ba = šu-úš-lu-šá.

⁵⁵ The words *ši-ka-ri ša-lul-ti* recur in the text quoted already repeatedly (cf. notes 49, 51, 52), line 34: ka-ás-bi-ir = KAŠ. A. SUD = II II (= ka-ás-din-na-ku) a-si-ir-gu-nu-ú = bi-i-qu, is-su-ú, ši-ka-ri ša-lul-tum, a-lap-pa-nu. For ka š bi r cf. the note of Falkenstein, ZA XLV 171 n. 1. Note furthermore line II: 37 of our tablet.

As to the designation *šikar šalultu* 'third beer,' reference should be made to the semantic parallels to be found in Hittite (*terialla*, cf. Ehelolf, OLS XXXII 322, quoted by Falkenstein, loc. cit.) and Egyptian (*bmt*, cf. Gardiner, *Ancient Egyptian Onomastica* II 233).

⁵⁶ This translation is based upon the assumption that *baršu* stands here for *bašsu* (cf. Langdon, *AJSL* XXXIX p. 140 and my AOS XXXII index s. v.), a change attested in the Middle-Babylonian text Clay, BIN II 33: 11.

⁵⁷ For *bīqu* (probably 'mixture') as a designation of a type of beer, cf. page 7. The medical texts mention rather frequently ka š. A. DI or, in Akkadian *bīq(a) (ša) šikari*. Note furthermore *bi-qa a.g.ēštin.na. ka.la.ga* 'bīqu of strong vinegar' in Küchler, *Beitr.* pl. 17 II: 71.

⁵⁸ The English of this and the next lines (up to II: 32) attempts to follow the rather obscure terminological expressions of the Akkadian column as against those of the Sumerian.

⁵⁹ This and the following eight lines appear also on the unpublished Kuyundjik fragment K 4251 (cf. note 3). Cf. also the damaged passage (of the series a lam = *nabnitu*) on K 4314 (publ. II R 45 no. 2) lines 41-42 d/e: [] . d é = II ša ši-ka-ri which is followed (after a dividing line) by [ka š. bur(?)]. ra = ši-ka-ri ni-qi-i.

⁶⁰ For the range of meaning of this difficult term, cf. Rm 341 rev(!): 7 (publ. CT XI pl. 39) with three Akkadian entries (*ni-sa-an-nu, ni-sa-ak-ku* and *ni-qu-ú*) rendering Sumerian *ni sa ga*.

⁶¹ Hardly to be connected with *zē.ēb* standing for *bašálu* (cf. Deimel, *SL* 133/47e) as referring to the use of drinking tubes.

⁶² The guess might be ventured that this Sumerian *sa.š. in* is a loan from an Akkadian word which appears in medical texts. Cf. for *sašnu* Thompson, AMT 69, 12: 5 (said of pomegranates) and for the fem., *sašindu*, Ebeling, *KAR* 202: rev. IV: 36 and 208: 23. Thompson (*JRAS* 1929, 815 note 2) proposes the translation 'crushed, mashed.' The Akkadian root *s. š. m* (cf. *šubšumu* in Walther, *LSS* IV/4 217 note 1) could have yielded a Sumerian *sa š in* (from **sa š im*) denoting some kind of compacted or crushed dish.

⁶³ For this meaning of *agarinnu*, cf. Goetze's remarks in *JAOS* LXV 235. It should be noted here that the medical text Thompson, AMT 85, 1 II: 1 mentions *AMA. SIM* while AMT 43, 6: 7 refers to a substance called *AMA. SIM+GAR* in connection with the verb *šapáku*; hence it is to be considered a liquid.

⁶⁴ The expression *š u. kin* could be connected with the verbs *kin. a. g* and *kin. d. ú* that refer to a process to which cheese was subjected; cf. the

passages from Hittite texts discussed by Goetze in MVAeG XXXI/1 77. Cf. note 71.

⁶⁵ Cf. p a d = *pussusu* in Deimel, *SL* 469/6.

⁶⁶ Cf. perhaps Deimel, *SL* 318/173 and my remarks in AOS XXXII (*Eames Collection*) 54 note 71.

