ASPECTS OF SUMERIAN CIVILIZATION DURING THE THIRD DYNASTY OF UR.

WITH EVIDENCE FROM TABLETS IN THE JOHN RYLANDS LIBRARY.

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III.—RIVERS AND CANALS.

The land of Sumer was the gift of the rivers Euphrates and Tigris. Possibly a native, a contemporary of Ur III (circa 2300 B.C.), would not have appreciated the fact. He might even have violently denied it, pointing to all that the rivers took away when in flood, and, more important, to the labour required to control the river that men might live. A contemporary king would have said that one of his main duties as tenant of the gods was to defend the land and the people from a two-fold peril: the peril of too much and the peril of too little water. And all the Sumerian folk must have been conscious of one of the lessons of the national poem, "Enuma Elish"; namely, that the land on which men lived was not so much what the water gave as what the water gave up; after a violent struggle. Nevertheless it is true that the land of Sumer was formed by the alluvial deposits of the rivers Euphrates and Tigris which oppose to the sea some of the burden which they have brought down from the Armenian hill country in which they rise. A delta of mud and clay and sand appears in place of the sea which has been forced back; a process still going on to the extent, it is said, of a mile and a half every hundred years.

One of the primary needs of man is food. Hence one of the primary occupations of man is the production of foodstuffs. For this work of production the Sumerian had land of excellent quality. He had too, in the rivers and their branches, a water
supply that was, in quantity, adequate. But it was not constant and it was not "economically" distributed. It was not constant: the Euphrates on or near which the Sumerian lived, was too full during its brief flood season, and not full enough during the long dry season. It was not economically distributed by nature: it was concentrated on or about the river and did not in the natural course, reach the fields lying out in the "desert."

To effect constant supply and economical distribution of the river water necessary for fertilization of potentially good land, was a basic occupation of the Sumerians. It was effected by means of canals and dykes which led the water from the river by means of reservoirs and by ponds which stored the water against the dry season. Neglect would mean death to vegetation, cattle and men by drought and disease. Whenever in human history there has been neglect, ruin and desolation have resulted. To-day Iraq, where it is not marsh, is a net-work of canals; the greater number disused, choked, parched and crumbling; a witness to an earlier industry and a later indifference. The presence of British irrigation officers in Iraq since the war has been described as the first-fruits of British occupation. But there were irrigation officers in Iraq 5000 years ago, tackling the same problems for the same end: food. The Sumerians succeeded and have left us records of their work.

It must be stated at the outset that the body of evidence is not large. It is direct and indirect. The indirect evidence is this: masses of records from each town excavated, show that the yield of land under cultivation was very great, and consistently so. Such plentiful yield affords good evidence of efficient irrigation and the diligent care of waterways. The direct evidence is scanty, i.e. we have comparatively few actual records of which the matter is canals and irrigation work. The explanation of such lack of evidence may be of this sort: (i) the matter of the records is the unusual, the new; so that the making of a new canal would be recorded, but the regular care of an existing one would not; and (ii) the character of the records is an official character; they are, so to say, municipal documents; and as such they are not concerned to record the work done by a private owner and his men on a canal, or a portion
of a canal which supplies his private field, and is therefore his private responsibility.

Yet actual record does exist. Some of it is to be read on the Sumerian tablets of the John Rylands Collection. The larger part is scattered among the large quantities of tablets in other collections. All of it, or all that is known to me, from the period of Ur III, has been used for the purposes of this article and almost all of it is embodied in the text or supplied in the references.

Actual record of our time and for our purpose, is of three kinds: the royal inscriptions, the year names, and the data in the body of the tablets called "Temple Records." From the time of the Third Dynasty of Ur we have one piece of each of the first two kinds of evidence. An inscription\(^1\) of Ur Nammu, the first king of Ur III, states that he dug "the canal bearing the name ‘Nannargugal,’ and the boundary canal." The tablet is from Lagash and the boundary referred to is probably that between Lagash and its neighbour Umma. Of the second kind of evidence, year names, we have the detail\(^2\) that the construction of the Nintu canal gave the official name to one of the years of the Ur period. It is as yet impossible to say to which of the five reigns the year belongs; probably to the reign of Ur Nammu, the first, or of Ibi Sin, the last king of the dynasty.

