Medicine, Surgery, and Public Health in Ancient Mesopotamia[§]

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Medicine in ancient Mesopotamia grew out of a folk tradition of what is usually called herbal medicine. In such traditions, plants and plant products, minerals, and animals and their products furnish the basic ingredients of the medications. Such medications (to be described in more detail below) are usually to be ingested, applied to the body surface, or inserted into the body.

It has sometimes been claimed that the earliest medicine in Mesopotamia was a "rational" or "scientific" medicine which was only later "contaminated" by magical practices. Recently published letters from Mari (modern Tell Hariri), however, clearly show the physician, *asû(m)*, and magician, (*w*)*āšipu*(*m*) or *mašmaššu*(*m*) working side by side on the same cases. There is no hint in the ancient texts that one approach was more legitimate than the other. In fact, the two types of healers seem to have had equal legitimacy, to judge from such phrases as "if neither medicine nor magic brings about a cure," which occur a number of times in the medical texts. The two types of therapy seem to have been used by both categories of practitioners, at least on some occasions. It should be borne in mind that while the *asû*'s profession was to treat illnesses, treatment of illness was only one of the many functions of the *āšipu*. Nevertheless, it is useful to present separately the material we have on each.

Sources of Evidence

We have no treatises on medicine as such from ancient Mesopotamia to make explicit their understanding of sickness, health, and the treatment of illnesses. What information we have comes from the so-called medical texts, from letters, and from literary sources. The major source is obviously the "medical" texts themselves. The earliest medical prescriptions we have date from the Third Dynasty of Ur (about 2000 BCE) and are written in Sumerian. The largest proportion of the medical texts, however, are Neo-Assyrian in date, coming mainly from Assurbanipal's library in Nineveh and from the Assyrian site of Asshur (modern Qalat Sharqat). Smaller numbers come from other sites such as Nippur (Nuffar), Sippar (Abu Habba), Nimrud (Kalkhu), and Sultantepe. Relatively few medical texts are known from Mesopotamia itself from the second millennium, but they obviously once existed, as is evidenced by the numerous Babylonian medical texts from the Hittite capital of Khattusha near the modern village of Boğazköy in central Turkey. In a number of cases, there are word-for-word parallels in later texts, suggesting the corpus of texts as we have it from Neo-Assyrian times may well reflect the medical practices of nearly a millennium earlier. Thus these texts can hardly provide evidence for any innovations that may have occurred in the treatment of illnesses or any specific

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changes in attitudes or beliefs that might have affected the treatment of illness. It has been argued by A. Leo Oppenheim that the very fact that there was a written tradition had a stultifying effect and made medical practice hidebound. It seems likely, however, that, there were changes in attitudes, evolution of skills, and innovations of various kinds, some perhaps the result of differing traditions among various ethnie groups, Which our texts do not reflect. Our descriptions are thus not necessarily applicable to the whole time span or area of ancient Mesopotamia.

An ideal in Babylonia was to enjoy good health and to have contentment, to be viewed favorably by the gods and fellow humans, and to enjoy a long life with one's descendants. A full life included having children who would provide funerary offerings after one's death. A statement attributed to Adad-guppi, the mother of the Babylonian king Nabonidus, telling of her long and contented life (which she attributed in part to her piety and zealous worship of the moon-god) illustrates the point:

> *He (the moon-god) added many days and years of happiness (to my life) and kept me alive . . . one hundred and four happy years. . . . My eyesight was good (to the end), my hearing excellent, my hands and feet were sound, my words well chosen, food and drink agreed with me, my health was fine and my mind happy. I saw my great-great grandchildren, up to the fourth generation, in good health and (thus) had my fill of old age.* (Translation by Oppenheim in James B. Pritchard, *Ancient Near Eastern Texts Relating to the Old Testament,* 3rd ed. I969, p. 561.)

This quotation gives an indication of what approximated an ideal. In real life, however, there were many deviations from this ideal, and prayers seeking deliverance from troubles often enumerate some of them: crying spells, insomnia, nightmares, fears, inability to enjoy food or drink, sexual inadequacies, and so on.

One can assume from the medical texts that generally a person who considered himself ill was considered so by those around him. The symptoms described usually include those perceived by the patient, such as localized pain or itching, nausea, or the inability to get up and walk. In other cases, it is those around the ill person who perceive him to be ill, as when his behavior is irrational, he keeps forgetting what he has said, or he does not recognize people he knows.

It is probable that home remedies were administered in many cases, and these were most likely fairly simple traditional treatments, utilizing medications that did not carry any unusual risks. The medical texts, however, reflect only the measures taken by professional healers. The various apothecary's inventories that have been preserved may indicate, however, that a good many of the most commonly utilized ingredients were readily available to whoever sought them, whether or not a professional healer had preseribed them for a particular illness.

Perceived Origin of Illness

People in ancient Mesopotamia surely recognized the natural origin of

some illnesses, which might occur as a result of overexposure to heat or cold, overeating, eating spoiled food, or drinking too much of an alcoholic beverage. The fact that some diseases were contagious was certainly recognized (see comments below on the Mari letters), but there was obviously no perception of how (from a modern point of view) contagion occurred. In general, however, illness was perceived as an intrusion coming from outside a person and entering the body in some fashion. It may be that this concept helps to explain the use of purgatives and enemas even for illnesses that do not involve the digestive tract or for complaints that we would tend to see as psychological in origin.

