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**Publication/Creation**

London : [publisher not identified], [1941]

**Persistent URL**

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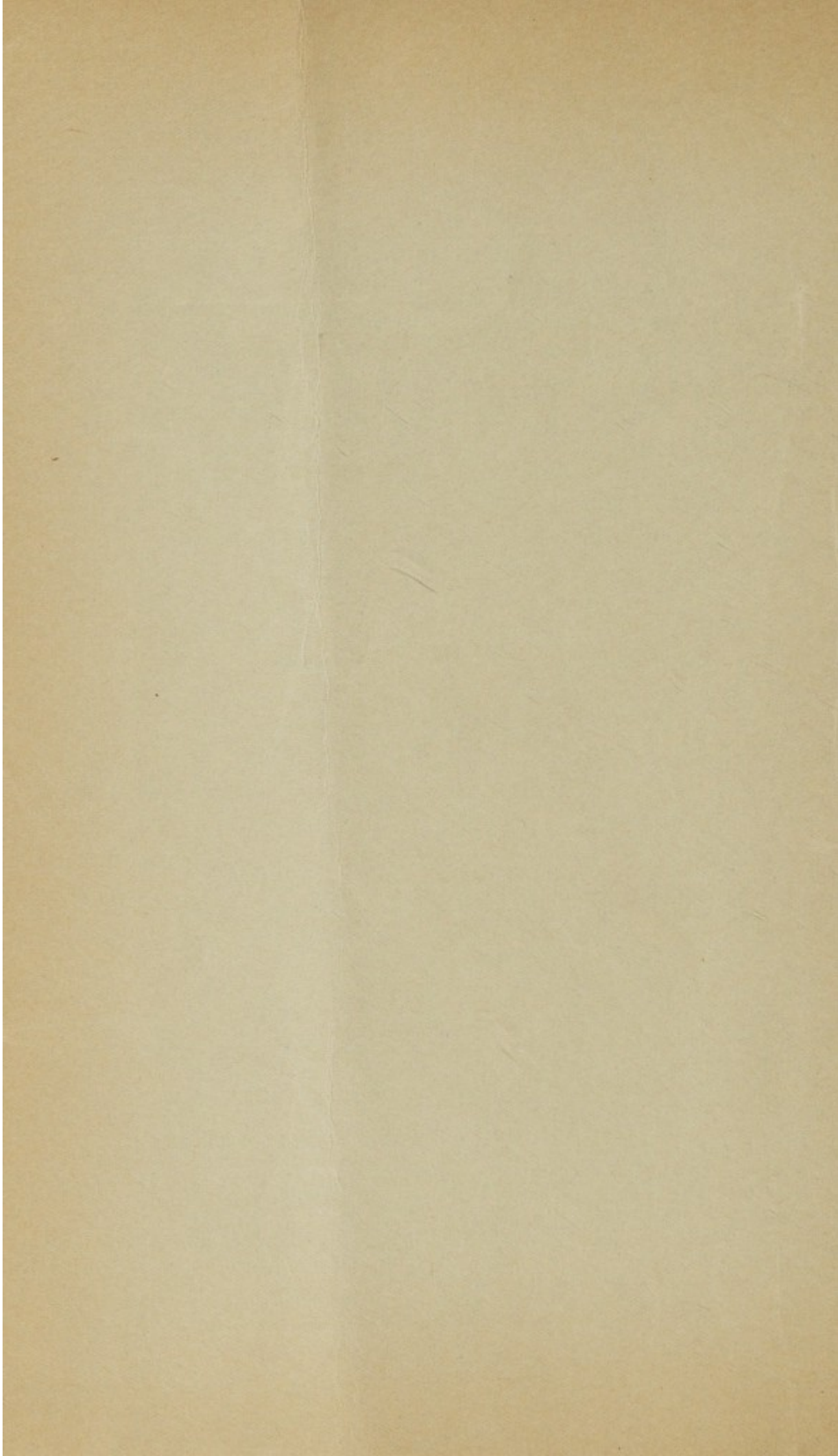
*With Compliments.*

*B.R. Townend*

**BABYLONIAN AND ASSYRIAN  
MEDICAL LORE with Special  
Reference to DENTISTRY**

By  
B. R. TOWNEND, L.D.S.(L'pool).

London  
Reprinted from THE DENTAL RECORD,  
January and February, 1941  
Brock House, 97, Great Portland Street, W.1





# BABYLONIAN AND ASSYRIAN MEDICAL LORE

## *with Special Reference to* **DENTISTRY**

By B. R. TOWNEND, L.D.S. (L'pool).

I HAVE deliberately given medical lore preference in my title because, in spite of the inferences which have been made from the statement of Herodotus (Bk. II, 84) that dental specialists existed in ancient Egypt, there is little or no evidence that such specialists existed in the sense that we understand specialists to-day, and there are abundant indications that scientific dentistry did not break away from general medicine until comparatively recent times. Tooth drawers have no doubt existed through the ages, as have the artisans like those who constructed prosthetic devices in Etruscan times. The former of these two groups were in the past and through the years regarded with some degree of scorn by the academic writers on medicine and surgery who included diseases of the teeth within the ambit of their studies, which seems to indicate that they were in a class apart.

We can safely say, when dealing with such periods of the world's history as are covered by this essay, that dentistry was then a branch of medicine. This being so, it is impossible to gain a true picture of the knowledge of dentistry possessed by any such ancient peoples without taking into account their perceptions and knowledge in the wider field of general medicine. If we find a people with no rational practice of medicine, we must logically expect the same state of affairs to obtain in the specialised branch of dentistry, but if we find germs of rational procedure in medicine we can look for, and probably find, similar procedures in matters concerning the teeth. At the risk of labouring the point, which to my mind is an important and basic one, we must study the whole before we can attempt to study and understand the part.

Reference to dental knowledge and practice among the ancient people of Mesopotamia has been, for some reason, neglected by dental historians. The subject is completely ignored by Guerini



in his "History of Dentistry," but this is understandable because that valuable work was written before a great deal of research had been done on the medical lore of the Babylonians and Assyrians. There is no excuse, however, for M. D. K. Bremner's statement in his recently published "The Story of Dentistry," that we have little information concerning the treatment of dental disease in Assyria and Babylon. Actually, we have much more available material than in the case of Ancient Egypt, yet that country's dental lore is dealt with by many writers at considerable length.

There is another factor which makes the study of the medical and dental lore of these ancient people very important to the student of medical and dental history as a whole. We are dealing with an area and a time where and when some of the earliest manifestations of human culture took place. Manifestations which were, by their diffusion from this centre, to have a great influence upon the trend of culture in later ages and in different parts of the world. Nothing grows out of nothing, and we find again and again, beliefs and practices widely separated by time and space, having their counterparts and probable origins in Mesopotamia and Egypt, which appear to have diffused from these ancient centres of civilisation.