A study of the royal inscriptions of the Ur kings shows that there is far less record of the construction of canals during their reigns than during the reigns of their predecessors; for the obvious reason that the work of the earlier kings had survived and was adequate for national needs. It may be, however, that the inscriptions found at Ur during the post-war excavations will reveal much local activity in this respect.

The rest of this article is based on the third class of evidence, "Temple Records."

It is said that sailors are accustomed to speak of the water by which they approach a great town under the name of that town. Thus the Yare is Norwich River and the Lower Thames is the River of London. There is something of this in the name of the Euphrates as written by the Sumerians. The spoken name was Buranum, but the ideogram by which they

\(^1\) SAK., p. 188, i).

\(^2\) RTC. 270; ITT., iv. 8066.
wrote the name was "The River of Sippar." The implication of the ideogram is that the river gave access to Sippar. Perhaps the ideogram dates from the time when Sippar was the most important southerly terminal of the Euphrates before it poured itself into the sea. In contrast to this, no place-name enters into the composition of the ideogram used to express the Tigris. This may be explained by the fact that none of the Sumerian cities were situated on the Tigris. The Sumerian name for the Tigris was Idigna which means flowing, powerful, vehement; characteristics of the Tigris in contrast to the slower and more manageable Euphrates.

The two rivers are seldom mentioned on the records of Ur III. We read of the bank of the Tigris and of the Euphrates in connection with the carrying of a stele or statue of Sulgi to the great feast; of the temple of Enki, lord of the earth, on the bank of the Tigris; of barley, sesame, pomegranates on the bank of the Tigris. A badly preserved tablet shows traces of ka id-Idigna, i.e. the mouth of the river Tigris; and another tablet has the item that ten men were employed at the u of the Tigris. The meaning of u in this context is uncertain. Deimel suggests, with a query, "eine Art Bewassungsgraben" and quotes instances of its use, similar to this context, from earlier documents.

It would be hazardous to argue that because the Euphrates is mentioned but once, the capital sites of the kingdom of Ur were not on the Euphrates but on some branch of it. Nor is the evidence of modern travellers decisive. They state that they have been able to follow old canals through and past the towns of Nippur, Umma and Lagash, from which our tablets have come. Thus Peters writes of Nippur "situated in the alluvial region . . . at the north-east of the Afeech marshes which are formed by the overflow of the Euphrates . . . (it) lies about 100 miles east of south of Baghdad. The Shatt en-Lil runs through the mounds." And of Yokha, i.e. the ancient Umma and the mounds 15 minutes s.w. of Yokha . . . "evidently an important centre of population once existed here.

Close to these mounds runs an old canal bed said by the Arabs to be the Shatt en-Lil, or ancient Nil canal. This . . . left the Euphrates at Babylon . . . One branch of the canal according to the statements of ancient writers, connected the Euphrates with the Tigris. Another branch ran southward through Nippur, and this we were able to trace past Bismya and Yokha until it rejoined the Euphrates at Warka, the ancient Erech.”¹ And of Tello, the ancient Lagash, “situated on the southern shore of the Shatt el-Hai . . . a great ship canal which from time immemorial has connected the Tigris with the Euphrates.”² But others mark Tello on the Shatt en-Nil.

It is clear that the modern mounds of ancient sites are on old waterways. But the problem is what is the relation of those old waterways to the ancient course of the Euphrates. Some regard them as remains of ancient canals or branches of the Euphrates. Others regard them as the actual course of the river ages ago. There seems to be no decisive evidence in the matter from ancient records. To-day, at any rate, Umma, for example, is about sixty kilometers, as a bird flies, from the modern course of the Euphrates. Peters remarked “at the present time not a drop of water within three miles of Yokha even in the season of the inundations.”

We may divide the waterways, other than the Euphrates and Tigris, according to their names, into those named by names of towns, those named by names of gods, and the rest named by names of persons or by some, and to us usually obscure title.