Apparently deeply rooted in Mesopotamian thought was the view that illness or any kind of trouble was punishment sent by the gods because of offenses committed by the sick person.

A Mari official tells a king of his (the king's) conniving daughter, "About Shimatum, who has been voicing calumnies against my lord and concerning whom my lord has complained to God—the God of my lord caught her and mangled her fingers. Moreover, she keeps on having epileptic seizures." These offenses cover a wide range of acts against the social order as well as the breaking of taboos (See Walter Farber, "Witchcraft, Magic, and Public Health in Ancient Mesopotamia," in Civilizations of the Ancient Near East, ed. Jack M. Sasson, New York: Charles Scribner's Sons, 1995, vol. 3, pp. 1895-1907). The taboos might be broken knowingly or unwittingly (an example of the latter might be stepping in water that someone else had washed in). Exhaustive lists of such offenses are given in the tablet series *Šurpu* (Burning). A few lines (not necessarily in sequence) are cited here:

[So-and-So] Who has eaten what is taboo to his god,
who has said "no" for "yes" and "yes" for "no,"
who estranged brother from brother,
who entered his neighbor's house,
who had intercourse with his neighbor's wife.

Typical of this genre are incantations to rid the patient of his illness or troubles that involve the destruction of a plant or other product. An example is "Like this onion he peels and throws into the fire—and fire consumes it entirely—which will not be grown in a plant bed, . . . whose roots will not take hold in the soil, whose shoot will not sprout, (so) may the pain of my hardship, sin, transgression, crime, error, the sickness that is in my body, my flesh, my veins be peeled off like this onion." Similar passages include matting that is unraveled and burned, wool that is pulled apart and burned, and grain that is burned.

Prayers to gods with a plea that punishment for one's wrongdoing be stopped often include a confession, such as, "my misdeeds are numerous, I have transgressed in every way," and "I have knowingly and unknowingly done wrong." The possibilities of offending the gods—and thus bringing illness or troubles upon one-self—were so numerous that people must have been under constant threat of being the object of divine displeasure or wrath.

Another possible source of physical or mental problems was sorcery. Because it so often happens in documented cases from other cultures that

relatives are accused of sorcery, we might expect that some of the Mesopotamian examples would fall into this category. This is seldom the case, however, and most of our references to sorcery are limited to, traditional literary formulations. In fact, incantations sometimes mention outsiders, specifically foreign women, as the instigators of sorcery. The usual formulation in the medical texts dealing with sorcery is "if a man has such-and-such symptoms, that man is bewitched." Often the sorcery is attributed to bewitched food or drink that has been consumed, but there are other possibilities, such as some of the victim's hair, nail clippings, spittle, or semen being taken by a witch to use against the victim.

The dead—especially dead relatives—might also trouble the living, particularly if family obligations to supply offerings to the dead were neglected. Especially likely to return to trouble the living were ghosts of persons who died unnatural deaths or who were not properly buried (for example, death by drowning or death on a battlefield). In the diagnostic texts (to be discussed below), "hand of a ghost" is frequently given as the source of a patient's illness. (For a further discussion of ghosts, see Jo Ann Scurlock, "Death and the Afterlife in Ancient Mesopotamian Thought" in Civilizations of the Ancient Near East, vol. 3, pp 1883-93.)

Another major source of illness in the Mesopotamian view was demons. Quite a variety of them are attested in the texts. They usually have some partly human characteristics. They "seize" or "strike" their victims in some way, causing illness or death. Some prophylactic measures could be taken, however, principally wearing an amulet that had on one side a depiction of the demon and on the other an exorcistic incantation.

The Medical Texts

The therapeutic medical texts frequently combine the two types of treatment, the medical (*asûtu*) and the magical (*āšipūtu*). The term "therapeutic" is used to refer to the texts that include prescriptions for treatment, as opposed to the diagnostic texts, which give a diagnosis of illnesses and usually a prognosis but do not include prescriptions for treatment. The standard therapeutic texts normally describe the complaint, give a list of ingredients with instructions for their preparation, and give instructions for administering the medication. Sometimes a prognosis is given (usually "he will recover"). The usual structure of such texts is "if the patient has such-and-such symptoms, you prepare the following ingredients in the following manner and then administer the prescription as follows." Numerous elaborations could be given, for example, quantities of specific ingredients, the time of day, and the number of days to administer the medication. In a few instances, warnings on toxicity of certain ingredients are given. An example of a prescription is the following:

> *If a man's tongue is swollen so that it fills his mouth, you dry tamarisk leaves, leaves of the adāru-plant, leaves of "fox-grape," (and) "dog's-tongue"-plant; you chop them up finely and sift; you knead them with juice of the kasū-plant; you rub the top of his tongue with butter; you put (the medication) on his tongue, and he will get well.*
> *(Hunger, Spātbabylonische Texte aus Uruk, no. 46,lines 1-5)*

Particularly in the case of magical treatments, instructions may include such specifics as "such-and- such plant growing over a grave," "such-and-such plant to be pulled up before sunrise," or "set outside under the stars overnight." Special containers normally made of leather were often included in instructions for magical treatments. They might contain, for example, hair from a black dog, a piece of a dirty (menstrual) rag, or pig manure to be worn around the neck. The corpus of medical texts, being in large measure a compilation of material from what may have been separate corpora of texts of the *asû* and the *āšipu*, contains treatments from both sources mixed together. A considerable number of the medical texts from Asshur have colophons showing that they belonged to a man named Kiṣir-Assur, who identifies himself as an exorcist of the temple of the god Assur. If he was not merely a bibliophile but made professional use of these tablets, it would appear that there was considerable fluidity and overlap in the use of prescriptions by both categories of healing professionals.