I feel that this factor is an extremely important one to the student of history. Continuity is the essence of history. It has been suggested that it is still nearly true to say that medical history commenced with the Greeks, because it is only since their day that there is continuity in the story, but I shall hope to show in the course of my argument that many ideas which became current in other parts of the world at a later date, had their origin in the earlier culture centre of the Tigris-Euphrates basin. There can be little doubt that many magical and superstitious beliefs originated there and probably diffused eastward into Persia and India, and then drifted westward again on the stream of the so-called Aryan culture. The geographical area which is covered by many of these beliefs points strongly to this fact. Let us consider one point alone, that of birth omens which has been studied by Morris Jastrow ("Babylonian-Assyrian Birth Omens and their Cultural Significance," *Religionsgeschichtliche Versuche und Vorarbeiten*, Giesen, 1914). The people of Assyria and Babylon laid great stress on omens and practised many forms of divination, including liver divination, which was adopted by the Greeks and Romans. Out of their study of birth omens, with its observations of monsters bearing resemblance to animals, arose the basis of the study of human physiognomy, "which when it came to the Greeks and Romans was made a means of determining the character of the individual, just as Babylonian and Assyrian astrology when transferred to Greece and Rome was applied to the individual as a means of casting his horoscope, i.e., for determining the general course of his life. The same factor of the resemblance between men and animals in conjunction with the ignorance of the processes of nature\* led to the belief in all kinds of hybrid creatures composed

\* This refers to the lack of appreciation among primitive people of the association between the sexual act and the birth of offspring.



of human and animal features" (Jastrow-op.cit.). According to Jastrow, this same belief seems to underlie the fabulous creatures of Greek and Roman mythology, and the animalistic gods found in India, China, Polynesia, and the American cultures of Mexico and Peru. Again, the widespread fables in the folklore of many countries in which men are changed into animals, and vice versa, have probably originated from the same source.

Many of these Babylonian-Assyrian birth omens have well-marked analogies in the lore of other races, which seem to establish their direct relationship beyond all shadow of doubt. I will content myself with quoting one only, which happens to have some dental interest. We read: "If a woman gives birth to a — being — with teeth," certain dire misfortunes will follow. We find this same omen in Livy, *Historia*, XLI, 21, Pliny, *Hist. Nat.*, VII, 15. Richard III was said to have been born with teeth, and certain evil traits in his character were attributed to this fact (Shakespeare, *Henry VI*, Part 3, v. 6). We find the belief widespread in Europe and also in India, from whence it appears to have spread to Africa, together with similar beliefs such as the evil omen of upper teeth being cut before the lower. There seems little doubt that this belief, together with a host of others, had its origin in the practices of divination in Mesopotamia.

It appears to be a reasonable and logical speculation, if not an absolute certainty, that if such magical and superstitious concepts had their origin in Mesopotamia and diffused from that centre, rational ideas of which we shall meet a considerable number must also have diffused. It is true that superstition is the most viable of all products of the human mind, but it is inconceivable that the lump of superstition which the Babylonian-Assyrian culture gave to the world did not contain some small portion of the leaven of reason and rational thought.

To gain our first impressions of the status of medicine in Mesopotamia, it is necessary to go back to the days of Khammurabi (C. 1950 B.C.). In the Code of Laws of that monarch which has been preserved we read:—

"If a physician operate on a man for a severe wound (or make a severe wound upon a man) with a bronze lancet, and save the man's life; or if he open an abscess (in the eye) of a man with a bronze lancet and save that man's eye, he shall receive ten shekels of silver as his fee."

"If a physician set a broken bone for a man or cure his diseased bowels, the patient shall give five shekels of silver to the physician."

In the same code we find curses upon those who break the law, one of which calls upon the gods to visit the offender with "a grievous malady, an evil disease, a dangerous sore which cannot be cured, which the physician cannot diagnose, which he cannot allay with bandages, and which, like the bite of death, cannot be removed."

These references seem to indicate that the practice of medicine was a recognised profession at that early date, and as the Code of Khammurabi was not the invention of that just and vigorous monarch, but a compilation of existing laws, many of which dated back to Sumerian times 5,000-4,000 B.C., we can reasonably



infer that the physician had held an honourable place in the community for many years. The fees he could command were quite good. Ten shekels would now be worth roughly £2. It is interesting to note, however, that his activities were controlled with some severity. We read in another clause in the same Code:—

“ If a physician operate on a wound with a bronze lancet and the patient dies, or on the eye of a man who loses his eye in consequence, his hands shall be cut off.”

With such a heavy penalty for malpraxis, one is tempted to wonder whether the fees charged were very high after all, considering the risks!

We have abundant evidence that the ancient people of Mesopotamia lived an ordered, busy and reasonably hygienic life. Their drainage system was elaborate and effective from an engineering standpoint. As early as 5,000 B.C. sanitary drains were used at Kish, and tiled lavatories have been found at Ur, which were built 2,000 years B.C.

We can deduce from these facts with a considerable degree of assurance that these people possessed the elements of a common sense knowledge of medicine, disease and hygiene, but we cannot and should not minimise the fact that this basic rational knowledge was thickly overlaid with the primitive magical and superstitious concepts which have ever been a barrier to, and a drag upon, the higher culture of mankind. Yet we must regard these ideas with tolerance, because similar ones still exist among civilised people to-day and have persisted through the ages.

Magic has been described by Sir James Frazer as the child of error but the mother of freedom, meaning that out of magic grew science. As we shall see, in Mesopotamia were felt the first quickenings of the infant freedom, but its life was hemmed in and limited by the black womb of the mother. It had to wait for birth until the Greek genius could act as midwife and deliver it to a waiting world. After that glorious birth it became a puny child, ever hanging on to its mother's skirts until the Renaissance of the 16th century. Even to-day the Science of Medicine has much of its mother in its make up, but that is another story.

Magic and superstition played a very large part in the medicine of early times, and it is therefore necessary in order to gain a clear conception of the medical lore of the Assyrians and Babylonians to study how disease other than cuts and bruises, fractures, etc., was regarded. Natural and understandable mishaps appear to have been treated fairly rationally since the very early days when *homo* began to justify the adjective *sapiens*, but diseases for which no obvious explanation could be found, such things as sudden attacks of bellyache, which we should now recognise as appendicitis, were considered to be the result of possession by demons, ghosts, or evil spirits, and treatment was directed in attempts to drive out or exorcise the evil thing possessing the body. It was simply a wrong association of ideas and, if this conception be grasped, the seeming absurdities of much early and primitive medical treatment in all ages and lands becomes understandable. Coupled with this we have the old and almost universal law of sympathetic magic, again based on faulty associations, that *similis similibus curantur*.



The burning or destruction of an image or a drawing of an offending demon was thought to cure the disease that the demon was supposed to cause. The reasoning was perfectly logical, absurd as it sounds. The premises were faulty. Again, it was also thought that the demon could be exorcised, cajoled, or bullied to leave the patient, with incantations or words of power, or that the patient could be protected by wearing appropriate amulets. A vast structure of medical lore was built upon the insecure foundation of these faulty premises, which has hampered the progress of science and culture throughout the ages.

We find many examples of these beliefs in the Medical Texts which formed a part of the library of Asur-bani-pal, that King of the Sargonid dynasty in Assyria who reigned 668-626 B.C. Although these texts were made at a comparatively late period, many of them were compilations from much earlier texts and beliefs, which, by order of that literary monarch, were collected from various libraries and other sources in his realm. For the romantic story of their discovery the reader is referred to the British Museum publication, "The Babylonian Story of the Deluge and the Epic of Gilgamesh."

The world of science is greatly indebted to Dr. R. Campbell Thompson for his scholarly interpretations of many of the texts, and I personally am indebted to him for his encouragement, guidance and ever-willing assistance in a matter which, save for his help, would have remained a closed book to me. My quotations, unless otherwise stated, appeared in his "Assyrian Medical Texts," which were published in the *Proc. of the Royal Soc. of Medicine*, Sect. of the Hist. of Med., 1924 and 1926.

We find, as an example of the idea of demoniac possession, an incantation which says, "If a fiend has attacked the mouth of a man" and another charm which reads, "O Shamash, because of my tooth which hurteth me, some ghost unburied, to whom I have not offered food nor poured out water, is angry." An interesting parallel to this is found in Anglo-Saxon Medicine, in which we find a prescription which describes the treatment for a "fiend sick man."

