tion maps that show the situation from the middle Epi-Palaeolithic period to the end of the Neolithic and beyond. In fact, as already indicated, occasional finds of O. have been noted on a few sites as early as the Upper Palaeolithic period. The picture is therefore different in the middle Epi-Palaeolithic, occurrences of O. become a little more frequent. Two sites in the north Zagros (Sanidir and nearby Zawi Cemi), and five sites in the Levantine corridor (among them Tall Mureybet, Abu Hureyra and Eynan) have small amounts of O. Hallan Cemi, near Batman in southeast Anatolia, which was first occupied late in the middle Epi-Palaeolithic, occurs on one or two sites that, for example Agliki Hoyuk, Caryonu and Cafer Hoyuk, have produced blocks of O. direct from the sources, cores and retouched tools, as well as blades and retouched tools. In north Mesopotamia and the north Zagros, some cores and pre-forms, as well as some chipping debris are found, along with the tools that were in actual use. Whereas almost all of the tools and weapons might be made in O. At Agliki Hoyuk or Catalhoyuk, at Nerkir, in north Mesopotamia, the excavators noted that O. was used for some tools and not for others, for example, all were made from Flint or Chert. In the area of the Euphrates in north Syria and the Damascus basin, quantities of O. are much less than further north, and only a little has been noted. In such circumstances, we may suspect that the debitage is the by-product of re-working damaged or broken O. pieces. Sites in Israel and Jordan produce very small percentages of O., usually in the form of blades and bladelets, as well as some small flakes and odd splinters.

Whereas we saw in earlier periods that amounts of O. in use increased over time, towards the end of the aceramic Neolithic period, in the last quarter of the PPNB, there are signs at one or two sites that amounts of O. in circulation were reducing.


T. Watkins

Obst und Gemüse (Fruits and Vegetables), A.I. Mesopotamien.

§ 1. General. Food culture in ancient Mesopotamia, as in most ancient societies rested primarily on plants. Although crop plants dominate the archaeobotanical record from the 8th mill. on, wild plants continue to be gathered as foods, medicines, and materials. This type of gathering, although in that of more or less slow change, is almost impossible to identify in written or archaeological evidence. Methodologically, however, we must keep its existence in mind, because it constitutes the social and scientific background of the material medica as well as of the food culture.

In the food culture of ancient Mesopotamia, grains played the dominant role, particularly barley (Hordeum spp.) and emmer wheat (Triticum dicoccum). Species identification of other wheats and grains mentioned in cuneiform texts remains problematic. The proportional role of cultivated grains must have varied considerably over time and especially geographically. It seems probable that opportunite gathering of plant foods played a more important role in the 1st mill. and earlier than in later times. Likewise, that grains increased in importance as one moved from the highlands into the alluvium and from countryside to city. The way in which grains were consumed varied over time as well as within societies. Bread was probably primarily urban and upper class phenomenon down through the 4th mill. B.C. (discovery of ovens in towns fits this theory, because that was, after all, where the elite was concentrated). A great deal of grain, perhaps a majority, was consumed in forms other than bread, as in purries and soups, and in the form of malted or sprouted grain. This is a function of economics, because preparation of bread prior to the invention of the rotary mill (ca. 200 B.C. in Italy) was extremely costly in terms of labor (mostly done by women).

It is, therefore, within a larger food culture dominated by grain, where foods of animal origin are consumed primarily by animal herders and by the elite, that we must try to envision the role played by fruits and vegetables. But, beyond this, we must keep in mind what was not there in ancient times. Rice seems to have come from India after Alexander the Great. Egg plant, okra, spinach, and perhaps even the watermelon, are probably immigrants of the 4th mill. A.D. The chicken, which came westward in the 9th cent. B.C., probably originally from amusement (fighting cocks) rather than food. The food has left no visible trace in the cuneiform sources. Moreover, one must keep in mind the absence of all “New World” plants, since many of them are now ubiquitous throughout the Near East and even specialists seem only subliminally
are aware of the significance of this obvious fact: tomatoes, potatoes, most of the squashes, all of the peppers (capsicum), hot and sweet, and, above all, that ubiquitous, immensely variable, and delicious vegetable, the "bean". It comes as a surprise to speakers or readers of European languages to learn that the "beans" one reads about in translations of ancient texts do not even have genera in common with the ubiquitous "beans" of modern times which are Phaseolus and come from the "New World".

Similarly with "fruits", not only is there no evidence for the various species of citrus fruits like lemons, limes, and oranges, but even peaches and the now ubiquitous apricot are not identifiable in the ancient evidence. What all this means is that, though the food culture of ancient times shares some foods in common with the modern food culture, it was profoundly different. This confronts us with a serious methodological problem. Are we to assume that the important segments of the ancient food culture now occupied by introduced crops from India, Africa, Central-South and East Asia, Europe, and the New World were simply blank, or filled out by those relatively few species we can identify in the cuneiform sources and in the archaeological evidence? Or, were there other plants that filled these niches that we still cannot identify in the available evidence? Our limitations reveal themselves in the fact that these questions cannot be adequately answered. In all probability we are in a situation like that revealed in the Greek and Latin sources where many plants are eaten that later went out of fashion, especially in and around towns, where this group was gradually replaced by a relatively small number of reliable domesticates. What this means is that comparison of the modern food culture of the Near East with the evidence from the ancient cuneiform sources will not necessarily help much in identifying plants where one has little more than names and very limited contextual evidence. What can be inferred with some probability is summarized below.