⁶⁷ The word *nartabu* denotes here a mash produced by pouring a liquid over crumbled or pulverized substances, cf. the passage Thompson, *AMT* 83, 1: 20 (also Thompson, *RA* XXXI 12 note 4) *nār-ṭa-ba tu-ra-ṭa-[ab]* 'you shall make a mash (by soaking ...)' For *nartabu* referring probably to a pulpy dish, cf. above note 39.

From the same root is formed the *nomen instrumenti nartabu* (with determinative d u k in Ebeling, *KAR* 382: rev. 45), the 'watering pot' (cf. also von Soden in *Orientalia* NS XVI 169 f.).

The medical use of a mash prepared of b a p p i r is attested in Thompson, *AMT* 49, 6: 5 s ū n bāp-pi-ri.

⁶⁸ The *Vordläufer* text Van der Meer, *OECT* IV 154 III: 15 has a l . s u r . r a instead of a . s u r . r a . For the meaning of *sur*, reference should be made to the unpublished text VAT 9558 (copy and transliteration of Dr. Landsberger) which belongs to the series *LÜ* = *ša* (4th tablet) and lists the equations l ū . k a š . š ā m . š ā m and a . š ā m = II (for the latter cf. l ū . k a š . š ā m . š ā m). They give us the designation of a specialized brewery worker: *mēšū* 'who prepares the mixture/mash.'

⁶⁹ The basic meaning of *rasānu* 'to steep/soak objects in a liquid' is well attested. Apart from the medical texts which frequently prescribe that certain plants of the pharmacopoeia are to be steeped in beer or other liquids, there are three domains within the technology of the daily life that make use of processes referred to with the verb *rasānu* and its derivatives. These are tanning, brewing, and cooking.

For tanning cf. the text AO 6497 (published and translated: Thureau-Dangin, *Bit. acc.* 3 f. and 41 f.) which refers in II: 21 ff. (cf. the parallel text Ebeling, *KAR* 60: rev. 4-8) by means of *rasānu* to the steeping of the hide to be tanned in a mixture of flour and beer. Two legal texts of the Seleucid period call the tanner *amērišinu* (not 'Glaserarbeiter', Ungnad, *Glossar* to *NRV* I 134) and his craft: *amērišinātu*: cf. Contenau, *TLC* XIII 238 (misunderstood by O. Krückmann in his thesis p. 65, and by E. W. Moore, *NBAD* 256 f. on account of a miscopy of Contenau: a . š ā for a . āi) with *amēri-si-nu-ū-tu* in lines 6 and 7, and Clay, *BRM* II 47 (misunderstood by Mullo-Weir in *JRAS* 1925, 655 f.), with *amēri-si-in-nu-ū-tu* in lines 10 and 11, and *amēri-si-in-nu* in lines 13 and 24. Both these texts deal with the 'butcher prebend' (*isiq amēnaš-paṭrātu*) the owners of which received an income consisting of certain cuts of the sacrificed animals and their hides. They usually have tanners prepare these hides. Such tanned hides were termed *mašak risitti* (cf. e. g. Clay, *YOS* III 51: 8, 82: 11, 89: 12; with *risittu* meaning 'tanning process' as e. g. in Strassmaier, *Camb* 155: 1-5 (materials destined a-na ri-si-it-ti). Cf. also the list of synonyms (von Soden, *LTBA* II note 8) in *ZA* XLIII 233 ff. (von Soden) with line 231 *šal-la-pit-tū = še-e-nu ri-si-it-tū* 'shoes of tanned leather.' Note, finally, Strassmaier, *Nbn* 413: 3 for *rešinitu*.

The texts of the same period use *rasānu* also in connection with brewing, cf. *risittu* (*ri-es-sit(1)-tim* in Strassmaier *Nbn* 779: 7), *risindu* (Strassmaier, *Nbk* 233: 3(1)) and *rešinū[itu]* (Strassmaier, *Dar* 543: 12(1)). For an early occurrence of *rasānu* in this nuance cf. Clay, *PBS* II/2 51: 17. Note also the name of one of the gates of Assur *bāb rešinat kurru ilāni*.