We are probably safe in assuming that we owe the Babylonian medical compendia chiefly to the fact that expert exorcists, such as Kiṣir-Assur, also had to be scholars. Because of their widespread activities, the countless rituals to be performed and the incantations to be recited, they necessarily became heavily dependent on the written word. Numerous colophons say as much when they end with the notation "hastily excerpted for a ritual."

Pharmacology

Knowledge of human anatomy was probably rather limited because, as far as we know, dissection was not performed. Nevertheless, it seems likely that there was some understanding of the body parts (if not necessarily their true functions) by analogy with slaughtered animals, particularly sheep, for which there was very detailed knowledge because of the practice of inspecting the internal organs as a form of divination (extispicy). Some knowledge of internal organs may have been acquired by physicians when they attempted to treat patients who had been gored by a bull or wild pig, or had been wounded in battle.

Without knowledge of the true etiology of specific diseases, physicians could treat only their overt symptoms. It is recognized that in traditional medical systems the practitioner need not necessarily know the cause of an illness to deal effectively with it. It is also a fact that most diseases (degenerative diseases excepted) are self limiting, and the patient either recovers or dies.

Most of the Mesopotamian medical treatments consisted of herbal remedies. As in other traditional societies, the most common purposes for which herbal medicines were used were to treat gastrointestinal, dermatological, and respiratory ailments. As we know from research into the use of herbal medicine in modern traditional societies, some of these remedies quite likely produced the desired effect, especially in the case of emetics, purgatives, and expectorants.

The beneficial effects of some common products (such as wine and honey) are well known and have been demonstrated in modern experiments. It is well known that certain herbs can produce vomiting (in fact, emetics are often toxic to some degree, which is why the body's natural defense system causes them to be

expelled) and that others are effective purgatives. A good many herbal remedies were probably pharmacologically ineffective, however, with benefits largely limited to calming a patient's anxiety.

The Babylonian medical texts prescribe a great many plant products, usually specific parts of the plant such as leaves, blossoms, seeds, or roots to be prepared in various ways (crushed, cooked, or dried, for example) and mixed with an appropriate carrier (water, beer, wine, or milk for a potion, for example). Knowledge of plant chemistry as such in traditional societies is usually limited, and probably what knowledge practitioners had was a result of cumulative experience with plants. As in other traditional societies, there must have been some knowledge of toxicity in plants, for, indeed, only specific parts of many plants are toxic or are toxic only at a particular stage of their growth cycle. In fact, many of the plants used in medicine are normally not consumed as food, and thus presumably had some disadvantage such as toxicity or unpalatability. Of course, in using many of these drugs, care had to be taken to use a concentration that was therapeutically effective but nontoxic. Many prescriptions call for a large number of ingredients, often combining plant products and minerals. In many cases, the ingredients are summarized as, for example, "these fourteen ingredients you take and prepare (as follows)."

Identifying Ancient Prescription Plants

It is difficult to determine what specific plants and minerals were used. The common minerals and some plants, especially those cultivated as food crops, can be identified reliably. It must be stated frankly that most of the plants listed in prescriptions cannot be identified plausibly and that, therefore, we are not in a position to reproduce most of the prescriptions we have or to understand the effects of specific medications. This is a very serious lack in our understanding of Babylonian medicine and is one that cannot be overcome when studying an ancient traditional society. Many identifications of plants were proposed by Reginald Campbell Thompson (see bibliography). He had a certain advantage in being familiar with uses of plants (particularly in northern Iraq) in local folk medicine, but a number of his identifications depended on dubious etymologies. In theory, the study of ancient carbonized seeds from archaeological sites and the study of ancient pollen should help to identify the plants that actually grew in ancient Mesopotamia. So far, the information available is too little to be of major value in identifying medicinal plants, and the problem would still remain of associating plant remains with the names of plants found in the texts. Some progress in this direction may come from articles appearing in the journal *Bulletin on Sumerian Agriculture* (for example, Wilcox and Postgate in the bibliography).

Medical Treatment

In considering the various diseases that may have occurred in ancient Mesopotamia, we need to bear in mind the possibility that some diseases have mutated and that, therefore, we need not necessarily seek in the ancient textual

records or in the human skeletons for evidence of every disease now known to occur in the area today.

Eyes

A considerable number of medical texts deal with eye problems, surely reflecting the widespread occurrence of eye diseases in ancient Mesopotamia. The common Akkadian words for "blind" do not occur in the medical texts, however, and it does not appear that any treatments were attempted. Marten Stol has proposed that the rare term *sinlurmâ* (and variants) in medical texts is to be identified as both day blindness and night blindness. Because one of the principal causes of blindness in children is a deficiency of vitamin A, it seems likely that the disease xerophthalmia (one of whose early manifestations is night blindness) was widespread in ancient Mesopotamia, as it still is in many parts of the world where foods containing vitamin A are either unavailable or underutilized.