The following are the canals named by names of places:—

The canal of A-suhur town (id A-suhur-ki).³
The canal of Girsu (id Gir-su-ki), a suburb of Lagash.⁴
The canal of Ibla town (id Ib-la-ki).⁵
The canal of Sila-la town (id Sila-la-ki).⁶
The Canal of Umma (id-da Giš. Uh-ki).⁷

³ *ITT.*, III. 6431 (dug by Ur Nina, cp. SAK. p. 4, c. 3 : 7).
⁵ *An(alecta) Orientalia*, I. 88 : 286.
⁶ J(ohn) R(ylands), 625, 712 ; Chiera STA. 86, 162 ; *An. Or.* I. 144 ; *Orientalia*, nos. 47-49. 151, 337 : 15, 500 : 124 ; *Umma*, 65 ; STD. 1.
⁷ STD. 266.
The canal that goes to Nina town (id Nina-ki-šu gin).\(^1\)

Of the towns from which our tablets come, Umma alone occurs in canal names, though Girsu and Nina were part of Lagash. Two\(^2\) Rylands tablets refer to the "wharf of Umma" (kar Gis. Uh.-ki), and an unpublished Harvard tablet\(^3\) reads "from the wharf of Umma." Another tablet\(^4\) records shiploads of corn going from the town of A-ka-sila to the mouth (ka) of the canal of Umma.

One item in connection with the Girsu canal deserves special attention. A number of Umma tablets,\(^5\) but no Lagash tablets, have the phrase "AN. ZA. QAR id-Gir-su-ki." An. za. qar has been treated as a name of a god and as the name of a person. It is, in fact, neither. It is the Sumerian word for the semitic dimtu, a pillar or a tower, but these words do not convey all that the word stood for in the Sumerian mind, and all that is suggested by the context in which the word stands on our tablets. We may consider two tablets in the Rylands collection.\(^6\)

The first records rations of beer, barley, meal, sheep, butter, fats, reeds, for the courriers in (šā) the AN. ZA. QAR of the Girsu canal. A few of the texts mentioned above are similar.

The second records animals for the house of the couriers (ē-rim) of the AN. ZA. QAR of the Girsu canal.

From these tablets it is clear that the AN. ZA. QAR was populated and that it included a special building for couriers, police.

Further light on the dimtu is thrown by a letter of Hammurabi's time, where it is said that a certain Lugatum has removed his oxen to dimtu for field work.\(^7\)

All this is in line with what Mr. Gadd has written concerning dimtu in his study of Kirkuk tablets.\(^8\) "A dimtu signifies a commune or village, since (on the Kirkuk tablets) we hear of houses standing upon it." He describes a New-Babylonian (?)

\(^1\) ITT., II. 702; IV. 7712; Reisner TU. 111 : 9, 152, 1 : 16; Hussey ST., II. 150.
\(^2\) JR. 618, 630.
\(^3\) STD. 266.
\(^5\) JR. 871, III., 783 : 7.
\(^6\) Ungnad : Altbabylonische Briefe, 7 : 5-7.
\(^7\) Revue d'Assyriologie, 1926, p. 84, note.
plan of an estate, preserved on a tablet belonging to the University of Pennsylvania. "The land is bounded on one side by a road, and on another by a canal, which also intersects the property and has two wharves upon its banks. . . . At the back of the estate, against the boundary is drawn another small square, marked \( \text{AN. ZA. QAR} \), evidently the site of the watch tower."

It is likely that the \( \text{AN. ZA. QAR} \) of our Umma tablets was like that of the Kirkuk tablets a thousand years later. Certainly such information as we have points that way. The rim would be runners, scouts, on duty at the watch tower, of an estate on the Girsu canal.

The following are the canals named after gods and goddesses of the local pantheon:

- The Bauḫegal canal.¹
- The Ningirsu canal.²
- The Nin-tu canal.³
- The Ninurra canal.⁴
- The canal Šaraḥegal.⁵
- The canal Šetir.⁶
- The canal Šulpae.⁷

The names occur on Lagash and Umma tablets. The two Lagash canals are the canal Bauḫegal and the canal Ningirsu; their names celebrate two deities special to Lagash. The canal name Šaraḥegal is appropriate at Umma where Šara was specially honoured. We may note that four of the gods named, Bau, Šara, Ningirsu and Nintu were gods of agriculture, and therefore suitably connected with the waterways on which local agriculture depended.