In Dougherty, *YOS* VI 170: 3, we find the *amērišinu* as 'cook' preparing a *mirsu* (cf. note 75). Tremayne, *YOS* VII 79: 7 (*ši-zib a-na ra-sin-ū-tu*, cf. also San Nicolò, *ArO* VI 188 note 2) refers to the same application of the *rasānu* technique. In Clay, *BIN* I 88: 14 *risna rasānu* appears in an obscure context, cf. Ebeling, *Briefe aus Uruk* 233.

⁷⁰ The meaning of *karku* is somewhat difficult to ascertain. For the aspect 'to turn around' cf. my remarks in *Orientalia* NS XI 124 ff. where I, erroneously, as I see now, assumed the existence of a homonym 'to dam up' (some references on, cit. 124 note 2).

The clue to the understanding of this verb seems to be given by a passage from the Neo-Babylonian letter Clay, *YOS* III 84: 10-11 (also 22-23) which links the two meanings 'to turn' and 'to dam up' together. This passage refers to a specific irrigation technique with *mē karāku* (followed by *šaḳū*) which should be translated by 'to surround (a stretch of territory) with dykes in order to submerge it for a time (to allow the fertile mud to be deposited on the soil)' (for an illustration, cf. Dougherty, in *AASOR* VI 63 f.). The vocabulary passage a . l ā . i d . d a = *ši-kin na-a-ri* (cf. Deimel, *SL* 579/421) corroborates this interpretation of the verb *karāku* by showing that the Sumerian word corresponding on our tablet to *karku*, i. e. a . l ā . l ā or l ā . l ā refers to the muddy sediments (*šikin nāri* in the quoted equation means 'sediment of the river') which the *karāku* of the field causes the inundation water to deposit there. The concise idiom *mē karāku* which to render in English requires a long winded phrase (cf. above) corresponds to a certain extent to the Old-Babylonian *mē šapākum* (e. g. in Dossin, *TCL* XVII 6: 5 f.).

The adjective *karku* (of our text) describes most likely the *nartabu*-mash which was changed into mudlike consistency by means of prolonged soaking in water. Substances of this type were often used for poultices by the Mesopotamian physicians who refer to this treatment with the verb *šutakruku* (e. g. Thompson, *AMT* 28, 7: 8 and 23, 2: 13). This was done by means of a *makraku* i. e. a 'poultice' and it is interesting to note that this English word is connected with Latin *puls* 'pulpy dish'. The passage *K* 275: 5 (published *CT* XVIII 13) explains *ma-ak-ra-ku* as II (= *ši-in-ḏu*) II (= *šā asī*) 'bandage (used) by the physician.'

⁷¹ Cf. the corresponding entry in III: 24. The tool to stir the mash is called here a l, 'spade,' while the mixing is done by hand in the quoted entry.

⁷² The entry *editum* = 'starke Bewässerung' in Bezold, *Glossar* 18a is based solely on this line which does not warrant such a translation.

⁷³ The root *n. p. ṣ* refers elsewhere to the beating of the wool before the spinning (cf. *nippes* in Hebrew according to S. Kraus, *Talmudische Archäologie* I 137 and note 96). It was done with a stick called *nappasū* (Sumerian *G18. KAL* = e s i, cf. Meissner, *MAOG* III/3 21 and the equation

sfg.KAL.ba.dû = *pu-šik-ki* 'wool whipped with the KAL = fleece' from the 19th tablet of our series (Sm 13 in V R 14: 17 a/b).

⁷⁴For the relationship of the activities denoted respectively by *gaz* and *kum*, cf. my remarks in AOS XXXII index s.v. Cf. also, from the 8th tablet of our series *gi.a.l.k.u.m.a* = *baš-lum* and *gi.a.l.g.a.z.a* = *dî-i-ku* (published PSBA XVI 1893/4 308-9 and Meek RA XVII p.119 (K 945)).