§ 2. Methodology. A few words about the methodology. Akkadian is cited here in preference to Sumerian. The lexical evidence on which most of the readings of Sumerian words are based is cited in the Akkadian dictionaries (AHw., CAD). The Sumerian names are often problematic, and the graphic symbolization of many names seems artificial (i.e., post-Sumerian). The Latin binomials are given only to make clear what plant is implied by the English name. Species identification in the dictionaries is a rather uncertain affair, since they do not, as a rule, use the Latin binomials. Thus, one finds in AHw. under kamumu (AHw. 434) the definition "Kämmel", which in German normally denotes Carum carvi (caraway seed), but what AHw. really means is "Kreuzkämml", which is "cummin" (CSumun cumminum), under which unambiguous name it is now (Dec. 2001) being sold in the Münchener Vuitkulturenmarkt. The situation in CAD is similar but often more complex. CAD began its life in a world in which cuneiform evidence prevailed but has gradually drifted toward a reasonable agnosticism, particularly where the identification of plant species is concerned. However, failure to use the botanical binomial system in the Dictionary of the Epic of Gilgamesh leads to conclusions like that expressed in CAD's discussion of kasu (CAD K 1971, 250) where the opinion is expressed that sabla probably meant "watercress" (a notion one encounters elsewhere in the cuneiform documents). From a methodological point of view, species identification must always proceed from etymology to a consideration of context, with an awareness of the history of flora in the region (including the importance of and the evidence of archeobotany). If the etymological and other evidence agrees, then probable solutions become possible. However, where the linguistic evidence itself is confused or ambiguous, conclusions based on etymology may not necessarily help much in identifying plants where one has little more than names and very limited contextual evidence. What can be inferred with some probability is summarized below.

Attempts to identify species take place in that dangerous terrain where not just two but a whole group of disciplines meet and where any specialist is inevitably going to find oneself on uncertain ground. It seems fairly clear that most species of plants mentioned in cuneiform texts will never be identified with certainty, but precision in terminology and attention to the natural distribution and history of flora do permit at least an encouraging residue of probable identifications that may be increased in the future as new evidence accumulates. After all, cuneiformists now universally agree (a rare phenomenon) that the words amesu, ezimmu, andalbissu denote bulbous plants rather than Viciae, vetches, etc., as posulated by R. Campbell Thompson (DAB, published posthumously 1949, 89 ff.). And most cuneiformists also agree that zhams- ammuzu means sesame, despite that fact that CAD (St 1989, 301-307) has opted for "linsed" (contra: Powell, AulaOr. 9 [1991] 155-165); there is much additional evidence in both cuneiform and classical sources against the linseed theory. From a methodological point of view, species identification must always proceed from etymology to a consideration of context, with an awareness of the history of flora in the region (including the importance of and the evidence of archeobotany). If the etymological and other evidence agrees, then probable solutions become possible. However, where the linguistic evidence itself is confused or ambiguous, conclusions based on etymology may not necessarily help much in identifying plants where one has little more than names and very limited contextual evidence. What can be inferred with some probability is summarized below.
graphic/logographic equivocal identification of species.

It seems probable, despite the rarity of archaeological finds, that the name ha:bhur denotes the domesticated apple, but it may have included wild species. Since most of the fruit domesticates depend for their genetic stability on propagation by cuttings and analogous clonings, and, since this method of propagation is practically mandatory for grape culture, it seems likely that it was also practiced with other fruits. However, since propagation of apples by seed is attested even into modern times, we cannot exclude this in antiquity, which would have led to a much greater genetic diversity and to a corresponding variety in the resulting fruit.

The fact that the apple is not now extensively cultivated in S. Iraq, as it has led to the otherwise unjustified — assumption that ha:bhur must denote something else in cuneiform texts. Apricot (s. below) has been the preferred alternative. This assumption has no basis in fact. The apple was the preferred species among the Rosaceae in the 3rd mill. precisely because it had been domesticated and filled an important niche in the available domesticates. Apples were cultivated in the same way that Citrus species are grown in modern S. Iraq, namely in the micro-climate created by date groves. Flora of Iraq IVs (1980) 465 f. notes that, though citrus trees (native to southeast Asia, etc.) are too sensitive to stand the climate of S. Iraq when grown in the open, oranges (Citrus sinensis) can produce enormous harvests in properly spaced date groves.


§ 3.3. Apricot (Prunus armeniaca L.) (cf. B. § 1.2). Like the peach, this fruit seems to be a westward migrant from China/Central Asia whose appearance in the Near East probably post-dates the conquests of Cyrus the Great and Darius I, i.e., roughly the half-century 530-480 B. C. Proposals to identify either of these fruits with Akkadian (to say nothing of Sumerian) words must be, until clear archaeological evidence to the contrary, regarded as unfounded.


§ 5.4. Cherry (cf. B. § 1.3). Not yet identified in cuneiform sources. It is not impossible that the sweet (Mazzard) cherry (Prunus avium (L.) L.) or the sour (Morello) cherry (Prunus cerasus L.) would have been known in the uplands, but the domesticated cherry seems to have become widespread only after the Persian Empire. A more likely fruit (though very small) is the Malheh or perfumed cherry (Prunus mahel. L. Mill.), but nothing in the cuneiform sources points clearly in this direction. If a word for cherry existed, one would expect to find it in the "berry" sections of Hh. III, since the olive is also entered there (s. below). It is barely possible that gis gi-riz um = gigrus (Hh. III 230 = MSL §. 112) contains the ubiquitous word that turns up in various forms in Near East languages as well as in Greek kerasia and in Latin cerasus (NB: not derived from Kerasous!), but certainty is impossible, since the Near Eastern words from which kerasia etc. derive come from some unknown language (or group of languages), and, moreover, the Hh. III entry remains isolated.