The minatory type of exorcism is to be found in the well-known and oft-quoted "Legend of the Worm," which has considerable dental interest as being one of our earliest references to the widespread idea that worms in or about the teeth are the cause of dental disease. Actually, an earlier reference is made to this belief in the Papyrus Anastasi, an Egyptian literary papyrus in the British Museum, which was written during the 20th dynasty circa 1,200-1,100 B.C., but as we shall see the Assyrian charm is most probably a copy of a much older original. The Assyrian incantation is as follows:—

"After Anu made the heavens, the heavens made the earth, the earth made the rivers, the rivers made the canals, the canals made the marsh, the marsh made the worm. The worm came weeping into Samas, came unto Ea, her tears flowing; 'What wilt thou give me for my food, what wilt thou give me to destroy?' 'I will give thee dried figs and apricots.' 'Forsooth, what are these dried figs to me, or apricots? Set me amid the teeth and let me dwell in the gums, that I may destroy the blood of the



teeth and of the gums chew their marrow. So shall I hold the latch of the door.' 'Since thou hast said this, O Worm, may Ea smite thee with his mighty fist.' " (Fig. 1.)

Here we have a formula which is of a favourite type among magic healers. First we have a description of the worm's ancestry, indicating that the magician was thoroughly familiar with its origin—a sort of debased statement of etiology. Origin myths have ever interested mankind. The demon worm is then made to state its foul intent, and this being done the magician invokes the god Ea to deal the death blow to the enemy.

There has been some speculation that the worm may represent the dental pulp. French commentators have given an alternative translation to the sentence, "So shall I hold the latch of the door," i.e., "En fonce une aiguille et saisis le pied (du ver)" (Georges Conteneau "La Medecine en Assyrie et en Babylonie," Paris, 1938, p. 34). F. Thureau Danguin ("Tablettes Hurrites provenant de Mari," *Revue d'Assyriologie et d'Archéologie Orientale*, Vol. XXXVI, No. 1, 1939, pp. 2 and 3) referring to this passage says: "On sait qu'une tablette neo-babylonienne nous a conserve le texte d'une incantation contre le mal de dent, attribus a un "ver" qui n'est autre chose que le nerf de la dent malade." Dr. Campbell Thompson considers that the expression "seize the foot" is a more correct translation than his "latch of the door," but he is not satisfied with the word "needle" and it seems to me that upon this word depends whether or not a surgical operation is intended. It seems very unlikely that the Assyrians or any other early people associated inflammation or even the presence of the pulp with toothache. This opinion is strengthened by another charm in which the worm is mentioned which deals not with toothache, but with foetor of the mouth. Also the charm following and associated with the incantation against the worm just quoted says: "The door is the flesh, the latch is the bone: She (the worm) hath entered the flesh, she hath lifted the bone, she hath bitten the flesh, she hath dug into the bone; she hath brought decay into the teeth, etc." This seems to indicate some external factor entering into the body, but it is, of course, possible that some investigator may have broken up a newly extracted tooth and regarded the pulp as an intruding worm. Until further evidence is forthcoming the question must remain a matter for speculation, with, in my opinion, a strong leaning to the idea that the worm was an animistic concept and did not refer to the dental pulp.

Dr. Thompson in a footnote to the foregoing charm says that the word here translated "decay" occurs in a recipe for diseases of the head and that it is closely related to the Syriac word for "Scabies." It seems possible and likely that the formation of calculus with accompanying gingivitis may be meant. Such formation is very commonly found around the teeth in the crania of ancient peoples.

Before leaving the "Legend of the Worm," it is of interest to note that evidence has recently been brought to light by Thureau Danguin in his paper just quoted that a similar incantation against the worm (though whether it is a dental worm is not stated) exists in a text found among the much older tablets from Mari which are



contemporary with Khammurabi, who lived as we have seen nearly two thousand years before Christ. It may well be that the text in Asur-bani-pal's library is a recension of a much earlier version.

Two dental recipes using magical devices which we meet in later times, translated by Dr. Thompson and published in "The American Journal of Semitic Languages and Literatures," Vol. LIV, No. 1, October, 1937, pp. 34-36, are as follow:—

"If a man's right tooth troubles him, on the first day of Siwan his left forefinger shall make seven revolutions, (?) he shall crush a caterpillar such as crawls about the desert on his tooth, and put gum of Galbanum in his left ear."

"If a man's left tooth troubles him, on the eleventh day of Marcheswan he shall squeeze garlic thereon and crush a worm from the inside of a reed on his tooth, his right forefinger shall make seven revolutions (?); he shall put gum of Galbanum into his ears."

These recipes are particularly interesting, because they introduce examples of a number of devices which appear to have diffused extensively. We find them again and again in references widely separated both in time and space. The idea of certain days being propitious to the exclusion of other unlucky days (*dies nefastæ*) is common in Ancient Egypt and we find it again in many leech books of medieval times and later, particularly in association with phlebotomy. The use of worms as a dental remedy is referred to by Pliny (*Nat. Hist.* XXII, 57, XXV, 108, XXVI, 40) and earth-worms are an ingredient of many toothache remedies of the Middle Ages and later. It may be that their use was based upon the so-called "Doctrine of Signatures," by which drugs having some resemblance to the organ diseased or the symptoms of the disease were extensively used. Orchis root on account of its resemblance to the testicles was given to promote fertility, eyebright (*euphrasia*) on account of its resemblance to the human eye was used in the preparation of eyewashes, yellow drugs were given for jaundice, etc., etc. (See "Worms, etc.," in *Materia Medica* Section which follows). The magic number seven, the use of which is common in Assyrian medicine has a widespread diffusion and is found in many Gaelic charms and rituals against witchcraft and disease. Finally, the application of drugs to the ears for the cure of toothache, particularly to the ear on the opposite side from which the pain is felt is common in the medical lore of other countries and times. One feels when reading such prescriptions that one is getting very near to origins.

So much, then, for this primitive strata of magic and superstition which has been the last thing to go in the emancipation of medical science. Belief in it still exists among the laity even in so called civilised communities. We see on every hand advertisements for health-giving amulets, rings for the cure of rheumatism, luck bringers, etc., etc. The astrologer and reader of omens still thrives and battens upon human credulity. The average patient still has greater faith in a nauseous medicine which is probably a relic of the old idea that the administration of a filthy or evil-tasting drug would make the body uninhabitable for the possessing demon. Before we condemn a part of the medicine of the Babylonians and Assyrians as preposterous nonsense we should never forget that its



most bizarre and extravagant notions have their parallels in the medicine of all countries up to comparatively recent times, and they still exist among the folk-remedies of to-day.

We must now consider the more rational side of Assyrian-Babylonian medicine, and I shall attempt to indicate that, in spite of the layer of superstition and erroneous belief we have just considered, there exist many indications of shrewd, accurate observation and rational, well-thought-out treatment. What is even more interesting and important is that there are one or two very significant passages in the literary material that has come down to us, indicating, or at least seeming to imply, that a certain type of physician was strong minded enough to rebel against the authority of the priests and magicians who persisted, as such classes have ever done, in a conservative following of tradition which has hindered progress through all times. The opposition of the two forces, scientific thought on one hand and magic on the other, is well illustrated in many of the texts from the library of Asur-bani-pal.