Some canals bear the names of the Ur kings Šulgi⁸ and Bur Sin⁹. The names were given during the reign of the king whose name they carried and survived him; e.g. we read of the canal Šulgi in his 46th year and in the 8th of his successor, Bur Sin; and of the canal Bur Sin in his 3rd year and in the 6th of his successor.

One canal is named the Royal canal (id lugal).\(^1\) Hammurabi opened up a canal of the same name; and a canal of that name is known in the land to this day. Ringelmann’s view was that a “Royal Canal” was one of three canals running almost parallel, joining the Euphrates and the Tigris. The name was probably given to many canals.

There is a reference\(^2\) to a canal of the patesi, a sort of viceroy in the provinces. The tablet bears the seal of Ur Negun, the patesi of Umma, and is dated in the 32nd year of the reign of Sulgi. Perhaps the name conveys no more than that the canal ran through his estate.

The names of the remaining canals recorded in this age are:

- Sūḫ-gibil,\(^3\)
- Dul nunuz,\(^4\)
- E. Gir,\(^5\)
- E (ʔ)-mah,\(^6\)
- It-ti,\(^7\)
- Mu-kal-li,\(^8\)
- Nam-ba-ni,\(^9\)
- Sa-la-\(^10\)
- Sul-gi-i-li,\(^11\)
- Ug-dim,\(^12\)
- Ur-\(^4\)Babbar,\(^13\)
- U-sur,\(^14\)
- Za-ri-iq.\(^15\)

Of these names some are certainly the names of persons, two are temple names.

Three waterways are named by the names of fields:

- the canal of the field of Lugalšunirra;\(^16\)
- the canal of the field of E-suḥ-a;\(^17\)
- and the canal of the field of gis-balag.\(^18\)

It seems therefore that canals received the names of the owners of the lands or estates, or of the buildings, or of the fields, through or by which the water flowed.

Canals were divided anatomically into mouth (ka) and tail (kun). But Witzel\(^19\) has pointed out that ka is to be translated sluice or lock. On our tablets ka appears in the following contexts as the destination of shiploads of grain from Umma; and for a species of wood; as the site of a storehouse whence grain was exported, and of a garden (on the Girsu canal); and, finally, male slaves, female slaves and he-dur workers were employed at the canal lock at Umma and Lagash.\(^20\)

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2 An. Or. 7, 184.
4 Ibid. 31:5.
5 STD. 278.
6 HEU. 38.
8 STD. 99:8.
9 Ibid., II. 851.
10 Ibid., IV. 7909.
11 Ibid., III. 6431.
12 Ibid., IV. 7275; TU., 9, 117: vii, xiv.
13 Ibid., II. 766.
14 Ibid., II. 766; III. 5972; TU. 9.
15 Ibid., III. 6431.
17 Ibid., III. 5972.
18 Ibid., Rev. 2.
19 Ibid., III. 6431.
20 Ibid., III. 5972.
21 Ibid., IV. 7275; TU., 9, 117: vii, xiv.
The word *kun,* literally "tail," occurs in three combinations:

(1) *kun id da.*—A Rylands tablet records 9 women workers, who receive 3/30 of a *gur* of grain (as wages), carrying grass from the barrier, or gate (of the lock) (?) (-en-gab-du-ta) to the *kun* of the river, and fill it up with earth (*sahar si-ga*). Elsewhere, it is recorded that 451 women work for a day at the *kun-nun-na*; obviously a special sort of *kun*; and again that 16 men are engaged on the *kun* of the patesi’s canal; and finally, grain from the *kun* and the *giš-ma-nu* field.

(2) *kun zi da,* of the canals Bur Sin, patesi, Namhāni, Subgibil, Ur (?)-sig, (?)-ma-ri-ki, Mara of the *ka* of the canal Magurra, of Tiraš, Agisi, Dub. Ial Babbar-su., Magan-ki; and lastly, *kunzida* unqualified. Everywhere there is talk of work done on the thing.