§ 5.7. Grape (Vitis vinifera L.) (cf. B. § 1.9). karamu / geštin (ishnumutu, "cluster"), ubiquitous, from early 3rd mill. on, widely and extensively cultivated in the north, especially for wine, is the grape, which was probably consumed more often as raisins (muziqu / geštin UD), and for juice, which was turned into syrup (dispu / I1a1), i.e., the sour-flavored "wine" that turns up in modern translations of Sumerian and Akkadian texts. Likewise, the "wine" that turns up in lowland texts is almost all beer that has been flavored and/or fortified by the addition of grape syrup during the fermentation process. That, as a fruit crop, the grape was first in importance in the uplands and second only to the date in the lowlands is suggested by the elaborate terminology for the various parts of the plant in Hh. III (Powell BSA 3, 146). Texts from the 2nd mill. on suggest that grape cultivation for wine was concentrated particularly in the Syrian uplands and in the south sloping mountain terrain where modern Syria, Turkey, Iraq and Iran come together.


§ 5.8. Hackberry (Celtis spp.) (cf. B. § 1.10). Not identifiable in the cuneiform sources. Powell (BSA 3, 149) suggested identifying the mesu / mes tree with Celtis australis L., but this is probably wrong. Celtis (cf. caucasica L.) berries are known from Tall al-Der but are thought to be upland imports (Renfrew BSA 3, 398), whereas mesu / mes trees were actually cultivated in S. Mesopotamia, especially for wood, and Celtis does not grow well in southern Iraq (Flora of Iraq IVs, 69-75).

§ 5.9. Medlar (Mespilus germanica L.) (cf. B. § 1.12). Not identifiable in cuneiform sources. Identified by Thomson (AH 305 f.) of salleru / senur as medlar is unlikely (s. below under plum), because it occurs from Ur III on in the south, as well as widely in the north, where it turns up in large numbers, perhaps for planting, alongside pomegranate and fig. The medlar, from the fact that its fruit becomes palatable only in a blighted, softened condition, has always played a minor role in fruit culture, and this will have hardly been different in ancient times (cf. Flora of Iraq II, 188 f.).

§ 5.10. Mulberry (Morus) (cf. B. § 1.13). Tutti, western only a couple of times in Persian period texts. Heinemeulberre is correct in rejecting identifications with other Akkadian or Sumerian words. Morus alba L. (the preferred mulberry for silkworm culture) was unknown in the west in ancient times, and Morus nigra L. seems to be a 2nd mill. B. C. immigrant from the east
Persica, listed in Flora of Iraq IV 1997. It is possible that the wild Syrian pear (Pyrus syriaca Boiss.) is represented in one of the species associated with kamissarum in Hh. III, however, though reportedly eaten in modern times by the mountain people, it is not likely to have been cultivated for fruit in ancient times. Part of the ambivalence in the lexical must be attributed to limited cultivation in ancient Mesopotamia (only in the north), and it is not commonly cultivated in modern Iraq.

Flora of Iraq IV 1997; b. Batsch. Not identifiable in cuneiform sources probably only comes into the west after the eastward extension of the Achaemenid Empire. Apparently unknown to the Romans prior to the Mithridatic Wars (88–63 B. C.). This fact and the name perseis, i.e. "a Persian" (which is the origin of the western European words for peach) suggest that it was not widely known in Asia Minor until the 5th cent. B. C. and that "Perseis" was what it was called locally. See "apricot" above.


1.13. Pear (Pyrus communis L.) (cf. B. § 1.16). kamissarum, identified on the basis of words in Aramaic and Arabic. In the lexical series Hh. (III 13 f. = MSL 5, 96) the “Sumerian” equivalent ḫaṣṣur-kur-ra, “apple of the uplands,” may be artificial (i.e., post-Sumerian), and the graph ḫaṣṣir UD cannot be interpreted with certainty. Identification with pear is suggested by the close link between apple and quince in the few texts which contain lists of two or more fruit(trees), however, a puzzling section of Hh. III 126–132 = MSL 5, 103) that is sandwiched in between words for incense (trees) and nut trees treats both pear (kamissarum) and quince (suppurgilla) as synonyms of sallaru / šenurr. The latter term begins to turn up in lowland texts from Ur III on. If the Hh. III text is valid (i.e., not corrupt), this may mean that sallaru is yet another word for pear or perhaps dialectical, a distinct variety, or deriving from a different language from kamissarum (cf. also below under plum). None of these words appear to be either Sumerian or Semitic. It is possible that the wild Syrian pear (Pyrus syriaca) is represented in one of the words associated with kamissarum in Hh. III, however, though reportedly eaten in modern times by the mountain people, it is not likely to have been cultivated for fruit in ancient times. Part of the ambivalence in the lexical must be attributed to limited cultivation in ancient Mesopotamia (only in the north), and it is not commonly cultivated in modern Iraq.

Batsch. Flora of Iraq IV 1997, 126–132 = MSL 5, 103). This would fit with the Sumerian terms šenurr and big šenurr, since the fruit of the cherry plum is normally not more than half the size of the domestic plum. Unfortunately, Hh. (III 128–132 = MSL 5, 103) also equates big šenurr, šennur UD, and šennur of the uplands with “pear” (kamissarum), and the upland šennur is also equated with quince (suppurgilla) and marmahhu (meaning unknown), and the latter is also equated with big šenurr. One is therefore faced with two equally unpalatable alternatives: either the text of Hh. is corrupt or, what is inherently more likely, a single ancient name can, like the modern names, dialectically denote different species or the same species could be denoted by different names. For example, the name ḫaṣṣur and ḫaṣṣir both denote the cherry plum (E. cerasifera), the former being the red-purple, the latter the green.