Ears

There are also a number of texts that deal with problems of the ears, including earaches, ringing of the ears, and hearing loss (the word for "deaf" does not occur in the therapeutic medical texts, however). One of the most frequently prescribed remedies for ear problems was the application of pomegranate juice, possibly considered effective because of its astringency.

Teeth

The teeth are the subject of a number of medical texts. Understandably, toothache is the most frequent complaint treated, though the teeth are also described as loose or falling out. Both therapeutic and magical treatments were given for tooth problems. We have little evidence for the practice of dentistry as such, though it is possible that there were practitioners who were skilled at pulling teeth. The cosmological incantation of the "tooth worm" contains brief instructions to the practitioner, apparently an expert in tooth problems, to drive in a pin. This is the only textual evidence for dental interventions.

After Anu [had created the sky],
The sky had created [the earth],
The earth had created the rivers.
The rivers had created canals,
The canals had created the marsh,
The marsh created the worm.
The worm went forth weeping, before Shamash,
Before Ea in tears (saying),
"What will you give me to eat?
What will you give me to suck on?"
"I will give you ripe figs, armannu fruit, apples."
"Of what use to me are ripe figs, armannu fruit, and apples?
(Instead), raise me up and let me live between the teeth and the jaw!
I will suck the blood from the teeth!
I will chew upon the food in the jaw!"

(Instructions to dentist:) Drive in a pin and seize its foot.
"Because you have spoken thus, O worm,
May Ea strike you with all the strength of his hand!"
Text for tooth trouble.
Procedure: you mix together beer, a lump of malt, and oil;
You recite the (above) incantation over it three times;
you put it on his teeth.

The colophon, indicating that this is an old text, reads as follows: "Copy of a 'long' tablet, according to the wording of an old baked tablet belonging to Marduk-nadin-akhi; Nabu-nadin-ipri, descendant of Kudurranu, copied it."

Gastrointestinal Problems

Many texts deal with gastrointestinal problems, as would be expected in a society in which there was water contamination, food contamination, inadequate food preservation, and other factors that encourage intestinal problems. Common problems are passing blood, rectal stricture, constipation, and flatulence. Such problems were treated by a variety of means, including suppositories and enemas. While it seems unlikely that there was much understanding of the liver's function, it appears to have been recognized that the gall bladder could be involved when jaundice *(amurriqānu)* occurred.

Timothy Johns has suggested that the treatment of parasitic and digestive diseases is fundamental to the origin of human medicine. Indeed, many treatments in Mesopotamian medicine involving the gastrointestinal system may have been intended to control intestinal parasites. It seems likely that parasitic diseases such as bilharzia were endemic in southern Mesopotamia, but we cannot identify in the texts the treatments that were given to their various manifestations.

Problems of the Urinary Tract

Some texts appear to describe bladder or kidney stones, which, when passed, cause considerable pain and bleeding. Other texts mention incontinence in such phrases as "he keeps dribbling his urine and cannot hold it in." Such a case might be treated by introducing medication into the urethra through a bronze tube.

Skin

As one might expect in the sunny, arid Mesopotamian climate, skin problems were very frequent, and a considerable number of medical texts reveal prescriptions for treating skin conditions. Diseases such as chicken pox (it is not certain that it existed in ancient Mesopotamia), one of whose manifestations is lesions on the skin, would have been treated as a skin problem. Because of the intense exposure to the sun, skin cancers may well have occurred, but there is no direct evidence. A protozoal infection such as leishmaniasis ("Baghdad boil") would also have been treated as a skin disease. Vegetable oils and the fat of various animals were often used for applications to the skin.

Strokes and Heart Attacks

Because of imprecision in the descriptions of symptoms in the medical texts, it would be difficult to distinguish specific examples that could be confidently identified as heart attacks or strokes. An example, however, can be cited from a Mari letter in Which it appears that a man was struck with a sudden attack and died immediately: "(He said) 'There is something wrong with my foot.' As soon as he said 'my foot,' he said 'there is something wrong with my hand,' and immediately he passed away."

Mental Illness

Generally speaking, it appears that mental illness, Which probably included a wide range of conditions that resulted in memory loss or aberrant behavior, was treated by magical means. James Kinnier Wilson has devoted a number of studies to this topic. (See, for example, his article "Mental Diseases of Ancient Mesopotamia" cited in the bibliography below.)

Pregnancy and Childbirth

"Female problems" connected with pregnancy and childbirth are often addressed in the medical texts. There are numerous prescriptions for a physician to treat a woman with complications after childbirth, but there are no indications in the medical texts that physicians assisted the delivery of babies. Rather, the assistance was provided by a midwife (*šabsūtu*), probably aided by a female relative. Numerous texts, however, offer prescriptions for giving birth easily and for making a barren woman conceive. An example is "Total: 21 stones to help a barren woman become pregnant; you string them on a linen thread and put them around her neck."