(3) *id kun,* alone; *id-kun Nina-ki, id-kun-nagar.* This last occurs on a Rylands tablet which records: 113 labourers employed for one day at the canal of the *kun* of craftsmen (*nagar*).

To this class belongs the item *id-Še-tir kun-zi-da gi₄-a.* The literal meaning of *kun* is, as has been said, "tail," used appropriately of that part of a canal into which the water was received. Hence the accepted meaning "tank" or "reservoir," in which water was stored; filled when the canal was at flood and later emptied by water vessels and watering machines. Such a meaning will suit *kun-id-da* and also *kun-zi-da id,* where *zi-da* may be translated "fixed," or "permanent"; but perhaps where *kun-zi-da* is not said of a canal but of a town or district or building, it means the artificially constructed tank apart from the waterways, for the supply of the needs of town, etc. The third phrase *id-kun* is literally "canal of the basin"; hence perhaps the watercourse formed by water drawn off from the reservoir into the fields. Where grain is mentioned in connection

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1 JR. 632. 2 Or. 47-49, 208. 3 An. Or. 7, 184. 4 Or. 47-49, 184. 5 An. Or. 7, 213; ibid. 184; ITT. IV. 7909; STD. 278; An. Or. 1, 44: 16; ibid. 143: 4; Chiera STA. 5, V: 10. 6 Chiera STA.; 5, III; ITT., II. 766; JR. 611; Chiera STA., 2, IV: 28; ibid. 132; An. Or., I. 44: 16. 7 BE. Ser. A, III. 1, no. 84: III. 8 Harvard, 6257 (unpublished), ITT., III. 5111; Chiera STA. 120, JR. 617. 9 An. Or. 1, 193: 6.
with the *kun*, there, probably, the reference is to the area of land in which the reservoir was situated.

An occasional glimpse at canal banks (*gu id*) is given; of men at work there; of the weaving industry on the banks of the canal that goes to Nina town; and the arrival of supplies of grain. Busy days at the wharf (*kar*) are hinted at where the records tell of slaves, male and female, carrying grain from or to the wharf, and of the construction of the wharf of Ninni Erin town; and work at the wharf of Umma. It is interesting that the word for wharf, *kar*, also means tariff; possibly as token to be paid at the quai; some kind of dock or port charges.

A phrase of uncertain meaning occurs on the Ur III tablets, and it may be useful to set down here the contexts in which the phrase occurs. The phrase is *a e-a*. The literal meaning, got by translating the phrase word for word, is easy enough: “water which goes out, or forth.” Here are the various contexts:—

1. 127 bundles of reeds, *a-e-a*, the Girsu canal.
2. 5/145 bundles of reeds, *a-e-a*, the Silala canal.
3. 70 bundles of reeds, *a-e-a*, *Suḫ-gibil dü-a-ka*.
4. 39/42/36 women employed for one day, *a-e-a id du*.
5. 120 carriers, *a-e-a id /// du du-šù*.
6. 76 women weavers (receiving) 3/30 (gur of grain) for one day, *a-e-a ka-tar 4Nin-har-sag-ka*, present at its new bank (*gu-gibil-na gub-ba*).
7. 6 men at work for one day *a-e-a en-gab-du*.
8. 70 *giš il*, *a-e-a*, *a-šà giḫ nun-šù*.
9. 10 women employed for one day, *a-e-a kun-zī-da sa uru lum ma ȗ kun-ši-da id usar gub-ba*. (*usar* is a fence or the like and is used with field words *a-ša* and *gan*).