⁷⁵The verb *marāsu* refers to the mixing of small particles into a liquid, cf. the characteristic sequence of verbs: *bašālu* 'to crush,' *marāqu* 'to pulverize' and *marāsu* 'to mix into water' in the 'Glass' text Thompson, *Chemistry* pl. IV: 4. The resulting mixture is called *mirsu* (cf. Scheil, *RA* XIV 135 note 1; Dougherty, *AASOR* V 32 note 32; Falkenstein, apud Sommer, *Abbiyavā* 172 note 2) which, as a rule (but cf. *mi-ri-is geštin* ... [i]š-ša-ba-at in CT XXII 39: 9, 27-28) refers to a type of pulpy, semi-liquid food. This *mirsu* is prepared of cereals (as base), with oil, ghee, dates, etc. added and served in a bowl called *marānu* (cf. Engl. 'porridge'). A female cook preparing such dishes professionally, is mentioned in the Mari letter Kupper, *TCL* XXIV 85: 23 as *epēšat mirsim*.

⁷⁶According to Dr. Landsberger, the Sumerian loan word in Akkadian (*i*)*simanū* is derived from an administrative (technical term **(i)zi(d)*). *manu* (with *manu* a variant of *manu*) which referred originally to a certain type of provisions given to workmen and travelers to assume later a more general meaning (cf. Latin *sal* and *salarium*). The word *isimanū* appears rather rarely in cuneiform texts and many of these references have been recently discussed by von Soden (*Orientalia* NS XVIII 397) who, however, was neither aware of the basic meaning of the word nor of its complex etymological background. Since Dr. Landsberger is presenting the pertinent material in his forthcoming volume of *MSL* (Proto *ea-nāqu*, line 479) I abstain from commenting upon the terms *zid.munu*, and (*i*)*simanū*.

In other contexts, however, *zid.munu*, means 'flour made of green-malt,' cf. e.g. Thureau-Dangin, *Rit. acc.* 4 and 14, *AO* 6479 II: 23; also cf. note 88.

⁷⁷The *Vorläufer* text Van der Meer, *OECT* IV 154 shows in III: 20-22 the sequence *sū.n.munu*, *zid.munu*, and *manu*, which correspond to our lines III: 25-26 and IV: 3. This text thus omits the entire *tita*b-group.

⁷⁸The words for 'to dye' refer in Akkadian often to the submerging and the soaking of the textiles in the ooze of the dyer, cf. *šapū* and *šanū*. This observation justifies the translation of *šipātum* by 'steeped.' Cf. also IV: 4 of our tablet.

Note in this context the equation (from the 19th tablet of the present series) *tūg.a.DI.a* = *šī-ir-pu* (Sm 13 published V R 15: 15c) 'soaked textile = dyed.'

⁷⁹For the problem of the meaning of *zal* and *u.d.a.zal.li* cf. Landsberger in *JNES* VIII 254 note 31, and my remarks in AOS XXXII index s.v.

⁸⁰None of the multifarious meanings of *si.l.l.á* fits the semantic range required by the word of the Akkadian column (cf. above note 50).

⁸¹The two known logograms for *bāqilu* 'maltster': *munu.é* and

munu.ma, (cf. Meissner, *BAW* I 18) correspond to these two entries; they describe the activities of this craftsman who makes the sprouts come out (*é*) or grow (*ma*). Note the two partly destroyed equations in K 40 I: 62-63 (CT XII pl. 47) [] = II (= *kān-nu*) *šā MUNU.MU*. Furthermore the Old-Babylonian administrative text CT IV 23c (inadequately translated in Kohler-Ungnad, *HG* III 196) which mentions *munu.ma*, to be delivered to a *lū.gurūšī.e* 'fattener of cattle,' *a-na a-ma-az-za-az si-ra-š[u]-tim*. The profession *munu.ma* is already attested in Burrows, *UET* II 286.

⁸²The same adjective describes also crystallized alkali. For *naga.sī.é*, cf. AOS XXXII index s.v. Note also *munu.é.a* in the Old-Babylonian text Legrain, *PBS* XIII 61: rev. V: 12.

⁸³To be quoted here is the entry in *m.ū.t.u.lum* = *bu-tu-lum* from the 10th tablet of our series (K 55: rev. 8 published in CT XIX pl. 2) which seems to refer to soil covered by excrecences of alkali. The Sumerian word recurs in the equation *b.u.t.u.l = II* (i.e. *ba-tu-ú*) *šā murši* 'to be covered (with scab?) said of a disease' (Delmel *SL* 78/22).