There is one text that apparently gives prescriptions for aborting a fetus. The relevant line reads, "to cause a pregnant woman to 'drop' her fetus." The prescriptions consist of eight ingredients to be administered to the woman in wine and to be drunk on an empty stomach. The section ends with the words, "that woman will 'drop' her fetus."

Illnesses of infants and children are detailed in chapters of the omen collection known as SA.GIG (see below), but children's diseases or illnesses are not mentioned at all in the therapeutic medical texts. We know, however, from the Mari letters that physicians did in fact treat children. Children's illnesses are also addressed in the magical series *LAMAŠTU.* (See Walter Farber, "Witchcraft, Magic, and Public Health in Ancient Mesopotamia," in Civilizations of the Ancient Near East, vol. 3, pp. 1895-1907.)

Leprosy

A great deal has been written on the question of whether leprosy occurred in the ancient world. Evidence now suggests the occurrence of true leprosy in Palestine in the Byzantine period, but we would not at present be justified in suggesting its occurrence in ancient Mesopotamia at an earlier time.

Use of Drugs

Of the various possibilifies for use of drugs in ancient Mesopotamia, only alcohol is unambiguously attested in the written sources. The techniques for

distillation were not known, so "hard" liquor was not used. The most widely consumed alcoholic beverage was beer (*šikāru*), of which many varieties were produced. Wine (*karānu*) was produced in Assyria and was imported into Babylonia. Both beer and wine occur frequently in medical prescriptions.

Because an ancient commentary describes the *azallû* plant as "a plant for forgetting worries," it has sometimes been suggested that the plant may have had narcotic properties. Various parts of the plant were used for potions and in salves, but there is no evidence that it was ever used alone. To judge from its use in medical prescriptions, there is no reason to suspect that it had any special narcotic qualities.

Paleobotanists have not found any evidence for the growing of opium poppies in the ancient Near East, and attempts to identify an object depicted on Assyrian reliefs as an opium poppy are unconvincing. There is thus no plausible evidence for the use of opium in ancient Mesopotamia.

The *Asû*

Functions

A considerable amount has been written on distinguishing medical treatments from magical and separating the functions of the *asû* from those of the *āšipu*. It appears, however, that the distinction is more theoretical than real. At one time, it was believed that the etymology of the term *asû* (a Sumerian loanword in Akkadian) was Sumerian A, "water," and ZU, "know," thus, "one who knows the waters," presumably for the physician's knowledge of the use of liquids in medical treatments. In the third millennium, however, the relevant cuneiform sign ZU and another sign meaning "to know" differ, so the etymology of *asû* is unknown and thus of no help in determining the activities of physicians in early historical times. If we disregard etymological speculations and consider what we see the *asû* doing in actual texts, we get a picture of a practical person (there were, in fact, some female physicians) who could manipulate and set broken bones, lance boils, treat battle wounds, and treat internal and external illnesses with herbal medicines. A few lines from a hymn of self-praise of the goddess Gula (one of whose epithets is *azugallatu*, "great physician") may help to illustrate some of the activities of the *asû*:

I am a physician, I can heal,
I carry around all (healing) herbs, I drive away disease,
I gird myself with the leather bag containing health-giving incantations.
I carry around texts which bring recovery,
I give cures to mankind.
My pure dressing alleviates the wound,
My soft bandage relieves the sick.

(Lambert, "Gula Hymn," p. 121)

Notably lacking in this description of the *asû*'s paraphernalia is any mention of the scalpel (which we know was in fact used); by contrast, there is specific mention of incantations, which would seem to indicate that the *asû* also used incantations in treatment.

The hymn cited above specifically mentions texts as part of the *asû*'s

accoutrements. While there are references to physician-scribes, we do not know to what extent the *asû* utilized the medical texts in practice. Some aspects of medical practice (setting of bones, surgery, treating of battle wounds) are mentioned rarely or not at all in the texts, indicating that these were skills that one acquired through observation and practice (presumably in an apprentice relationship) for which written instructions would be of little use. Many of the medical texts that, from their lack of treatments that are specifically magical, would seem to belong to the *asû*'s repertoire simply describe the symptoms and give a prescription with instructions for administering it.

A letter from Mari notes the use of plants by an *asû* for the treatment of a particular illness: "Say to Yasmakh-Addu (Yasmakh-Adad), thus (speaks) Ishme-Dagan, your brother: The plants that your physician sent me are excellent. If there is a *simmum* illness, that plant cures it immediately. I have just sent Shamshi-Addutukulti, the young physician, to you so that he can examine that plant. Send him back to me."

Training and Accountability

Our knowledge of the training of physicians is rather limited. There are no apprentice contracts involving physicians, and there are no explicit references to their training in other sources. We know a bit more, but only by implication, from a Babylonian tale known as "The Poor Man of Nippur," probably composed about the middle of the second millennium, in which the hero disguises himself as a physician in order to be admitted into the presence of the mayor of Nippur. Appearing with his hair shaved off, he arrives at the mayor's residence and announces that he is a physician from Isin (suggesting that this may have been the typical appearance of a physician at the time). His claim to be a physician from Isin immediately identified him as an expert physician (Isin was well known as the cult center of Gula, goddess of healing, and it seems likely that it was a center for training physicians). The training obviously included the treatment of wounds, for he is to treat the wounds of the mayor inflicted on him by the same man using a different disguise.