One very striking example unmistakably describes pneumonia in a perfectly rational way: "If a man having fallen into the water and being taken out, his pain extends to his side . . . as his breath goes in and out, for his recovery . . ." Then follows the advice to boil certain herbs including fennel and balsam in a copper pan, mash up, spread on a cloth and bind on the patient (R. Campbell Thompson, "Assyrian Prescriptions . . . for Pneumonia," *Archiv. Sur Orientforschung* XI, pp. 337, 340). Quain's "Dictionary of Medicine," I, pp. 874, ff, says that the most common discoverable cause of pneumonia is a sudden chill (such as might be caused by the patient's immersion in the water described in the text) and that pain in the side aggravated by deep inspiration is a constant symptom. This pain may be reduced by fomentations and poulticing.

We find similar acute observation of symptoms of disease in a number of texts. It is true that some of them follow the description with the diagnosis: "He is bewitched," or "The hand of a ghost is upon him." It is also true that the treatment in many cases consists of remedies which are obviously magical in their operation, but among this dark welter of superstition we see gleams of light which indicate that the dawn of rational medicine was breaking. We read of the extensive use of emetics and honey in cases of cough. We find distinctions in types of cough such as, "If a man coughs dry, ejecting no saliva," "If a man's lungs cough up pus," or "If a man is hot, coughing." One interesting prescription is as follows: "If coughing attacks a man thou shalt mix KI-KAL of dates with pig's feet . . . without a meal let him eat it; then beer and honey steaming hot let him drink; with a feather thou shalt make him vomit, and he shall not go out into the wind, rain, or the sunlight, and he shall recover." In other words confined to the house for a few days. Another very sensible recipe for a cough "where no improvement is obvious," is to inhale the steam from a concoction of licorice, turpentine, etc., boiled up with water in a pot closed up save for a reed tube through which the steam escapes. (R. C.



Thompson, "Assyrian Prescriptions for Diseases of the Chest and Lungs," *Revue d'Assyriologie*, Vol. 31, No. 1, 1934).

The Assyrians were thoroughly familiar with the value of suppositories and enemata, and many recipes for these are to be found in the medical texts. (R. C. Thompson, "Assyrian Medical Prescriptions for Diseases of the Stomach," *Rev. d'Assyr.*, Vol. 26, No. 11, 1929.)

Affections of the genito-urinary organs were recognised and treated in various ways. Saltpetre which has diuretic properties was used for renal calculus together with turpentine which according to Squire's "Companion to the British Pharmacopœia," is said to dissolve gall stones, and the shell of ostrich egg which would be of definite value on account of its carbonate of lime content. (R. C. Thompson, "Assyrian Prescriptions for Stone in the Kidneys," *Archiv. fur Orientforschung*, XI, p. 336.) The Assyrians were also familiar with the use of catheters, and applied medicaments to the urethra by that means. (R. C. Thompson, "Assyrian Prescriptions for Diseases of the Urine, etc.," *Babyloniaca*, Tome, XIV, Paris, 1934.)

These old leeches recognised that some cases were beyond their power to treat. One striking example of this which I will quote, may well describe a case of acute ascending paralysis: "If the muscles of a man's right loin hurts him, there being a wasting of the flesh, his limbs being paralysed, his evacuations being constricted, he forgetting whatever he does, his saliva being dry . . . sorcery besets him. On the twenty-seventh or twenty-eighth day his speech will cease, there will be 'Hand of Stoppage of Life,' he will die."

These few examples will, I think, demonstrate the undoubted fact that some at least of the Assyrian leeches had gone a step further than the animistic theories and magical practices which primitive minds the world over have used to explain and treat disease. They were beginning to note clinical data and draw certain conclusions from those data. The fact that many of these conclusions may have been inaccurate does not signify. That still obtains to-day. The significant fact is that the true scientific method was in the process of birth.

In addition to this evidence of the growth of the scientific spirit, we have other evidence of a more personal and intimate nature. A great deal of the correspondence of the later Assyrian Empire during the Sargonid dynasty has been preserved, and it is a very valuable source of information concerning the history and social structure of the Assyrian civilisation (see Leroy Waterman, "The Royal Correspondence of the Assyrian Empire," *University of Michigan Studies*).

This correspondence may be regarded as the "office files" of the Court, and it includes a number of letters from various court physicians to the various kings. The later monarchs of this dynasty were not very robust, and the royal leeches appear to have had ample opportunities of practising their craft. There is evidence in these letters that the physicians were men of high intelligence and that they were an undoubted power in the land. One of them—Adadshumuser who flourished under Esarhaddon and Asurbani-pal—when commanded to visit certain patients, replied to the



king, saying: "Now the king my lord knows that a high official has brought me to the house of Dani on behalf of his son. I am attending him. His malady is serious. He is seriously ill. Since I am occupied with him it is not possible for me to set out to-day. I shall go in the morning and examine them and report their condition to the king." This is not the letter of a servile fellow of no importance. It is the letter of a confident man who realises that the demands made upon him are unreasonable and he does not hesitate to tell the king. Adadshumuser appears to have fallen foul of the religious element. We have a letter from a priest and an astrologer which tells how they had ordered the king to fast and he had questioned—somewhat querulously—the need for this. They had, however, persisted in their decree, saying: "The king may not eat food to-day." Apparently His Majesty was not satisfied and appealed to his physician who replied: "... Wherefore is not meat served before the king a second time to-day? ... Fasting, neither eating nor drinking, confuses the understanding. It brings on sickness. Thus it is. Let the king hearken to his servant." Professor Waterman suggests that this may have been a test case between political and religious forces, and the physician's letter a "dispensation."

Another letter tells of a cry of distress from the royal house: "In regard to the poultice of licorice of which the king my lord has spoken, saying: 'The burning is unendurable, tell us quickly what we shall do?' 'It is not a real burning, and as a remedy let them make a cold application.'" This calm and collected reassurance shows that the leech had no illusions concerning his royal patients, and later he confesses that the disease puzzles him, saying: "I do not understand why he has had the attack ... the gods have done it." Such a confession at least indicates that the physician had given the matter some thought and had tried to make a physical diagnosis before falling back upon the glib explanation that it was an "act of God."

An indication that treatment, probably involving the use of *materia medica* rather than magical methods is contained in another letter which, although studiously devoid of detail, is of some dental interest. It reads: "Concerning the recovery of the tooth of which the king has written, I am improving very much the condition of the tooth." In this case, the physician takes full credit for the treatment. In another very interesting letter in which the effectiveness of a bandage is tested by experiment, "the writer is evidently proud of his results, but modestly gives the credit to religion" (Waterman, *op. cit.*). Here is the letter: "It is very well indeed with the unfortunate man whose eyes are diseased. I had put a bandage on them that had covered his face. Yesterday, towards evening, the bandage which held it on I removed. I took off the dressing that was there. There was pus upon it the size of the little finger."

