

SYMBOLS, GLYPHS, AND DIVINATORY ALMANACS FOR DISEASES IN THE MAYA DRESDEN AND MADRID CODICES

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NO SATISFACTORY explanation, to the best of my knowledge, has been offered of the scenes on pages 16-20 of the Maya Dresden codex and the parallel passages on pages 93-95 of Codex Madrid which depict a goddess or woman in association with various birds, animals, and gods. She carries them on her head or shoulders or on a pack on her back supported by a strap across her chest.

Before attempting to solve the problem of the subject matter, I will make 3 postulates, for all of which, I believe, there is ample support. The first is that these 2 codices deal purely with divinatory matters; the second is that the woman depicted in these passages is Ixchel, the moon goddess, whose functions as patroness of childbirth, procreation, disease, weaving, and the growing crops I have previously defined (Thompson 1939; 1950: 230-1); the third is that the Dresden codex is the product of a Yucatec-speaking group.

Few or no persons would now deny the divinatory nature of the almanacs in these 2 codices or would contest the statement that most of them indicate the days which are favorable or unfavorable for such activities as agriculture, beekeeping, and hunting. Moreover, the astronomical sections of Codex Dresden must be regarded as divinatory, for the approach was astrological rather than astronomical; their main purpose was surely to give the priest fair warning when such dire events as heliacal risings of Venus and solar eclipses were to fall so that he could take the necessary steps to circumvent the evil consequences (Thompson 1950: 63-4).

The identity of the seated woman who appears in every picture of these supposedly medical almanacs is not, I believe, open to serious question. She is Ixchel, also called Zac Ixchel, "white Ixchel," the moon goddess and wife of the sun god. Sun and moon were the first parents, and the moon is commonly referred to as "our mother," "lady," and such terms. *Colol*, "mistress," also seems to have been applied to her. If, as seems possible, this term may be related to *col*, "milpa," we have an explanation of the fact that the curl of hair, the symbol of the moon goddess, is also the symbol of the

earth sign, as for example, in the glyph Caban. Ixchel was the patroness of childbirth, sexual relations, disease, the earth and its crops, water, and the art of weaving. It is, therefore, logical to find her as patron in almanacs which supposedly deal with disease.

The main reasons for believing that Codex Dresden originated in northern Yucatán are these: The presence of Initial Series dating and the elaborate astronomical presentation strongly argue in favor of a lowland origin. The standard form of Calendar Round rules out Campeche and the Puuc, and I suspect, but cannot prove, that this also eliminates the Chontal region after the close of the Classic period. The rather marked Mexican influences in the codex argue against an origin in the center and the southeastern lowlands, regions which, in any case, were backward in Postclassic times. The readings of certain glyphs, for instance the drought, *kintunyabil*, glyph (Thompson, 1950: 269-70) seem to depend on the employment of Yucatec. The use of the numerical *ox*, "three," as an intensifier (Thompson, 1950: 268-9) eliminates the Palencano Chol region and probably the Chontal area as well. We are left only with northern Yucatán or conceivably Tayasal, but if Codex Dresden was sent as a present to the Emperor Charles V, as is not improbable, it could not have come from Tayasal.

The sets of day names used as yearbearers in Codex Madrid enable us to place its provenience as Campeche, the Puuc region of Yucatán, or possibly farther down the west coast. Draughtmanship and script are far inferior to those of Codex Dresden, but subject matter, apart from the astronomical and mathematical aspects of Dresden, is fairly close, as is the pantheon. The glyphs to be discussed seem to be absent from Classic texts, so there is no complication of reconstructing proto-Maya.

In interpreting passages in the Maya codices it is essential to bear in mind that the pictures supplement the hieroglyphic texts; the texts do not interpret the pictures. To illustrate this point, the almanac running across the bottom thirds of pages 42-45 of Codex Dresden indicates the dates which will bring drought and those which will bring good crops. The

drought glyph appears on page 42c, but there is no glyph to describe the subject matter of the accompanying picture in which the rain god is about to strike with his ax the young maize god who tries to protect his face with his hand. The same drought glyph appears on page 44c, but again there is no glyph to explain the accompanying scene, in which the same rain god, with torch in each hand, bestrides a deer with outstretched tongue which crouches on the ground apparently in the act of dying. Yet, the smiting of the young maize god by the rain god, who could send or deny rain, is an obvious convention for crop failure and its corollary, drought. *Cim cehil*, "death of the deer," is a stock Maya phrase for drought in the books of Chilam Balam (Roys 1933: 122), and the burning torch is a symbol of the scorched earth. It is, therefore, perfectly understandable that there should be no reference in the glyphic text to either deer or death. Instead, the glyphs for drought express the concrete fact pictorially represented by the metaphors of the dying deer and the stricken maize plant. Similarly, in one of the scenes accompanying the glyphs for good tidings and abundance the rain god paddles a canoe, a fairly obvious picture of good rains, but in the glyphic text there is no glyph for a canoe or paddle. This matter of the relation of pictures to text is important because so many attempts to read the Maya hieroglyphs have started with the incorrect assumption that the glyphs describe the pictures with which they are found. Moreover, glyphs occur without pictures; pictures never appear without glyphs.