3.15. Pomegranate (Punica granatum L.) (cf. B. § 3.16). Calluna, turma, lurrum, limu / mu-ur-ru ma, ubiquitous, lowlands and uplands. Not attested in Presargonic texts from Lagas, therefore probably introduced into the lowlands in the Akkad-Ur III period. The name apparently derives from some unknown language. Most of the derivatives share the consonants r n, some with m, as in Arabic rumman. Hh. III 136–139 = MSL 5, 107 f. = MSL 9, 161) runs eleven entries that seem to focus primarily on taste (sweet, sour, etc.), but the Sumerian ḫaṣṣur is normally restoration of this entry than the ḫaṣṣur, šennur ḫaṣṣir UD, which is also attested by CAD s. v. angalā. A similar ambivalence is reflected in the equations šennur = sallaru and šennur-gal (big šennuar = ḫabбу). As Postgate has noted (BSA 3, 129 f.), ḫabbu, which must be the Arabic counterpart to ḫabbu, denotes “peach” in modern Iraqi and Egyptian but “plum” in Syrian. However, since there is no evidence for peach in cuneiform, it is possible — though by no means certain — that sallaru and ḫabbu denote respectively the cherry plum (Punica cerasifera) and the domesticated plum (Punica domestica L.). This would fit with the Sumerian terms šennur and big šennur, since the fruit of the cherry plum is normally not more than half the size of the domestic plum. Unfortunately, Hh. (III 128–132 = MSL 5, 103) also equates big šenurr, šennur UD, and šennur of the uplands with “pear” (kamissarum), and the upland šennur is also equated with quince (suppurgilla) and marmahhu (meaning unknown), and the latter is also equated with big šenurr. One is therefore faced with two equally unpalatable alternatives: either the text of Hh. is corrupt or, what is inherently more likely, a single ancient name can, like the modern names, dialectically denote different species or the same species could be denoted by different names. For example, the name ḫaṣṣur and ḫaṣṣir both denote the cherry plum (E. cerasifera), the former being the red-purple, the latter the green.


3.4. Vegetables. Reasonably certain are lettuce, cucumbers, garlic, onions, leek, and two or more kinds of legumes. Much of the contextual evidence is Ambivalent, and, species identification is more often than not problematic. S. also Garten, Gewürze, Kuche.

3.4.1. Greens (leafy vegetables). Lactuca sativa L., lettuce, is probably what is meant by bāṣṣiš / bī-15, but there is no way to be certain that this is not as ambivalent as "salad" with regard to species. The green tops of beeks, onions, and garlic were probably eaten, as seen to be implied by kisumu, "cut", applied to a number of vegetables with green tops, including what is probably turnip (latta), but cuneiform sources are cautious about permissible combinations. One should probably assume that the young green tops of sorts like coriander (kulusiššara / še-li), a delicious but pungent green now known widely under the name "cilantro", were also eaten. Among the Cruciferae, Lepidium (presumably sattum, but there are a number of closely related native species: Flora of Iraq IV 1980, 886–891, identified with sabiš / załi-li, seems likely. This is the "pruss" (Germ. "Kresse") that appears in

Chapter 9: Obst und Gemüse. A I


4.1. Greens (leafy vegetables). Lactuca sativa L., lettuce, is probably what is meant by bāṣṣiš / bī-15, but there is no way to be certain that this is not as ambivalent as “salad” with regard to species. The green tops of beeks, onions, and garlic were probably eaten, as seen to be implied by kisumu, “cut”, applied to a number of vegetables with green tops, including what is probably turnip (latta), but cuneiform sources are cautious about permissible combinations. One should probably assume that the young green tops of sorts like coriander (kulusiššara / še-li), a delicious but pungent green now known widely under the name “cilantro”, were also eaten. Among the Cruciferae, Lepidium (presumably sattum, but there are a number of closely related native species: Flora of Iraq IV 1980, 886–891, identified with sabiš / załi-li, seems likely. This is the “pruss” (Germ. “Kresse”) that appears in
Assyriological literature, a peppery plant that can be eaten green but which seems to have been cultivated primarily for its pepy seeds. The cabbage and mustard genus, *Brassica*, (Flora of Iraq IV/2, 847–853) must also have been known, but none have been identified with absolute certainty. Mustard has been sought in Akkadian *kassu*, like “cress” grown for seed, but *gazi*, the corresponding Sumerian term (or graphic representation) is still troublesome and may refer to two (or more) plants. Moreover, no one is in a position to say whether the Akkadian term would refer to *Brassica nigra* or *Sinapis alba*. Neither cabbage nor any of its closely relatives in the *Brassica oleracea* group is identifiable, but they will not have resembled the modern cultivars closely enough for us to recognize them anyway.