⁸⁴A more exact translation would be 'left-overs' because the word *šapitum* appears e.g. in the Old-Babylonian legal text Ungnad, *VS* VIII 66: 12 (= 67: 10) and *passim* in the texts from Mari, in the concise meaning of 'balance.'

⁸⁵The Sumerian *mug* denotes a coarse wool quality (probably 'offal') in the 19th tablet of our series (V R 14: 26c/d *sfg.mug* = *muk-ku*), cf. also my AOS XXXII index s.v. *sfg.mug*.

⁸⁶For this word, Dr. Geers refers me to Hebrew *haré* (Ges.-Buhl¹⁶ 255b).

⁸⁷This loan word confirms the reading of *DIM₄+ŠE* given already in the gloss of III: 26.

⁸⁸This translation is based upon the variant of the *Vorläufer* text Van der Meer, *DP* XXVII 54 II: 6 *zid.šā.munu*.

⁸⁹The term *pappasu* (Sumerian *ba.ba.za*) refers to a pulpy cereal dish (cf. Hrozny, *WZKM* XXI 379 f. to King, *Chronicles* II 8 f. and 117, and Ungnad "Woran starb König Irra-imitti?" in *Orientalia* NS XII 197 f.). For an isolated Middle-Babylonian reference cf. Clay, *BE* XV 44: 23 *NIG.HAR.RA á pa-pa-su*.

The word underwent a semantic change typical for the technical language of Mesopotamian bureaucracy: the development from ration (container as well as its content) to salary, subvention, income, etc. (cf. above note 76). The discussion of the meaning of *pappasu* in the Neo-Babylonian texts where it is very frequent falls outside of the scope of this article. I refer only to the proposed translations 'Materialien geliefert zur Verarbeitung' (Schwartzner, *OLZ* 1921, col. 86 f.), 'Deputat' (Ebeling, *Briefe aus Uruk* 69) and 'Rohstoffe' (Ungnad, *Glossar* to *NRV* I 120).

⁹⁰This substance belongs to the Mesopotamian pharmacopoeia and appears at times in medical texts, cf. e.g. Thompson, *AMT* 37, 4: 8, CT XXIII 43: 25, Küchler, *Beitr.* pl. 14 I: 3, etc.

Dr. Golb refers me to an Akkad text from Gasur (Meek, *HSS* X 148: 5) mentioning *ba.ba.za.munu.sīg*.

⁹¹Cf. the analogous logogram in IV: 32.

⁹² This important equation gives the long looked for Akkadian equivalent of *NI.G.ĪAR.RA* (cf. Landsberger, *OLZ* XXV 1922 col. 237). The word *mundu* recurs in the Nuzi texts Gadd, *RA* XXIII p. 157 no. 60: 10-11 (in parallelism with *zīd* 'flour'), Lacheman, *HSS* XIII 81: 2, 82: 1, 102: 1, etc. The commentary series to the present tablet (cf. the texts quoted in note 5 and *RA* XVII 127, K 2740: 10) explains *mundū kunāšī* (equated in the main series with *zīd.eša*) by *sasqu* which recurs in IV: 13 of our tablet as *sirqu* and *sisqu*. For the use of *NI.G.ĪAR.RA* for the brewing of beer cf. p. 20 and note 38a. [Dr. Landsberger refers me to the early Akkadian loan word *m u n d u* in Sumerian texts (cf. Deimel *SL* 95/11).]

⁹³ For *b u e . b u s* as a qualification of flour, cf. below note 106.

⁹⁴ This word recurs in medical texts (Thompson, *AMT* 69, 8: rev. 2, 68, 1: rev. 17) as *ku-ku-ús m u n u*, and in the Shamash hymn Gray, *AJSL* XVII 226 lines 4-5 (K 3286) where the offerings of the widow are listed as: *ku-uk-ku-šá zīd.m a d.g á u[p]-pu-un-tum*.

For a variant *kukuštum*, cf. Thureau-Dangin, *TCL* I 205: 6.

⁹⁵ The Neo-Babylonian texts refer to sifted flour by *zīd.d a d u n . g a n i - i p - ú* (Tremayne, *YOS* VII 186: 8).