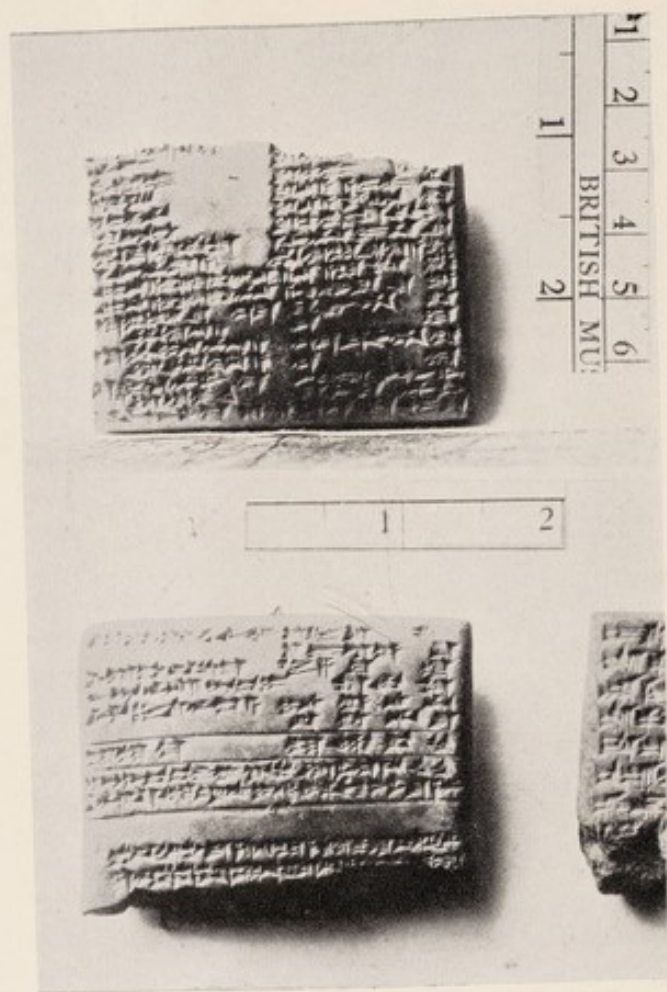
"Whoever of your gods has put his hand to this case has himself surely given his orders explicitly. It is extremely well. May the heart of the king my lord be of good cheer. In seven or eight days he should be well."

One is reminded of the termination "and God is the Healer"



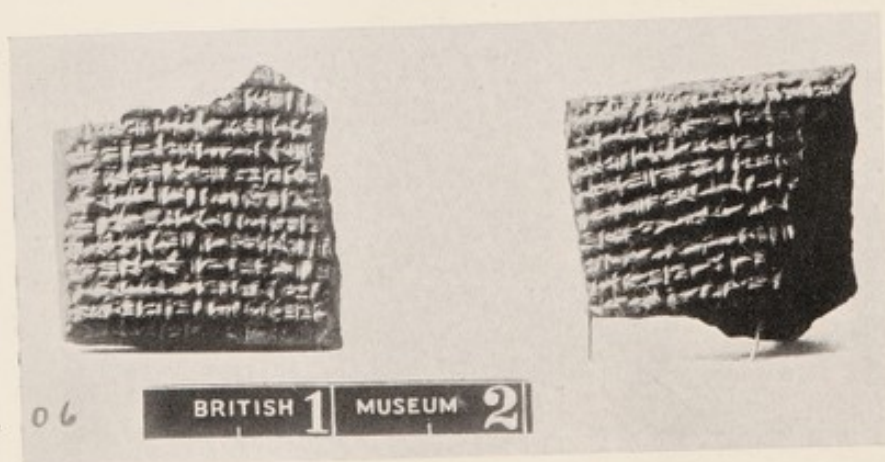






(By courtesy of the Trustees of the British Museum.)

**Fig. 1** (page 6)  
**Assyrian Tablet on which is inscribed**  
**"The Legend of the Worm"**



(By courtesy of the Trustees of the British Museum.)

**Fig. 2** (page 11)



used by Abulcasis, the Arabian surgeon of the twelfth century, A.D., at the conclusion of descriptions of operations.

We find in another letter the natural pride of a leech in a case brought to a successful conclusion: "Concerning the healing of the ears which I have undertaken, everything is done. Yesterday the king did not lift up his head, now to-day let him do it."

One of the most interesting and illuminating letters in the whole series describes a case of nose bleeding. The physician appears to have left the treatment in the hands of an assistant, who had not been very successful. Accordingly the physician writes: "The dressings are not properly applied. They are placed over the nostrils. They obstruct the breathing and come off when there is hæmorrhage. They should be placed within the nostril and then the air will be kept away and the hæmorrhage restrained. . . . I will go to-morrow and give instructions." As Prof. Waterman points out, this shows utilisation of observation and experience, and the physician can give reasons why the new method is better.

The most remarkable dental reference in Assyrian medicine occurs in one of these letters. Unfortunately we shall never know the name of the physician who wrote it, as the tablet is broken and the fragment which would have contained the superscription is lost. I have discussed the text at some length elsewhere (B. R. Townend "An Assyrian Dental Diagnosis," *Iraq* Vol. 5, Part 1, pp. 82-84), but as this source is not very accessible to most dental readers I will relate the parts that are pertinent to our study. The physician writes to the king saying: "The inflammation wherewith his head, his hands (arms), feet (legs), are inflamed is due to his teeth. His teeth must be extracted: it is on this account that he is inflamed; he will reduce (it?) through internal (channels) (?). Then all will be well. . . ." Dr. Thompson went to considerable trouble to re-examine this tablet (Fig. 2) at the British Museum, and assures me that the translation is correct. This being so, it is obvious that we are led into a world of thought very different and far removed scientifically from the type of mind that produced the "Legend of the Worm." In the first place, this is, so far as I have been able to discover, the first literary reference we possess to therapeutic extraction of the teeth, though that operation was said to have been invented by Æsculapius. There is no reference in the Egyptian Medical Texts to this operation, nor is there any definite evidence in the vast amount of craniological material from that country that extraction of the teeth was performed there to any extent. That great authority, Sir Grafton Elliot Smith, says in this connection in referring to evidences of dental disease in mummies which have been examined, "There is in no case the slightest suggestion that any operative measures were adopted in order to cope with dental trouble" (G. E. Smith and Warren R. Dawson, "Egyptian Mummies," London, 1924, p. 159). A similar conclusion is arrived at by Sir Marc Armand Ruffer, "The evidence rather points to the conclusion that even extraction was very seldom performed." "Study of Abnormalities and Pathology of Ancient Egyptian Teeth" (*Amer. Jour. Phys. Anthropol.*, Vol. III, No. 3, p. 377). Yet we find this old Assyrian physician saying "His teeth must be extracted," and saying it in a way that implies



that this was a commonplace operation, just as it is to-day. What is, however, even more remarkable, is the suggestion that the leech associated systemic disease with dental disease, an association which was not appreciated until quite recent times. We have seen that the Assyrian doctors, though not entirely free from the trammels of magic, showed "a sense of discrimination and a sincere effort to attribute certain ills to physical causes and a worthy attempt to find out their physical cures." (Le Roy Waterman, *op. cit.*, Part IV, pp. 25-26.) Dr. Thompson tells me also that the Assyrians said what they meant in plain, straightforward language. In spite of this evidence it is difficult to believe that this old doctor anticipated medical thought by over 2,000 years and, what is more, anticipated a concept which has been built upon the germ theory of disease about which he could have had no knowledge. Was his diagnosis and suggested treatment a shot in the dark? In the absence of collateral evidence, the matter must be left in the realms of speculation, yet in spite of every attempt to discredit this old physician we come back to his plain, straightforward statement that the inflammation from which the patient is suffering is arising from his teeth, and his teeth must therefore be removed. Dr. Chas. Singer, commenting on this, considers that the reference is not easily paralleled from Greek medical literature.

There can, I think, be little doubt after reading these letters that we are dealing with men who had advanced far beyond the status of the primitive witchdoctor. In spite of the occurrence of grotesque magical remedies, one can detect a sense of revolt, a questioning attitude towards medical problems and the dawning of the scientific outlook. As was said of Voltaire, they were beginning to make us ready for freedom, a freedom that was long in coming and had many setbacks, but the seed was sown and had commenced to germinate.