§ 4.2. *Cucurbitaceae* (cf. B. § 2.1.2). In this group the cucumber, *qisās* / *ukuš* pre-
ecably *Cucumis sativus* L., is relatively certain. The Akkadian term seems to denote the cucumber, whereas the Sumerian term is a collective term for all the *Cucurbitaceae* (cf. Guran). The canto-
eloop or sweet/sour melon (*Cucumis melo* L.) is represented by a still occurring wild form (*Cucumis* *sativus* L. var. *indicus*) and, therefore, may be implied by the term “sweet” (*matru* and the Sumerian terms *ukuš*-lal and *ukuš* ku, *ku*, lit. “ syrup *ukuš*” and “sweet *ukuš*” [MSL 10 p. 98, p. 115, MSL 11 p. 127 f.), but if it were an ancient cultivar in Mesopotamia, it is cu-
rious to find so little evidence of it in the ancient Mediterranean. There are around twenty Sumerian and Akkadian names for *Cucurbitaceae*, but it is difficult to distin-
guish species, varieties/cultivars, etc. from names that merely denote characteristics like stage of growth, taste, appearance, etc. Two or more of these names probably de-
note the colocynth (*Citrullus colocynthis* (L.) Schrad., perhaps *tigila* and the squint-
ing cucumber (*Ecballium elatum* (L.) A. Rich), but these two are inedible. It has gar-
nered a generally assumed that “bitter” in Akk./Sum. denotes inedible species, but un-
fortunately, that too is not necessarily true, because, under certain circumstances (age, drought, temperature, etc.), the cultivated cucumber can also be quite bitter, or, on the other hand, rather sweet. Other species that may lurk in these names are the bottle gourd (*Lagenaria siceraria* (Molina) Standl.) and the *luffa* gourds (*Luffa acutangula* (L.) Roxb.). The latter two are edible when young, but the first is thought to be of African origin, and the latter two of tropical and Indian origin respectively. We have as yet no clear evidence for the watermelon (*Citrullus lan-
atus* (Thumb.) Matsum./Nakai), which may not have arrived in the ancient Near East from its putative south African homeland. In any case, given the rather unique charac-
ter of the watermelon and the large role played by it in modern Iraq—where, with ir-
rigation, it flourishes—it would be rather surprising not to be able to recognize it in the economic texts. The ancient history of the cultivated *Cucurbitaceae* is not well under-
stood, and one should keep in mind that the cucumber (*Cucumis sativus*), which cu-
rently bore those names without question, is to be represented by *qisās* / *ukuš* and which occurs widely in texts from the latter half of the 3rd mill. on, is thought to be from India or Central Asia. Most of the cultivated squashes and pumpkins are from the New World (e.g., *Cucurbita pepo*, *C. moschata*, *C. maxima*).


§ 4.3. Roots, bulbs, etc. (cf. B. § 2.2). Among these, turnips (*Brassica rapa* L. sub-
*rapa*), *laptu* / *lub*-, and radishes (*Raphanus sativus* L.), *pojlu* / *Sum.*? is re-
certain, beet (*Beta vulgaris* L.), *sumutta* / *sum-dar* = less so. That these vegetables would have looked very similar to the var-
ious familiar to us is not likely when one con-
siders the enormous variation in mod-
ern cultivars, somewhat less so. Among the bulbs (lilly family), garlic (*Allium sativum*), *sumu* / *sum*, onion (*Allium cepa* L.), *samukku*, *samusukku* / *sum-sikil*, and leek (*Allium porrum*), *karasu* / *ga-ra*-, seem quite certain. Among *Allium* species one also expects chives (*Allium schoenoprasum* L.), but, given the rather complex terminol-
ogy attested for these species and the lim-
nited nature of the contextual evidence, it is often impossible to distinguish species from cultivars. On the base of growth, e.g., chive from, let us say, young leeks or green on-
ions (scallions) or even young garlic. In any case, garlic played a central role in ve-
tege culture. It is the basic name for “bul-
ous” plant in Sumerian, and the sign serves to denote bulbs even outside the lily family, as in *andabum*, perhaps a crocus, of which two edible species are native in Iraq (*Crocus biflorus* and *C. cancellatus*; Flora of Iraq VIII 226–232). That garlic was re-
garded as the primary bulb vegetable is probably because it is, by far, the least perish-
able of the *Allium* crops. The cloves tend to dry out rather than rot like onions, and the loss of a single clove does not mean loss of the whole bulb, as with onions or other juicy *Allium* species. And, it is also for this reason that garlic cloves are represented in the archaeobotanical record.


§ 4.4. Beans, peas and other legumes (cf. B. § 2.4). Identification of species still poses some scien-
tific problems. There are around 200 species of peas/beans and lentils. In the Achaemenid period, it is now clear that the most likely is *vicia* and *pisum*, the latter from Indo-
e canian texts, the word *lentil* clearly denotes *Lens culinaris* Medik.; Flora of Iraq III 544–548, chickpeas (*Cicer arietinum* L.: Flora of Iraq III 501–512), broad beans (*Vicia faba* L.: Flora of Iraq III 542–544), and cowpeas (*Pisum sati-
num* L.: Flora of Iraq III 573–578). How-
ever, bearing in mind the case of the cu-
vaceous with its putative Indian-Central Asian origin, we cannot exclude *Vigna ungu-

tata* (L.) Walp (Flora of Iraq III 581 f.), known variously as cowpeas and in Amer-
ica under a number of variety names (black eyes, crowders, purple hulls) and in Iraq as *linba*, a popular summer grown vegetable, nor *Vigna radiata* (L.) R. Wilczek (Flora of Iraq III), known as green gram or mung beans and in Iraq as *mas*. The former is of African or Indian origin, the latter from the *in-
dia* and has not been identified in any an-
cient sources, but, like the cucumber, the precise era in which they were introduced

into the Near East remains unclear, and, if mung beans seem rather unlikely, the same cannot be said of cowpeas, for which we must await more archaeobotanical evi-
dence. If archaeobotanical evidence indi-
cates its presence in the ancient Near East, it is likely to be difficult to identify lexicographi-
"..."
Ost und Gemüse. A. II

3. Obst und Gemüse.

Die Seitenzahlen beziehen sich auf Hoffner 1974, 95-111.