The evidence is too slight to indicate whether *asû*s normally learned to read and write. Probably not too much should be made from a humorous tale, but, in one example, called by Reiner "Why Do You Cuss Me?" the point was that a physician from Isin did not understand Sumerian when it was spoken to him (this seems contrary to the assumption that Sumerian was a basic element of the school curriculum). (For the two tales just cited, see Benjamin R. Foster, "Humor and Wit in the Ancient Near East" in Civilizations of the Ancient Near East, vol. 4, pp. 2459-2469.)

It is possible that physicians were organized into a professional group, for the title "chief physician" is attested; but there is no evidence that they were under the supervision of any particular public authority. By analogy with scribal schools, it may be that the medical school at Isin (whose existence is merely suggested here) may have had some system of examinations to pass before one was entitled to call himself a physician of Isin. If this is true, it would imply that there was a group of master physicians who had some control over curriculum

and the list of skills to be acquired. In any case, physicians were strictly lay experts, and there is no evidence for sacral supervision at any time.

It would seem that physicians were not subject to legal sanctions in the normal course of their work. An exception is that a physician was held liable when a patient died as a result of an operation or lost an eye because of his surgical intervention, with penalties varying according to the social status of the patient. The penalty for death or loss of an eye in the instance of an upper-class person was having a hand cut off, but only compensation was required in the cases of commoners or slaves. We do not know whether this provision was actually carried out, but severing the hand of a physician seems particularly unlikely. In any case, the *Code of Hammurabi* (eighteenth century) treats malpractice by a physician in the same category as a boatwright who makes a boat that sinks or a mason whose negligence causes a house to collapse. As Guido Majno has observed, a physician was not held liable for death or unsuccessful treatments unless he used his knife.

Social Setting

From Middle Babylonian Nippur we have a number of letters from physicians who were treating a group of patients, some of them young women. It has been suggested that they were a group of musical students; in any case, it appears that they were housed as a group. It seems unlikely that this should be considered a hospital setting, however. These letters are addressed simply to "my lord," not otherwise identified, but surely a high official. An example of such a letter is given here in translation:

> *[Say to my lord]: [thus (says). . . -muball]iṭ, your servant: I am ready to die as my lord's substitute. [As to . . .] about whom my lord wrote me, their [. . .] are well. The patient whose chest is sick was prescribed a dressing, and is kept bandaged; he is also taking a potion against tracheitis. And the other one whose chest [. . .] . . . ; when I assigned a poultice for him, no ašû herb was available. And my lord knows that if only a single herb is missing, it will not succeed. I asked the mayor to send word to a gardener, and [. . .]. The daughter of Muštālu who was coughing but not spitting out has started to expectorate after I gave her [appropriate] potions; but [. . .] now she is constipated. 1 gave her a potion for constipation to drink, and she is taking it, (but) there is no šarmadu herb and drawn wine available. Let my lord send (some) so that I can have her drink, lest she develop "Hand of Curse." The princess who had repeated attacks of fever has now calmed thanks to the dressing and potion. As to the herbs of which I spoke to my lord, let my lord not forget about them. [A list of specific but unidentifiable plants follows.] (Parpola, Letters from Assyrian Scholars, pp. 494-495.)*

There are a number of letters from the court physicians dating to the time of the Assyrian king Esarhaddon. In these letters we see not only herbal medicines being prescribed (a practice we also saw at Mari in the letter cited above), but the use of magical treatments as well. Esarhaddon's illnesses have been studied in considerable detail. (See Erle Leichty, "Esarhaddon, King of Assyria," in

Civilizations of the Ancient Near East, in Civilizations of the Ancient Near East, vol. 2, pp. 949-958.)

The *Āšipu*

It was the *āšipu* who dealt with illness of a supernatural origin (supernatural from our point of view, not the Babylonians', for whom the transcendental world of the supernatural was a reality): divine displeasure, sorcery, ghosts, and especially demons (as discussed above).

Functions

The *āšipu*, "exorcist" or "magician," had sacral functions, some of which had nothing to do with illness. It was he, for example, who ritually cleansed temples before their use for religious ceremonies. An Assyrian text from Asshur gives a long list of text categories for which he was responsible. They include such diverse subjects as diagnostic omens (described further below), physiognomic omens, texts to quiet babies, and a great many collections of magical texts having to do with demons and ghosts (included are two series, *abnu šikinšu* and *šammu šikinšu,* which describe minerals and plants and their uses in treating illnesses).

The *āšipu* (always a man), in his role that concerns us here, was the diagnostician par excellence. It was he who interpreted the symptoms and sought the cause of afflictions. In some cases, another specialist was called in to ascertain the origin of an affliction. This was the diviner *(bārû),* who, through extispicy, sought to identify the cause of illness. He could also determine whether it was propitious to treat a patient. An example from an actual Neo-Assyrian case is "If you perform (the extispicy to find out whether) to give a medical treatment (the answer is) the *asû* should not lay his hand on the patient."

An especially interesting example can be cited of the apparently fluid boundaries between the practice of the *āšipu* and that of the *asû.* In a document datable to 681, Urad-Gula is listed as a deputy of the chief physician. In 671 he is listed as an *āšipu.* Several years later he was dismissed, but then in 65o he is listed as an *asû.* This example comes from the Assyrian royal court, and we do not know whether it was a very special case.