Cf. also the Lamashtu passage (IV R² 56 I: 23a = Myhrman, *ZA* XVI 154) for *zīd.n u . s i m* 'unsifted flour.'

⁹⁶ The logogram **zīd.k a s k a l* (cf. for references Ungnad, *VAB* VI 385) seems to be appropriate for this place.

⁹⁷ The finely ground *mašātu* (*šahātu* 'to press (seeds or grapes)') was of great importance for the Mesopotamian ritual. It was to be scattered (*sarāqu*), burned in censers, filled into containers, etc. *Niqū* 'sacrificial offering' and *mašbatu* appear side by side, e.g. in the passage Lutz, *PBS* I/2 116: 19 'you are an evil demon *šá ni-qá la i-du-ú ma-aš-ba-ta la i-šu-ú* who knows no sacrifice, has no *mašbatu*, which illustrates the importance of this substance. This is also confirmed by such passages as, e.g., King, *BMS* 6: 80 *zīd.m a d.g á mu-ub-ri-in-ni-ma li-qi-e un-ni-ni-a* 'receive my *m a d.g á* -flour, accept my prayer!'

The word could be a Semitic loan in Sumerian and derived from the root *m . t . q .* 'sweet (smelling).'

⁹⁸ For *zidubdubbú* cf. Gurney, in *AAA* XXII 69 note 6.

⁹⁹ *Zisurrá* denotes a thin mixture of flour in water used to draw (*lamú*, *egéru*) lines on the ground for ritual purposes. Cf. also Zimmern in *ZA* XXX 216 note 2.

¹⁰⁰ The Akkadian word renders the *š u . b a l* of the Sumerian column but the obvious translation 'flour which has been bartered' does not seem acceptable in this context. The verb *šupa'ulum* appears in the Old-Assyrian texts from Cappadocia as a technical term referring to malting, cf. Lewy, *KTHahn* 35: 11-12; Contenau, *TCL* II 84: 15-17. It is not impossible that *šupiltum* refers here to flour processed in some specific way.

¹⁰¹ This value is already known through the Chicago syllabary, cf. R. T. Hallock, *The Chicago Syllabary and the Louvre Syllabary*, AO 7661 (Chicago 1940), line 296 and p. 69. Note also line 298 with the Akkadian word of our entry.

¹⁰² For another reference of *isququ* cf. the passage quoted in note 'n' to

col. V of the *Apparatus Criticus*. The word occurs also in the texts from Nuzi, cf. Lacheman, *HSS* XIV 94: 3, etc., 95: 6, etc., 97: 2, etc., 98: 2, etc. and in unpublished texts.

¹⁰³ The meaning of *takkasú* which, as far as I can see, appears only in Neo-Babylonian texts, is determined by the fact that the passages Dougherty, *YOS* VI 241: 8 and Strassmaier, *Dar* 26: 2 show that it was produced by the baker. The *takkasú* pastry for the divine repasts was prepared by the temple baker who is repeatedly said to be responsible for its good looks (warranty for *bu-un-nu-ú šá tak-ka-su-ú* in *YOS* VI 241: 55, *bu-un šá tak-ka-su-ú* in Contenau, *TCL* XIII 221: 17, and Strassmaier, *Dar* 16: 17 *bi-bi-tu*, [*šá*] *ta-ak-ka-su-ú bi(!)-i-ši* 'damages for spoiled *takkasú*-pastry').

Cf. furthermore Ungnad, *VS* VI 313: 4 *tak-ka-su-ú ú in-bi* 't.-pastry and fruits,' Dougherty, *GCCI* I 238: 1 *tak-ka-su-ú šá šamni* 't.-pastry (baked) in oil,' and Ungnad, *VS* V 87: 1 mentioning *rab-bu-ú šá tak-ka-su-ú* (for *rabbu* cf. Thureau-Dangin, *Rit. acc.* 82 note 1). The use for cultic purposes is attested in Thureau-Dangin, *Rit. acc.* 63 and 77, AO 6451: 39, where the *takkasú* are said to be served in baskets beside another type of fried pastry *kusipéti ša šamni*. Ungnad's translation 'Marmeladenkuchen' (*Glossar* to *NRV* I 161) is without foundation. The etymology seems to suggest a dish made of cuttings of some sort, or served in cuttings.