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| Obst und Obstanbaume

3.2. Quellen.

3.3.2. Quellen.

3. Der Text zur Wiederherstellung des Königes Gittā Isbara in Kizzuwatna gibt ebenfalls Aufschluß über Baum-, Obst- und Obstanpflanzungen (KUB 40, 2; bearb. als Bo. 4889 bei A. Goetze, Kizzuwatna [1940] 61-74, s. a. O. Olbaum B. 2, 2). Obst- und Obstanpflanzungen stellen einen großen Wert dar (s. O. Olbaum B. 2), was in den Hethitischen Gesetzen bestätigt wird. Es wurde Buße bei Baumfrevel von Stor- keller 1987, 741

4. Obst- und Obstanpflanzungen stellten einen großen Wert dar (s. O. Olbaum B. 2), was in den Hethitischen Gesetzen bestätigt wird. Es wurde Buße bei Baumfrevel von Stor- keller 1987, 741

5. Mythologische Texte, Beschworungsrituale.
### OBST UND GEMÜSE. A. II

#### Gemüse und Kräuter

<table>
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<tr>
<th>Deutsch</th>
<th>Heth. Hurr.</th>
<th>Sumeroogramm</th>
<th>Akkadisch</th>
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#### Obst auf der Ölwindung

| Olive s. Ol. Olbaum* | | | | | |
| Sosam | | | | | |

### § 4. Bestimmung.

Nach den Untersuchungen in den mesoopotamischen Quellen (ob Obst und Gemüse A. I. in Mesoopotamien) bleibt zu fragen, wie weit unsere Übersetzungen im Hethitischen überhaupt zutreffen.

Wenn das dort unter Aprikose (Apricot § 3.3), Kirsche (Cherry § 3.4), Mispel (Medlar § 3.9) und Pfirsich (Peach § 3.12) gesagt wurde, dann scheint diese Übersetzung für die Hethitischen Quellen der vorlängigen Ansicht zu entsprechen, dass man bei den Reihen wie eHA.SHUR, eHASHUR.KUR.RA und eSE.NNUR (z. B. in den heth. Gesetzen oder in den Landaufzeichnungen) ein wahrscheinlichsten „Apfel, Birne und Pflaume“ zu überlassen hat, wobei man die Pflaumen nur mit Vorbehalt einbeziehen kann. Dies würde dann auch für die beiden Obstsorten Feige (ePES) und Granatapfel (eNUUR.MA) gelten, über deren Identität in den mesoopotamischen Quellen kein Zweifel besteht.

Bei den Gemüsearten steht es noch schwieriger. Denn während die heth. (hett., hurr., luv. und pal.) Aussprache für Apfel, Granatapfel und Pflaume(!) durch syllabische Schreibungen bekannt ist, werden einige andere Obst-, aber vor allem die Gemüsearten durchwegs sumerographisch wiedergegeben. Das würde bedeuten: Wenn Unsicherheit über die Interpretation solcher Wortzeichen schon in mesoopotamischen Quellen besteht, überträgt sich diese Unsicherheit erst recht auf das Hethitische. Wenn man zwischen Kichererbsen (Cicer arietinum), Erbsen (Pisum sativum), und Sau- bohnen/Brennbohnen (Vicia faba) nicht klar unterscheidet, so gilt das auch für die heth. Texte.

Obst und Gemüse (Fruits and Vegetables).


Bota

G. Frantz-Stahle

nately we can draw on evidence from ex- cavations in surrounding regions to map the arrival of new crops from Europe or Central Asia. Where a crop is found in the Levant, Turkey or Iran it can usually be as- sumed that it would have been available (if not cultivated) in Mesopotamia. Equally, absence (as with so many of the fruits) from these regions supports the view that the plants were also absent from Mesopotamia.


§ 4.1. Apple (Malus pumila Mill.) (cf. A. § 3). Crab apples (Malus sylvestris (L.) Mill.) were found in an EB tomb in the Royal Cemetery at Ur, Iraq, dried, cut in half and threaded on string. These are either import means of wild apples from Turkey or northern Iran, or might derive from lo- cal cultivation of wild apples, which are not native to Iraq. Domesticated apple (Malus pumila) is now known to have been domesticated from wild populations in central Asia and then to have spread westwards. The date of its arrival in the Near East is unknown, but may be as late as the classical period. The scarcity of apple seeds at Near Eastern or Egyptian sites sits uneas- ily with the identification of baalbauhaz as an apple. Apple cultivation in southern Iraq is not unusual, but until recently it was assumed that most of the fruits such as orange, apple buds require low winter temperatures to break bud rest. Although cultivated apples do occur today, in the northern Iraq, “neither tree or fruit attains great size” (Flora of Iraq II [1966] 110). Neither the archaeological nor eco- logical evidence are consistent with large-scale cultivation of apples in ancient Iraq.

§ 4.2. Apricot (Prunus armeniaca L.) (cf. A. § 3). Taken into cultivation in central Asia; like domesticated apple archaeological evidence suggests a late arrival to the Near East from the Middle-Eastern context. In Mesopotamian records, Iron Age (Urtarian) from Basram, Iran, alone the absence of apricot stones from other Iron Age sites suggests it did not spread to Mesopotamia and the Levant un- til later.

§ 4.3. Cherry (cf. A. § 3.4). Sweet cherry (Prunus avium [L.] L.) and sour cherry (P. cerasus L.) were probably taken into cultivation in Europe, perhaps in the Class- ical period. Malehak (Prunus mahaleb (L.) Mill.) is a wild tree that grows in northern Iraq. Its fruits are usually reported as inedible, but the pulp and the roasted kernels are used for flavouring. There are no arch- aeobotanical finds of cherry from the Near East, apart from Prunus mahaleb at EB Harimán at Turbozistan.

§ 4.4. Christ's thorn (Ziziphus spina- christi (L.) Willd.). Seeds of this wild tree are common at sites in the Arabian Peninsula and occasional in the Levant and Egypt. The fruits are eaten and might have been an item of trade in Mesopotamia.