Training and Resources

Nothing specific is known from ancient texts concerning the training of exorcists. As they had to consult a great many written sources, it is likely that their training included some years in the scribal schools so that they could read the texts themselves as needed or make copies for the use of colleagues. A number of colophons list an exorcist as the scribe, the owner, or both of medical texts. It seems likely, however, that particular practitioners may have committed commonly used texts to memory and that, except in the royal court and in urban centers, many exorcists may not have needed to know how to read or write.

The *āšipu* was aided in his diagnoses by an extensive series of texts. Because of its importance in his role as a professional healer, it needs to be discussed briefly here. The series as a whole, consisting of forty tables (or chapters), was known by its Sumerian title, SA.GIG (Akkadian *sakikkû*), but also by the

opening line of its first chapter, "When an *āšipu* goes to the house of a sick person." This first chapter is concerned entirely with the *āšipu*'s chance encounters on his way to the patient's house (for example, "if he sees pigs that keep lifting their tails," "if he sees a deaf person"), each of which entails a prognosis for the patient. Further on, there is a chapter that is more a medical manual, giving symptoms, etiology, diagnosis, and prognosis (the latter usually simply "he will recover" or "he will die," but also such predictions as "he will live a long time but will not recover," and "he will die in three days"). In many instances, the diagnosis is that the patient is suffering from the "hand" of a particular deity or demon. Examples of other diagnoses are "he has had intercourse repeatedly with a married woman," "he had sexual relations with his mother," and "the ghost of someone who was burned alive has seized him." In some instances, one can see an association between the affliction and the deity to whom it is attributed, most notably in the instances of venereal complaints being attributed to Ishtar. A final group of chapters in this long series deals with pregnant women and gives predictions for the woman and for her child.

Oppenheim has suggested that the *āšipu* observed the pulse of patients as part of the bodily characteristics on which he based his diagnosis and prognosis. There is no indication that there was any awareness of the circulation of blood, however.

One of the chief resources of the *āšipu* was the collection of incantations. Many hundreds of such texts have survived. They go back as far as the Sumerian incantations from the middle of the third millennium mentioning ŠÀ.GIG, literally "sick belly," and it may well be that even at that early time incantations were being used in the treatment of illnesses. The incantations range from those of obvious Sumerian origin (often in copies with interlinear Akkadian translations), many of which are directed against demons, through stereotyped appeals to the sungod Shamash, as god of justice, to brief incantations that seem to reflect a popular rather than a scholarly tradition. Some appear to be abracadabra. The incantation needed to be accompanied by certain actions on the part of the performer (or the patient). Of the surviving incantations from before the middle of the second millennium, only a very few are accompanied by written instructions to the practitioner, and we can only assume that he knew what actions were called for. It may be that particular importance was attached to preserving the correct wording of incantations, while a certain flexibility was allowed in the performance of the ritual. After the middle of the second millennium, the instructions are normally given immediately following the incantation. They consist, for example, of instructions for setting up a brazier, preparing a censer, or making offerings or libations to the particular deity being addressed; the instructions normally end with directions for removing the equipment used in the ritual. The incantations were normally recited by the *āšipu* either three or seven times. In some instances, however, it is explicitly said that the patient is to recite the incantation (the instructions say, "You have him recite the following"). The following are two instructions:

> *If a man has been "seized" by a ghost and the āšipu is unable to get it to withdraw, you crush together the following [a list of unidentifiable plants*

follows], you rub him with oil, you wrap up (the herbal mixture) in a piece of leather and put it around his neck.
If "hand of a ghost" is persistent in a man's body and cannot be gotten rid of, to expel it you take (various minerals) and carob seeds, you char them over coals, you pulverize them, you mix with cedar resin; you recite (the following) incantation seven times.
(Köcher, Babylonisch-assyrische Medizin, no. 221. iii. 14-24)

Besides dealing with illness of various sources discussed above, the *āšipu* was a sort of sex therapist. There was a special collection of texts known by its Sumerian name, ŠÀ.ZI.GA (translated into Akkadian as *nīš libbi*, literally, "lifting of the heart," where "heart" seems to be a euphemism for penis). Some of the incantations, often of an erotic nature, are ostensibly recited by women. When any cause is given for a man's loss of potency, it is usually attributed to sorcery. Some of the usual herbal remedies are prescribed, which differ in no significant way from standard therapeutic prescriptions, but specific to this group of texts are items taken from sexually excited or copulating animals or birds. An example is the following passage from a Middle Babylonian text: "If a man loses his potency, you dry and crush a male bat(?) that is ready to mate, you put it into water which has sat out on the roof, you give it to him to drink; that man will then recover potency." A quite different approach is involved when the man's and the woman's sexual organs are to be rubbed with specially prepared oils, sometimes mixed with magnetic iron ore. (For a brief example of an incantation associated with potency rituals, see Walter Farber, "Witchcraft, Magic, and Public Health in Ancient Mesopotamia," in Civilizations of the Ancient Near East, vol. 3, pp. 1895-1907.)