¹⁰⁴ For *tappinnu*, cf. the following line in the commentary-series (quoted according to K 260, published *RA* XIV 24 plus K 8811 from an unpublished copy of Dr. Landsberger): *n i n d a . Z I D . S E . [] = tap-pi-in-nu = ku-uk-ku KUG-tu*. The explanation of *tappinnu* as 'light *kukku*' does not prove very helpful.

As to its function, *tappinnu* corresponds to *zisirurá* (cf. above note 99) as can be seen, e.g., from K 4872: 57-58 (published *V R* pl. 50) *ša-lam an-du-na-ni-šu šá tap-pi-in-ni ina qa-qa-ri e-šir-ma* 'draw a likeness of his person on the floor with *tappinnu*-paste.'

¹⁰⁵ The reading *milla*, etc. for *ZID.IS* is discussed in note 'n' to col. V in the *Apparatus Criticus*. For pertinent references of my remarks in *AOS* XXXII index s. **z1.s a ħ a r*. From the medical text Thompson, *AMT* 73, 1: 12 and 26 (plus *KAR* 192, Ebeling, *AGM* XIV 26 ff. and Thompson *JRAS* 1937 279 ff.) it can be seen that *milla* denoted a type of flour; here we have *milla.m u n u*, beside *zīd.m u n u*.

¹⁰⁶ The commentary-series (quoted in note 49) contains, in line 31, the following entry: *ZID.IS.b u e . b u s = tu-ma-gu = niq-qu*. This can be taken to indicate that the *tumagu* (flour, or pastry made of it) was used for cultic purposes. Cf. also above the entry IV: 30.

¹⁰⁷ This word belongs probably to the root *s . m . d* (cf. Landsberger *OLZ* XXV 1922 Sp. 340 f.) 'to grind fine flour' denoting a type of pastry made of this flour.

¹⁰⁸ Cf. the phrase from Thureau-Dangin, *Rit. acc.* AO 6451: 45 63 and 77 introducing the benediction which the baker of the temple had to pronounce *ina mušši ba(!)-la-la šá gi-ir-ši* 'over the mixing of the dough.' To the same root (*g . r . š* in Babylonian, *k . r . š* in Assyrian) belongs the name of the pastry mentioned in the letter Contenau, *TCL* IX 117: 22 *ga-ri-ša-tum*

ù *ku-sip-pi-e*. The texts from Nuzi (Lacheman HSS XIII 395:16, XIV 43:7, 63:1, 3, 11, 13, 68:2, etc. and passim in unpublished texts) seem to refer by *bilu* and those from Mari by *billitu* (cf. the passage *bi-ii-tam* ù *zid.da* quoted from an unpublished letter by Jean in *RES* 1937 106) to some kind of paste given out as rations to workmen or soldiers.