§ 4.5. Citron (Citrus medica L.). Introdu- ced to the Near East by the Hellenistic period (4th cent. B.C.); one isolated archaeobotanical record from Hala Sultan Tekke, Cyprus, LB 1200–1200 B.C. One un- confirmed find from Nippur.


§ 5. Date (Phoenix dactylifera L.) (cf. A. § 3). Early records are from around the Arabian Gulf, including Dalma Island, U. A. E.; and ‘Ouqil, Iraq; 5th millennium. B. C.; then at many sites in the Levant and Mesopotamia, e.g., in Iraq Ur Royal Cem- etery, st. Uruk, LB, Nimrud (Iron Age). Archaeological evidence for uses includes a Bronze Age (1750 B. C.) madbasa for ex- tracting date honey at Failaka, Kuwait.


§ 6. Russian olive, Oleaster (Elaeagnus angustifolia L.). Edible, olive-shaped fruits. No archaeobotanical records of fruit, and probably not native to Iraq. However wood remains have been iden- tified from an undated context at Uruk, Iraq (Kat. 1939) and from Neo-Assyrian Tall Seh Hamad, Syria.

§ 7. Fig (Ficus carica L.) (cf. A. § 3).6. Common at Near Eastern sites from Neo-
lithic period, but probably not domesticated until the fourth mill. B. C. Present at Mesopotamian sites, e.g., Abu Salabih (EB), Nimrud (Iron Age). Although archaeobotanical remains are sometimes identified as sycomore fig (Ficus sycomorus L.), this is unlikely because this species was mainly grown in Egypt.

§ 1.9. Grape (Vitis vinifera L.) (cf. A. § 3.7). Wild grape seeds are occasional at Neolithic and Chalcolithic sites; slender seeds with long beaks, typical of domesticated grapes are common from the EB onwards in the Near East and Egypt. Claims of chemical evidence for wine making (and, thus, probable domestication) in the Chalcolithic period are controversial.


§ 1.10. Hawthorn (Crataegus L.) (cf. A. § 3.8). A wild fruit, common at Neolithic sites in Turkey and occasionally found at later sites, e.g., Tall al-Der, Iraq, c.1650 B. C.

§ 1.11. Hazelnut (Corylus avellana L.) (cf. A. § 3.9). No archaeological records from the Near East. Thought to have originated in Transcaucasia or Iran, the first textual evidence is from the classical period and cultivation has been largely restricted to Europe.

§ 1.12. Mulberry (Morus nigra L.; common or black m.; Morus alba L.; white m.) (cf. A. § 3.10). Introduced from central or south Asia; one archaeobotanical record for seed of M. nigra from Samos, Greece, 7 th cent. B. C. Earlier introduction is suggested by wool finds from EB Urak, Iraq, (Kat. 1914) and Iron Age Pella, Jordan.

§ 1.14. Olive (Olea europea L.) (cf. A. § 3.11). Probably domesticated in the Levant in the Chalcolithic period. Numerous records from many Near Eastern sites, including in Iraq Tall Taya (Akkadian) and Nimrud (Iron Age).

§ 1.15. Peach (Prunus persica (L.) Batsch) (cf. A. § 3.12). Taken into cultivation in central Asia. Present at Samos, Greece, in the 7th cent. B. C., but other records are post-classical: Byzantine (8th cent. A. D.) Upper Zohar, Israel, and Sasanian Merv, Turkmenistan (6-7th cent. A. D.).

§ 1.16. Pear (Pyrus communis L.) (cf. A. § 3.13). Wild pears (Pyrus syriaca Boss.) are occasional on prehistoric sites, though not yet found in Mesopotamia. They are common wild plants in northern Iraq. In Persia wild pears were grown into flour in the 19th cent., while in Turkey today they are eaten, like quince and medlar, after boiling. Wild pears seem an unlikely candidate for trade to southern Mesopotamia. Pears may have been domesticated in Europe, by the classical period.

§ 1.17. Plum (Prunus) (cf. A. § 3.14). The little archaeobotanical evidence for cultivated plum (Prunus domestica L.) is from classical period Europe. The earliest definite record from the Near East is of European plum (domestica group) and damson (musaica group) from Iran (c. 1550 A. D.) Qa ’qat, Al Majd, Syria. As with apple and pear, the absence of archaeobotanical data suggests plums of any species were not cultivated in the ancient Near East.

§ 1.18. Pomegranate (Punica granatum L.) (cf. A. § 3.15). Grown in the Levant from the EB onwards. Only rarely found at sites in Iraq (Nimrud, Iron Age) but today cultivated throughout the country, and likely to have been cultivated in the past.

§ 1.19. Quince (Cydonia oblonga Miller) (cf. A. § 3.16). Domesticated in Caucausia or central Asia, usually thought to be a late arrival in the Near East, perhaps in the classical period. One archaeobotanical record, from Iron Age Hasanlu, Iran, but incompletely published and in need of dating.

§ 2. Vegetables


§ 2.1.1. Lettuce (Lactuca sativa L.). Probably grown in ancient Egypt, based on artistic and textual evidence only; no other records until the classical period.

§ 2.1.2. Cress (Lepidium sativum L.). Cress seeds were found in the tomb of Tutankhamun. Probably domesticated in the Near East, but no archaeobotanical records.

§ 2.2. Cucurbitaceae

§ 2.2.1. Cucumis melo (Cucumis sativus L. and Cucumis melo L.) (cf. A. § 4.2). Seeds of the two species are identical in appearance. Archaeobotanical identifications to one species must therefore be treated as uncertain. The dating of numerous uncharred seeds from EB Sahri Sohta, Iran, requires confirmation. The earliest reliable records are from Iron Age Nimrud and Samos. Evidence for melon in Pharaonic Egypt is stronger than for cucumber.