Surgery

There has been considerable discussion over many years regarding the extent to which physicians in Mesopotamia practiced surgery. Such discussions usually concern the eye operation mentioned in the *Code of Hammurabi,* sections 215-220. Whatever the procedure may have been, it is unlikely that any very complicated surgery was undertaken. The physician's scalpel was most likely used mainly to lance boils and for bloodletting—the latter sparsely attested in the medical texts. It is not known whether bloodletting was a widespread practice.

Very little paleopathological study has been published on human remains from ancient Mesopotamia for, unfortunately, it used to be that human bones were rarely preserved by archaeologists excavating sites of the historical periods. Probably the most extensive collection is from the excavations of J. N. Postgate at Abu Salabikh from the third millennium. Some of the graves have been published, but detailed paleopathological studies have not yet appeared.

There is no evidence in ancient Mesopotamia for trephination (perforating the skull with a surgical instrument, usually for the purpose of draining fluids), though it appears that it was practiced at least occasionally in other parts of the Near East, especially Egypt. As far as we know, circumcision was not practiced in Mesopotamia, though, of course, it was widely practiced in other areas of the Near East.

In the years since Oppenheim believed he had found evidence for the cesarean section in Babylonia, his proposal has often been taken as fact. Despite the addition of further texts and continued discussions by several scholars, it must be said that a convincing case has not been made and that it remains an unproved suggestion.

Whatever limited surgical procedures may have been undertaken—and these might have included cases of battle wounds or injuries sustained by being gored by a bull or a wild pig—they are not covered in the medical compendia. Such techniques as were used were probably learned in an apprentice relationship with a more experienced physician or developed in emergency situations. It is easy to believe that the infection rate in any surgical procedure must have been high and that serious surgical interventions were undertaken only in dire cases as a last resort. This is only speculation, however, for the ancient texts are silent on the question.

Public Health

It is difficult to speak of public health as though there were a governmental office that was concerned with preventive medicine or with control strategies when there were serious outbreaks of illness. It is especially clear from the letters from Mari (early second millennium) that measures were taken to try to control the spread of apparently contagious illnesses among the population. A number of letters refer to populations of whole villages being moved elsewhere, normally to higher ground. There was indeed a realization that some illnesses could be transmitted easily from one person to another, so, at least to some degree, there was isolation of the ill when their illnesses appeared to threaten the community. The following letter illustrates such a situation:

> *I have heard that the woman Nanna is ill with simmum disease, but she has (nevertheless) been in contact a great deal with the palace (servant women) and that she has infected many of the women around her. Give strict orders that no one drink from a cup she drinks from, that no one sit on a chair she sits on, and that no one sleep in a bed she sleeps in so that she does not infect (any more) of the many women around her. That simmum disease is (easily) caught!*

Indeed, the chances of encountering infectious microorganisms or viruses must have been quite high in the close quarters of palace life.

Some illnesses which gave every appearance of being contagious were surely mycotoxicoses—illnesses caused by consumption of cereal crops contaminated by toxic molds (the toxins in these molds are unaffected by cooking and baking). The evidence is necessarily circumstantial, but it is surely significant that some texts mention illness affecting both humans and domestic animals, especially cattle. It is known that the livers of cattle are less able to process toxins than are the livers of sheep, and therefore it is not surprising that the texts specifically mention illnesses of cattle. Descriptions of the condition of sick bulls in Mari letters are consistent with modern evidence concerning cattle poisoned by toxic molds, particularly when the poisons result in gangrene of the extremities.

There are apparently no studies specifically of measures taken in ancient Mesopotamia to deal with human wastes. Drainage systems, presumably to collect rainwater, are amply attested in archaeological reports of Mesopotamian sites. There were, in fact (in some towns and cities, at any rate), sewer systems consisting of terracotta pipes that drained urine and probably feces as well (such pipes and the soil around them have the characteristic discoloration found in excavated privies). Whether such sewer systems were created as a health measure or for aesthetic purposes cannot be determined, but the practical result may have been a health measure.

It may well be that groups of people who were ill were given treatment at the same house, palace, or other location, but it cannot be suggested that there was any institution resembling hospitals as they are known in the early Islamic Near East at such places as jundi-Shapur or among Christians in medieval Europe.

Veterinary Medicine

Veterinary medicine in ancient Mesopotamia is known from various sources. The *Code of Hammurabi* refers to treatments for oxen and asses, and an Old Babylonian letter mentions a veterinarian for cattle. A third-millennium lexical text gives the term for veterinarian for asses. There are texts in Akkadian and Ugaritic dealing with illnesses in horses. A brief example: "(These are) eight ingredients for equine colic; (you mix them with) pressed wine; you pour it into his left nostril and he will recover."

Conclusion

This essay has sketched the most salient features of medical practice in ancient Mesopotamia. Mesopotamian medicine, attested in various forms over nearly three millennia, remained, as far as we can tell, largely within the general traditions of herbal medicine such as has been practiced in various parts of the world. There are some parallels between Mesopotamian medicine and medicine as attested in ancient Greece, but it does not appear that Greek medicine (in contrast to such fields as mathematics and astronomy) was in any way derivative of Mesopotamian medicine. While Mesopotamian medicine is among the best documented in the ancient world, and is of interest in its own right, it cannot be claimed that it was a direct precursor to the "scientific" medicine now practiced in most parts of the world.

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