ADDITIONS AND CORRECTIONS

- To p. 6. For the reading of GAB "bran" cf. now Landsberger, *WO* 5, 373 n. 74.
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- To p. 7. The writing of LAB*ku* instead of *ribku* (cf. Thureau-Dangin, *EA* XIX 84) is based on the spelling *la-ab-ku* on the fragment of a duplicate of the Wadi Brissa inscription published by Scheil in *EA* XIV 161, line 5.
- To p. 8. Dr. Landsberger has drawn my attention to the texts Burrows, *UET* II 162 and 219 which show, side by side, *m u n u s* and ŠIM+GAR. This and the occurrence of the sign ŠIM+GAR in the texts of Fara (cf. Deimel, *WVDOG* XL 61, no. 659 and *WVDOG* XLIV 8*) indicate that my interpretation of the shift from KAŠ+GAR to ŠIM+GAR has to be corrected. The use of the former sign seems to have been restricted to Lagash, the change coinciding with the rise of the kingdom of Agade. The other cities seem to have always used the writing ŠIM+GAR.
- To p. 9. Another instance of an Assyrian text referring to the brewer as l ú.ŠIM+A can be found in Bu 91-2-9, 218 (published by Winckler in *AOF* II 21, cf. my translation in Pritchard, *ANET* 293) listing craftsmen taken as prisoners from Egypt.
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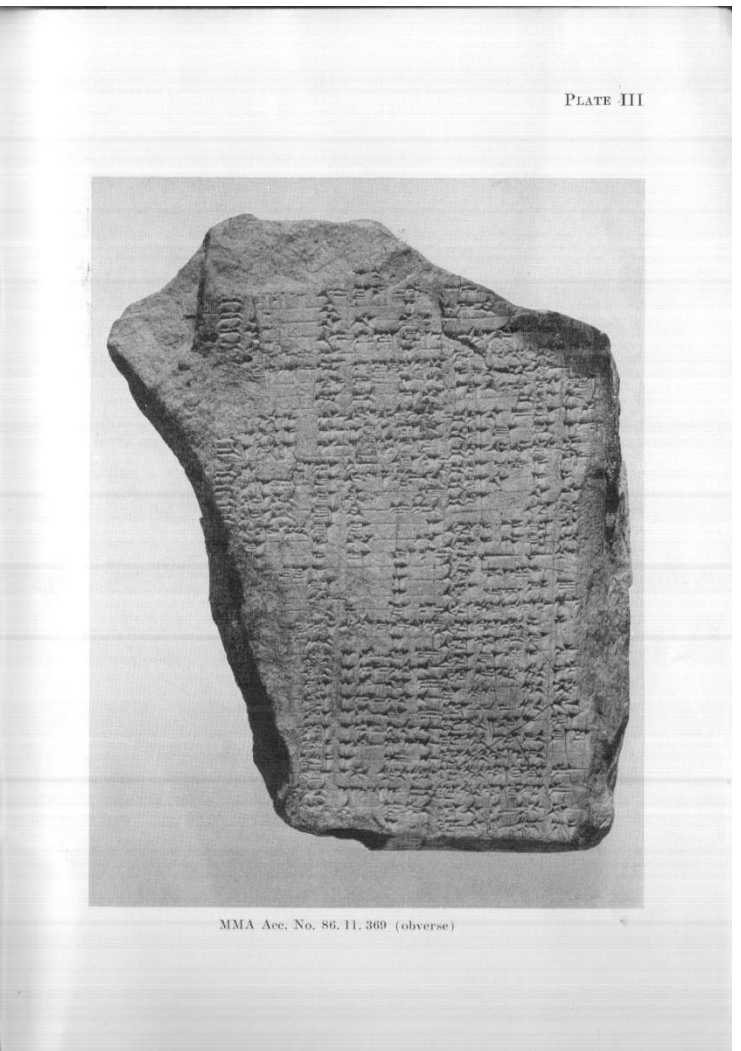
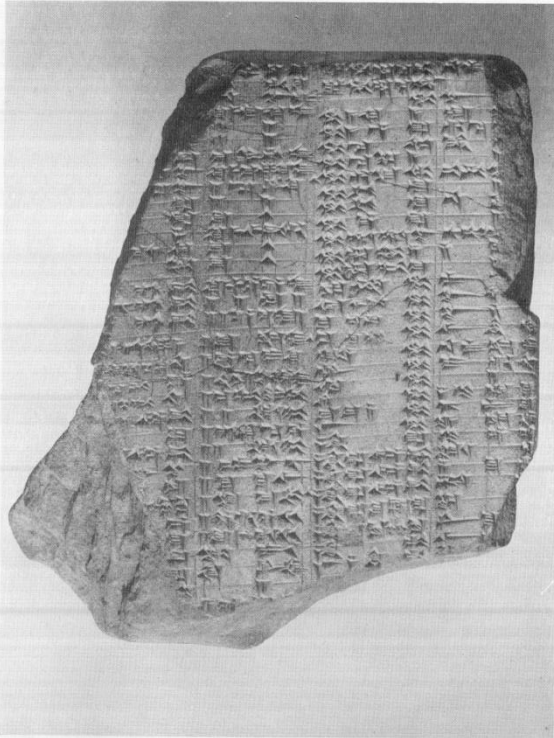


PLATE IV



MMA Acc. No. 86.11.368 (reverse)