It is not certain what precisely *a-e-a* means but there are two positive indications. The first is a text from the Agade

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1 ITT., II. 702. (Further general refs. to *gu-id* are included in the refs. to canal names, above, and on Or. 47-49, 189: 3; 371: 5; An. Or., I. 50: 11; ITT., II. 776.)
2 Ibid., II. 3390. (For general refs. to *kar* see canal names, and JR. 756; An. Or. 1, 250: 44; An. Or. 7, 284: 12, 314; Chiera STA. 2, V: 4.)
3 JR. 618, 630.
4 In order of the quotations: (1) Umma, 54; (2) Umma, 65, 59; (3) Umma, 65; (4) An. Or. 7, 297: 7-11; (5) ITT., V. 6890; (6) Or. 47-49, 361; (7) An. Or. 1, 269; (8) ITT., V. 6985; (9) ITT., V. 8235.
period\(^1\) which reads "\(a-e-a\) gi-zi-ta Da-rig uh-ga-šu\); i.e. "from the reed—\(a-e-a\) to D. is 784 gar-du\) (a measure of about 6 metres). The second is that in the Ur tablets just quoted reeds are mentioned on half of them. We may therefore plausibly suggest that the \(a-e-a\) is a streamlet formed by "water flowing out" from canals whose banks have fallen in through neglect or flood. Hereabouts would be favourable place for reed-beds which supplied raw material for all kinds of construction work in the towns.

Another word which may usefully be considered in this article is nag-tar. The word occurs in connection with (i) canals: nag-tar id Sila-la-ki; nag-tar id ĖŠara-he-gal-ka;\(^2\) (ii) ki-gam-ma, dul-Šara, and dūb-lal Babbar;\(^3\) (iii) sahar (earth), e.g. 15 men employed at the nag-tar of the Saragegal canal, filling up with earth (sahar si-ga)."\(^4\) Other references are not helpful to our purpose.

One text\(^5\) gives the dimensions of a nag-tar as follow:—

12 gar long, 12 gar wide, \(\frac{1}{2}\) gar deep, its earth 2 gan 40 sar first nag-tar.

7 gar long, 2 gar wide, \(\frac{1}{2}\) gar deep, its earth 84 sar second nag-tar.

A gar is almost 6 metres; a gan is about 2528 square metres and a sar is \(25\frac{1}{2}\) square metres. So that the tablet gives us first the dimensions of the two nag-tar: the first, about 70 metres in length, about 70 wide and nearly 3 metres deep; the second about 40 metres long, 10 metres wide, and 40 metres deep. The amount of earth quoted is probably the amount of earth displaced in construction. In all this there is nothing opposed to the suggested translation "pond" but the general meaning of the word nag is "to drink," and it may be that the nag-tar was reserved for drinking-water.

It is regrettable that the Sumerians have not left us details of the work of irrigation. We hear of men and women employed on canals but the work is not described. We know only that

\(^1\) ITT., I. 1175.
\(^3\) Ibid., 193 : 2, 193 : 4; JR. 617 : 4.
\(^4\) Lutz, STR., I. 8 : 4; cp. Or. 47-49, 289, 458 : 5.
\(^5\) Or. 47-49, 511 : 10.
the work (kin) was done, and that they had the men and the machines and the intelligence necessary. They dug (dù), they dredged (bal), they irrigated (a-dé-a), they dammed (?) (šu-ùr-ra). Their methods are not recorded on Ur III tablets.

Nothing has been said of the two sorts of canal known as e and pap. The references, which are not numerous on Ur III tablets, are listed below.

Of the canal in religion we have but one record in this period. It is from Drehem and records that the sacred mouth (ka dug-ga) and the sacred "tail" (kun dug-ga) of the canal received offerings.

1 kin TU. 9R; ITT., II. 4456; BE. Ser. A, III. 1, 84: III. 50. du ITT., II. 766; bal ITT., III. 5111; Or. 47-49, 211: 3; An. Or. 7, 231: 2. STA. 162; STD. 223; a-de-a HEU. 68...; šu-ur-ra. ITT., II. 766, III. 5972; Lutz, STR., pt. 2, 91: 1-3; Chiera STA. 5. IV: 9, 14; 2, IV: 12-14; An. Or., 1. 213: 4; An. Or. 7, 190: 3; Or. 47-49, 182: 4, 183: 3.

2 e Or. 47-49, 364: 11, 250: 3; pap. Langdon: Archives of Drehem, 12; An. Or. 7, 199: 2, 201: 2, 231: 2, 322.

3 Langdon: Archives of Drehem, 49: 11.