We are now in a position to study in some detail the available Assyrian material that has come down to us in the medical texts dealing specifically with diseases of the mouth. Unfortunately, many of the tablets on which these texts were inscribed, which comprised a small part of the great library of Asur-bani-pal, were sadly damaged at the sack of Nineveh by the Medes in 612 B.C., and in subsequent centuries when the Parthians and others occupied the site.

At the risk of repetition, one cannot speak too highly of Dr. Thompson's patience and ingenuity in piecing the fragments together, translating them, and giving us a fairly coherent picture. His endeavours stand high as an example of synthetic and analytic scholarship and wealth of learning. All my quotations are taken from his paper, "Assyrian Medical Texts," *Proc. Royal Soc. of Med., Sect. of the Hist. of Med.*, pp. 57-78, Vol. XIX, No. 3, Jan. 1926.

I have already referred to several remedies for dental disease of an obvious magical character, and have indicated that we must expect to find such remedies in all systems of early medicine, but on the other hand we find a number of straightforward texts with no hint of magical thought behind them. Some of the drugs may have been used, it is true, because of their supposed magical



properties, which is again to be expected, but on the other hand, many of them have definite therapeutic value well fitted to the conditions they set out to cure and, as we shall see, these virtues which appear to have been first recognised in Assyria were passed down the ages along the recognised cultural streams.

We also find indications, many of them tantalisingly fragmentary, that various kinds of dental disease were diagnosed and differentiated. For instance, we read: "If a man's teeth ache," "If a man's teeth are all loose and decay sets in," "If a man's teeth have become yellow," "If a man has mouth trouble." For loose teeth drugs are rubbed on them "till the blood comes forth." Thus we see recognised the sound principle of relieving congestion of inflamed gingiva. If the teeth have become yellow a mouth wash of honey and oil is prescribed, and in another text, which is unfortunately very fragmentary, but appears to deal with a similar condition, we read: "He shall scrape his teeth . . . thou shalt cleanse, the black of his teeth it shall remove." This seems clearly to imply some surgical treatment for the removal of caries, or more probably calculus.

A number of texts refer to *fœtor* of the mouth, often associated with *fœtor* of the nose. This *fœtor* is described in one of the incantations as having "seized him as a lion seizeth the throat of a cow, as a jackal seizeth a steer . . . so hath the worm established her seat amid the teeth." I have referred to this charm when dealing with the "Legend of the Worm." Another charm referring to *fœtor* says: "It rageth like a lion." It is difficult to say what condition or conditions are meant by this. The treatments prescribed fall into three classes. Internal remedies, including aperients and emetics, remedies either blown into the nostrils or applied on pledgets of linen, and remedies applied to the teeth. Applications to the nose for dental ailments have their parallels in early Indian Medicine. We find many such in the works of Susruta. It should also be remembered that the humoral theory of disease which was popularised by Galen, and remained the current theory for many centuries, considered that dental disease was caused by rheums or humors falling upon the teeth from the head. According to this theory, medication of the nose and ears would be quite rational, and so the pieces of the jig-saw seems to fall into place to some extent, with a strong indication that the condition described as *fœtor* was a mouth condition giving rise to offensive breath. Several of the texts give further strength to this speculation. One reads: "If *fœtor* attacks him . . . thou shalt weigh out equal quantities of Nigella, Ammi, Eruca, Arsenic Trisulphide, powdered alum, storax, and bray them. Thou shalt rub a paste of dough on the root of his tooth (until blood comes forth) then these drugs thou shalt apply to his tooth and he shall recover." For the same condition powdered alum is applied to the tooth, a leek is slit and rubbed on the root. In the first case the astringent action would be of value, and in the second a counter-irritant and rubefacient action would probably take place. Another recipe for a condition in which *fœtor* is a characteristic gives rise to some interesting speculations. The text is, unfortunately, exasperatingly fragmentary:—



" . . . and his mouth is puckered, its name is Ziktu . . . and his mouth is broken, its name is Ziktu . . . hurts him, its name is Ziktu. If the affected part is dark and small, its name is Ziktu. Thou shalt bray . . . pine turpentine, mix in *kurunnu* beer, bind on him and he shall recover." What is meant by Ziktu? In a footnote Dr. Thompson says that it is probably a "point or sting." The description of the puckered mouth puts harelip into one's mind, but the treatment and promised cure does not support this. A very serious condition such as noma seems unlikely also, as again the physician promises a cure. Alveolar abscess opening on the face or actinomycosis seem to be most likely answers, but the puckered mouth remains a difficulty unless it can refer to the puckering of scar tissue round an external sinus.

A number of remedies are given for a condition the characteristics of which are: "If a man's saliva comes when he is talking and he ejects spittle in a man's face, his teeth ache, his mouth hurting (?) him, the eructation of . . . that man's trouble. . . ." Here we have one of those tantalising gaps which may never be filled. Excessive salivation seems to have been regarded as a serious symptom, for in another text we read: "If the saliva in a man's mouth does not cease to flow, that man has been bewitched."

Finally, one very interesting diagnosis which seems to point to some form of facial paralysis reads as follows: "If a man's mouth hurts him, it being twisted to the right, so that he cannot speak, his speech he cannot control, for six days thou shalt make his diagnosis, on the seventh. . . ." The text here, unfortunately, is fragmentary, but some form of poultice seems to be prescribed for treatment. The following text, which is even more fragmentary, commences in the same way, but refers to the mouth being twisted to the left instead of to the right.

This brief survey of the intelligible part that has come down to us of Assyrian dental lore, coupled with the allusions to the same subject I have quoted from the royal correspondence, points to the fact that I have stressed throughout this paper that the Mesopotamian leeches had made several steps forward from the purely magical and animistic concept of disease towards a more rational and scientific outlook. Their promise was limited by magic, but the promise was undoubtedly there.

We must now consider the dental materia medica of the Assyrian and Babylonian people. For the bulk of our knowledge of this difficult subject we are again indebted to Dr. Thompson. The results of his brilliant researches are to be found in his "The Assyrian Herbal," Luzac & Co., 1924, and in the footnotes to his various papers giving translations of the medical texts. In the introduction to his Herbal he tells us that the Assyrians used no less than 550 names for vegetable, mineral, other and unidentified drugs, and in addition, such substances as beer, wine, fats, oil, honey, wax and milk. Not only do these drugs appear in the medical texts used in prescriptions for medicines for the cure of various ailments, but the Assyrians actually prepared, in a tabular form, lists of drugs with their various uses. Some of the tablets on which these texts are inscribed have come down to us, including one containing a number of drugs used for dental troubles. By



courtesy of the Trustees of the British Museum I am enabled to illustrate this tablet, and Dr. Thompson has furnished the following translation, which is set out in the same way as the original. (Fig. 3.)



Figure 3.

(By courtesy of the Trustees of the British Museum.)

Male mandrake.	Toothache.	Put on tooth.
Root of male mandrake.	"	" "
Green Cassia (similar to cinnamon).	"	" "
Lulumtu plant.	"	" "
Mustard.	"	" "
Root of pyrethrum.	"	" "
Root of thorn (Lycium).	Which has not seen the sun when thou pullest it up.	Drug for the worm, put on tooth.
Some form of cress. (Cardamons.)	Drug for decayed tooth, dry, bray.	Mix in oil, put on tooth.
SIPIR (-isid-) MAH-root.	Drug for decayed tooth, dry, bray.	Mix in oil, put on tooth.
Root of White Caper.	Which has not seen the sun as thou pullest it up.	Drug for decayed tooth Dry, bray, mix in oil, put on tooth.
Rosemary.	Drug for weakened teeth.	Put on tooth.
Mustard root, root of Alluzi plant.	Drug for weakened teeth.	Put on tooth.
Gum Arabic (?) Myrrh.	Drug for weakened teeth.	Put on tooth.
Gum of Galbanum.	Drug for weakened teeth.	Put on tooth.
Margusu (a gum).	Drug for . . . tooth.	(Drug) for cleansing. Without a meal thou shalt clean his teeth.
Alum, Ammi plant.	Drug for . . . tooth.	(Drug) for cleansing. Without a meal thou shalt clean his teeth.
Gum of Aleppo-pine.		