§ 2.2.2. Watermelon (Citrullus lanatus) (Thunb. Matsum/Nakai). Abundant archaeobotanical remains are known from second millennium B. C. Egypt, but not found in the ancient Near East.

§ 2.3. Roots, bulbs etc. (cf. A. § 4.3).

§ 2.3.1. Garlic (Allium sativum L.). In cultivation at least from the 2nd millennium B. C., e.g., 350 cloves from Tall al-Der, Iraq, c.1650 B. C. Onion (Allium cepa L.) is abundantly documented from 2nd millennium B. C. Egypt.

§ 2.3.2. Radish (Raphanus sativus L.). Radish is thought to have been independently domesticated in Europe and in southeast Asia. Evidence for radish in ancient Egypt is unclear, and it is not well attested as a crop in the Mediterranean until the classical period. No radish seeds have been found in the ancient Near East.

§ 2.3.3. Turnip (Brassica rapa L. sp. rapa). Like radish, no secure records before the classical period. A root fragment has been identified from 15th cent. Byzantine Sparta, Greece.

§ 2.4. Pulses (cf. A. § 4.4).

§ 2.4.1. Chickpea (Cicer arietinum L.), Lentil (Lens culinaris Medik.), Pea (Pisum sativum L.). Common in the Near East, including Mesopotamia, from the Neolithic period. Chickpea appears more commonly in northern Mesopotamia, in the south, lentils are widely distributed.

§ 2.4.2. Horsebean (Vicia faba L.). Most pre-Bronze Age records are of small numbers of seeds and are of doubtful reliability, as several wild species have seeds of similar shape. The first certain records of horsebean as a crop are from the 5th millennium B. C., e.g., at 'Arad, Israel, later occurrences are sporadic, e.g., Horbat Rōs Zayit, Iron Age, Israel. Records from Mesopotamia are of few seeds and are thus ambiguous, except for a large store from Endjemat, Iran, probably of Hellenistic or Roman age. Large seeded forms (broad bean) appear to be a very recent (Islamic?) form.

§ 2.4.3. Cowpea (Vigna unguiculata (L.) Walp). Domesticated in Africa, taken to India during the second millennium B. C., possibly reached the Mediterranean in classical times, and the Near East in the Islamic period. Seeds have been found at Tall Guffan (1000 A. D.) and Qaryat al Midd, Israel, (c.1550 A. D.), Syria. A variety of other beans are known from 2nd millennium India, including black gram (Vigna mungo (L.) Hepper), green gram or mung (V. radiata (L.) R. Wilczek), and hyacinth bean (Lathyrus purpureus (L.) Sweet). Although all are cultivated today in Iraq, we can be reasonably certain that none were cultivated or consumed in ancient Mesopotamia.

§ 2.4.4. Grass pea (Lathyrus sativus L.). Probably first domesticated in Neolithic southeast Europe. Finds of just a few seeds may be of closely related wild species. Definite finds in the Near East include Tall al-Sweyhat, Syria, EB (c. 2200 B. C.); Hadidi,
O’CALLAGHAN - ODA (HYDE)

Ökologie. Das Wissen um ökologische Zusammenhänge beruhte in Mesopotamien auf Erfahrung. Es wurde jedoch nie systematisiert. Die drei Faktoren Boden, Wasser und Klima bestimmten weitestgehend Land- und Viehwirtschaft in den drei dauerhaften Tierarten:


Die Bauern entwickelten vorbewusste Anbaumethoden:


O’Callaghan, Roger Timothy. Historian of the ancient Near East. Born in New York City October 13, 1932, died in a traffic mishap near Baghdad on March 26, 1954. He entered the Jesuit order in 1927 and was ordained a priest in 1938. He studied ancient Near Eastern languages, history, and archaeology under W. F. Albright at Johns Hopkins University, where he obtained his doctorate, followed by post-doctoral studies at the University of Chicago 1945-46. He taught philosophy at Fordham University (1943-42) and ancient Near Eastern history and archaeology at the Pontifical Biblical Institute, Rome (1946-52). He participated in excavations at Byblos, Tall Fara (near Nabiis), and Nippur. Author of Aram Naharaim (Arachosia) (1946), a study of the history of ancient Syria between 2300 and 600 B.C., and a series of articles, particularly on Hurrian and Phoenician subjects.


J. Brinkman

Oda (Hyde) & Uda.

Syria: (MB, 1900-1500 B.C.) and Bāzīmān-Irān (Old Babylonian, 1900-1700 B.C.). Sometimes mistakenly said to be toxic, in fact safe for human consumption if well cooked, and sold today in Iraq for soup making. An important food pulse in India.


§ 2.4.4. Bitter vetch (Vicia ervilia L. Wild.). Common on archaeological sites in Turkey from the Neolithic period, uncommon in Mesopotamia. Present at EB IIb Tell Qasem and Iron Age Nimrud, cultivation perhaps then, as referred to in the text, rather than within our text, nourished equipment for use, as well as a food for humans. Like green pea, toxic unless cooked.

§ 2.4.6. Common vetch (Vicia sativa L.). A Mediterranean, Eastern European and Western Asian type. Seeds are similar to many other wild related, no certain archaeological records. Possibly a recent domesticate.


Ein frühes ökologisches Bewusstsein zeigt sich z. B. auch in Briefen und literarischen Texten; denn Felder, Weidegebiete, Kanäle, der Euphrat oder Wasser werden als „Lebensgrundlage“ (wörtlich „Lebensodem“) des Landes bezeichnet (CAD N/A, 302 ff. b. 2).

Ackerbau- und Ackerwirtschaft in sum: Zeit*; Landwirtschaft* bes. §§ 2-4, 6-8, §§ 12.