Dr. Thompson tells us that the Assyrian botanist had a fair capacity for dividing his herbal into classes according to his needs in a quite intelligible way. "It is the arrangement of a rather superficial but laborious cataloguer, but the more the subject is studied the more obvious appears to have been the great knowledge possessed by the doctors and chemists of Nineveh." (Thompson, "The Assyrian Herbal," p. XI.) It is further pointed out that the influence exerted by these old herbalists upon the plant names of Western languages was considerable, as the following examples of Assyrian names with their Latin equivalents will show.

ARMANU (Apricot)	..	..	..	Armonica.
ARZALLU (Cratægus)	..	..	..	Azarolus.
AS (Asa-fœtida)	..	..	..	Asa.
KURKANU (Turmeric)	..	..	..	Curcuma.
LASERBITU (Silphium)	..	..	..	Laserpitium.
PA-PA (Poppy)	..	..	..	Papaver.

I shall now consider a number of drugs used in Assyrian Medicine for dental disease, quoting in many cases parallel uses in other times and lands with a view to indicating that the use of many of these substances in dental materia medica appears to have originated in Mesopotamia. My references are by no means complete, but they are taken from representative authorities, who in their turn have passed on their lore down the stream of culture. For convenience, the following abbreviations will be used.

- Diosc.** Dioscorides a Greek writer of the 1st Century A.D., who together with Pliny had a tremendous influence on herbal lore of succeeding ages. My references are taken from the beautiful edition of Robt. T. Gunther. Oxford, 1934.
- Pliny.** The Natural History of Pliny. Trans. by J. Bostock and H. T. Riley. Bohn. London, 1855.
- S.M.** Syrian Anatomy, Pathology and Therapeutics, or "The Book of Medicines." Sir A. E. Wallis Budge. Oxford, 1913. This book was probably written about 860 A.D. It is for the most part a translation of Galen's "De Locis Affectis." The many parallels between prescriptions for dental and other diseases in this work and in the Assyrian Medical Texts appear to indicate that Galen was indebted to no small extent to Assyrian medicine for his materia medica. When Budge translated the work he considered that it was of native origin, the close similarity of many of the prescriptions to Assyrian prescriptions being thus explained, but our later knowledge points strongly to the probability of the Assyrian influence upon later Greek medicine, thus establishing a link in our continuity.
- Leech Books.** Under this heading I have included references from works of the Middle Ages, such as "Medical Works of the 14th Century." G. Henslow. London, 1899. "Liber de Diversis Medicinis" (15th Century), M. S. Ogden. Early English Text Society, 1938. "Meddygon Myddvai, or the Physicians of Myddvai" (14th Century), John Pughe. Llandovery, 1861. "A Leech Book of the 15th Century." Warren R. Dawson. London, 1934.
- Herbals.** Under this heading I have included Renaissance Herbals such as those of Gerarde, Parkinson, Culpepper, etc.



- Z.A.** The Zene Artzney, the first purely dental work, 16th Century.  
\* \* \* \* \*
- Alum.** A very common drug in Assyrian materia medica. Used for toothache, fœtor of the mouth, which as we have seen was probably associated with some gingival disease. Its obvious therapeutic value has been recognised and utilised by many authorities. Diosc., Pliny, Celsus<sup>1</sup>, Cassius Felix<sup>2</sup>, S.M., Leech Books, Z.A., Herbals.
- Ammi.** An umbelliferous plant. Species doubtful. Used in many Assyrian prescriptions for "mouth trouble."
- Anemone.** For "mouth trouble" as a cleansing agent with calendula or arnoglossum beer (q.v.). Pliny recommends root chewed for toothache, and the same use is made of it in modern times.
- Arnoglossum or Cynoglossum.** Plantain or Way bread. See Anemone. Plantain is widely referred to for toothache. "Goute of ye teeth," ulcers of the gums, canker sores of the mouth. Diosc. (II. 153. Leech books and Herbals.
- Asa-foetida.** Pliny (XXII), 49, S.M., Leech Books, Z.A. Pliny deprecates its use in the form of a pill covered with wax placed in a hollow tooth for toothache, saying that a man after doing so threw himself headlong from the top of a house.
- Beer.** Various beers were frequently used in Assyrian medicine as vehicles for other drugs and as ingredients in poultices. At the end of the "Legend of the Worm" the leech is told to mix *usa* beer, millet meal and oil together, repeat the incantation over it three times, and put it against the patient's teeth or mouth.
- Blood.** Has for long had a peculiar significance as a giver of life. It was early realised that upon it depended life, and its use as a medicine has a long history and a wide distribution. In Assyrian dental medicine the blood of a lizard and the "liquid" (probably blood) of a cricket are used.
- Calendula (?)** I have found no parallels to the use of the marigold in dental medicines, though it is extensively used for other disorders (notably smallpox) in the Herbals.
- Caper.** In the drug list quoted we find the strange injunction that it "has not seen the light of day when thou pullest it up." The ritual attached to the culling of herbs is a most interesting subject, and the idea that daylight had a deleterious effect upon the efficacy of a drug is a very old and persistent one. We meet it in ancient Egypt, in Anglo-Saxon medicine, and to-day in Yorkshire, where "mouse pie" is still administered for enuresis, a mouse from a coal pit which has never been exposed to daylight is believed to be more efficacious than an ordinary mouse. Caper root or seed are recommended for toothache by Diosc. ii, 204, Pliny xx, 59, and it is used in India to-day for the same purpose. (Kanhoba Ranchoddes. "Indian Medical Plants.")
- Cassia.** Similar in its therapeutic effects to cinnamon. One or the other referred to in S.M., the Leech books and Z.A.

<sup>1</sup> Cornelius Celsus (B.C. 25-A.D. 50). "De Re Medica."

<sup>2</sup> Cassius Felix (2nd century A.D.). "De Medicina."



- Cratægus.** Probably some species of hawthorn. Again we have the strange injunction not to allow daylight to strike the drug. Recommended for a relaxed mouth and hæmorrhage of the gums, S.M.
- Cress.** (Cardamons *Lepidium Sativum*.) Diosc. suggests the use of the root hung about the neck for toothache, and it is also recommended by Celsus.
- Cricket.** See Blood.
- Dung.** Dove's dung and gazelle's dung appear in several Assyrian prescriptions for the teeth. Such filth remedies are very common in early medicine, and their use in folk medicine persists to-day. As I have suggested before, it is thought that their efficacy depended upon the idea that disease was caused by an evil spirit and that by administering some disgusting medicine the spirit would find the body uninhabitable and depart.
- Gall Apples.** Widely used in dental medicine. Diosc. I, 146, Pliny XXIV, 6, S.M., Celsus, Cassius Felix, Leech books.
- Garlic.** A drug with many parallels in dental materia medica. Diosc. II, 182, Pliny XX, 23, Leech books.
- Grape Juice.** The juice of unripe grapes (*omphacium*) is recommended by Diosc. V, 6, for mouth ulcers and sore gums. By Pliny for extracting loose teeth. Also occurs in prescriptions in S.M.
- Hellebore.** Diosc. for toothache, IV, 151, S.M.
- Henbane.** (*Hyoscyamus*.) Of all drugs in dental materia medica, none has had such a wide and long vogue as henbane. The Assyrian reference appears to be the earliest recorded. It was known as "The Heart Plant," and the following legend was attached to it. "The Sun God brought it down from the mountain<sup>1</sup> and planted it in the earth; its roots filled the earth, its horns stretched to Heaven . . . it seized on the heart (mind) of the Moon God in the clouds; it seized on the heart of the Ox in the Stall, it seized on the heart of the Goat in the Fold . . . it seized on the heart of N and the son of N." This would appear to refer to the narcotic effect of the alkaloid hyoscyne which is contained in the plant. The fumes from burning or heated henbane seed inhaled have been considered a specific for killing the worms supposed to cause dental decay for thousands of years, and it is still used in many parts of the world. It may be that the idea of the dental worm and its appropriate cure have both originated in and diffused from Mesopotamia. Parallels, Diosc. IV, 69, Pliny XXV, 105, Celsus, Cassius Felix, Scribonius Largus,<sup>2</sup> S.M., Leech books, Herbals, and in country districts to-day.
- Honey.** Has a widespread use in dental medicine. Referred to in the Papyrus Ebers, Pliny, Cassius Felix, S.M., Leech books, Herbals.
- Leek.** Recommended for gangrene of the teeth in S.M. Extensively used in medieval and later medicines, Leech books, Herbals.
- Lizard.** (See Blood.) The belief in the medicinal value of various parts of lizards extends to modern times. The Assyrians used the gall and the blood. Diosc. II, 69, recommends the liver put into a hollow tooth for toothache.

<sup>1</sup> I have recently heard that a popular name for its seeds to-day is "Seeds of Paradise."

<sup>2</sup> Scribonius Largus. "De compositione medicamentorum (A.D. 47).



<b>Lupin.</b>	I have not found any parallels to the use of this drug.
<b>Lycium.</b>	Probably similar to <i>cratægus</i> (q.v.) or may be a species of <i>acacia</i> . Both drugs are referred to in the treatment of dental disease by Diosc. and Pliny.
<b>Manna.</b>	Used for fœtor of the mouth. No parallels.
<b>Mint.</b>	The obvious therapeutic value of mint has long been recognised, both as a treatment of toothache and fœtor of the mouth. Celsus refers to a cure practised by country people for toothache, consisting of fumigation of mint leaves in water heated by hot stones. Occurs Leech books and Herbals.
<b>Mustard.</b>	An obvious counter-irritant. Pliny XX, 86, Celsus, Cassius Felix, Leech books, Herbals, Z.A. Used in India.
<b>Myrrh.</b>	Another drug, the therapeutic value of which had been widely recognised. Diosc. I 77 and I 116, Pliny, XXIV, 118, XXV, 110 and XXVIII, 49, Celsus, S.M.
<b>Myrtle.</b>	This drug is referred to by Pliny XXV, 110, for offensive breath, Cassius Felix for fixing loose teeth and ulceration of the gums, S.M. Used in India as a mouth wash.
<b>Nettle Seed.</b>	Nettles recommended extensively in Leech books.
<b>Nigella.</b>	No parallels.
<b>Opium.</b>	The use of opium is very common in Assyrian medicine. It is referred to in Assyrian as "blood of a lion." Recommended for dental disease by Pliny XXV 105, Celsus, Peter of Spain <sup>1</sup> , Herbals.
<b>Origanum.</b>	Pepper wort. Recommended by Diosc. III, 32, for aphthæ, and Pliny XX, 69, for whitening teeth and as a liniment for toothache. Used in India for dental disease.
<b>Poppy.</b>	See opium.
<b>Pyrethrum.</b>	Another drug with a long history. Mentioned as a treatment for dental disease by Diosc. III, 86, Celsus, S.M., Herbals.
<b>Rocket.</b>	<i>Eruca Sativa</i> . Recommended by Diosc. and used in Indian medicine for dental disease.
<b>Rosemary.</b>	A drug which we find prescribed for toothache in Leech books and Herbals.
<b>Rue.</b>	Pliny XX 51. Also in Leech books and Herbals.
<b>Salt.</b>	Widespread in dental materia medica with a sound therapeutic basis for its use. Celsus, Cassius Felix, Leech books and Herbals.
<b>Snake.</b>	The gall is used in Assyrian medicine for dental disease. Diosc. II, 19, advises use of the slough of a snake for toothache, and his prescription was widely copied in later ages.
<b>Tamarisk.</b>	Pliny XXIV, 42, uses it for toothache, decocted with wine. Found in the Herbals.
<b>Thistle.</b>	Diosc. III, 11, recommends its use with pepper and wax. It may be that the down was used in place of cotton wool, but the juice is mentioned by Pliny XX, 99, for dental disease and a decoction of the root in the Leech books and Herbals.
<b>Thyme.</b>	Though thyme seems an obvious remedy for toothache, strangely enough I have not found it mentioned in any of the various herbals, etc., at my disposal.

<sup>1</sup> Peter of Spain (Petrus Hispanus), A.D. 1277. Physician to Pope Gregory X. Afterwards became Pope John XXI. Wrote "Thesaurus Pauperum," the most popular of the medieval formularies.



- Turpentine.** Again, not a common dental remedy, though used extensively for other conditions.
- Vitex Agnus Castus.** (Chaste tree.) Pliny XXIV, 38, recommends for ulcers of the mouth.
- Vinegar.** Vinegar is very widely used as a medium for drugs. Used in this way in Diosc., Pliny, Celsus, Leech book and Herbals.
- Worms, etc.** A number of rather fantastic remedies occur in the Assyrian medical texts involving the use of worms, weevils and other insects, frogs, and so forth. The very strangeness of these remedies and the fact that we find parallels to their use in later medicine seems to point to the possibility that they have diffused from some common source. One can conceive an independent discovery of the properties of a drug with obvious therapeutic value, such as mint for an offensive breath, but when we find the Assyrians using the fat of green frogs for toothache and medieval writers using the self-same remedy, when we find them crushing some kind of beetle or weevil and applying it to the aching tooth, and the same use being made of the ladybird and the bloody-nosed beetle in country folk lore to-day, one cannot help thinking that such remedies have been passed down from age to age with no thought as to whether the cure was rational or not. Conservatism and lack of originality is the keynote of herbal lore. Dioscorides and Pliny—particularly the latter—were copied and recopied right through the Dark and Middle Ages and later, and the fact that we find so many parallels to Assyrian recipes in their works seems to point to the probability that Babylonian Assyrian lore had a great influence upon Neo Greek and Roman medicine. Whether this influence came direct or whether through the Magi of Persia is a matter for further research, but it seems most unlikely that so many remedies of such great similarity could have had independent origin.

I have endeavoured in this paper to show that the culture which arose in the Tigris-Euphrates basin in very early times played a considerable part in the early development of medical science in general and dental science in particular. That in spite of the dead hand of magic and superstition which held free, untrammelled scientific thought in check, there is abundant evidence that the leeches of Mesopotamia were struggling to the light in spite of their handicaps, and that they at least lit a candle to burn for ever in the Shrine of Æsculapius. Further research and discoveries may show us that their influence was more influential and basic than we realise to-day.

The wisdom of the Chaldeans has become proverbial. They gave to civilisation many inestimable gifts, including the art of writing. Gifts which merit the study of all who are interested in the progress of human culture. Although, in the words of Isaiah, the "wolves shall cry in their castles, and jackals in the pleasant palaces," their lore has played no small part in the story of civilisation, and much of the story remains to be told.