Although divinatory almanacs for such activities as beekeeping, farming, weaving, and hunting have long been identified by the associated glyphs or by the accompanying pictures, yet the sending of disease, clearly one of the most important matters in which divine intervention affects man's fate, has not been recognized as the subject of any divinatory almanac.

The Maya do not, and presumably never did, hold the divine powers responsible for all disease which befalls mankind or his crops, but there is ample evidence that much disease was sent from above in the opinion of the Maya of Yucatán who, as noted, are probably to be credited with the painting of Codex Dresden and perhaps of Codex Madrid as well. Bishop Landa (Tozzer 1941: 106, 129, 184) tells us that the Yucatec Maya believed that death, sickness, and affliction were the results of

wrongdoing and sin; that virulent pestilences, quarrels, or droughts were due to divine anger; and he adds that they performed rites for their gods solely that they might be granted health, life, and their daily bread. That sickness is divine punishment for wrongdoing or neglect of one's religious duties is still a Maya belief in Yucatán (Redfield and Villa 1934: 177; Villa 1945: 105, 134) and in other parts of the Maya area (Baer and Baer 1952: 248-9; La Farge and Byers 1931: 141-2). Furthermore, as will be brought out below, the Yucatec term *koch*, the glyph for which I believe I have identified, means both divine retribution and disease.

One might, therefore, reasonably expect to find in the Maya codices divinatory almanacs covering the subject of divinely sent disease. Pages 16-21 (Fig. 2) and 22c-23c of Codex Dresden and pages 93a-94a, 94b-95b, 94c-95c, and 91d-94d of Codex Madrid seem to meet this expectation, although perhaps only those scenes which show the goddess with bird, animal, or god on her head, shoulders, or back (Dresden: 16b-18b, 16c-20c; Madrid: 94c-95c, 93d-94d) treat to a varying degree of disease of man and crop. Consideration of the other sections will be postponed to some future study; Dresden pages 16a-17a will also be omitted from the discussion because the glyphs are largely destroyed.

In almost all divinatory almanacs day signs are at the left, and the additions needed to reach each set of days which govern each divination are given in black bars and dots (Fig. 2). To simplify handling of this involved subject, the accompanying days are omitted from the present discussion, except in the example of interpretation given below, but it must be emphasized that whatever fate a passage promises—drought or abundance, death or good tidings—the days with which that fate is associated are always given. Indeed, on the specific days depends the whole divinatory structure.

A divinatory almanac is composed of several compartments or subdivisions, occasionally only two, but normally four or five, depending on the way in which the 260-day almanac is divided. Normally, each compartment has 4 (sometimes 6) glyphs at the top, and below them the arithmetical computation in bars and dots to allow the priest to calculate the days to which the divination applies. Below these is the picture which illustrates, comments, or amplifies the glyphic text (Fig. 2). Ideally,

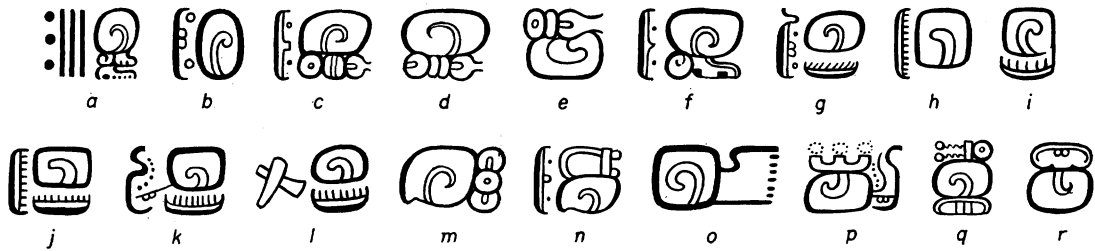


FIG. 1. Examples of spiral glyph. *a, c, d, f, g, m, n, r*, Codex Dresden, pp. 46, 18b, 17b, 17c, 49, 18c, 4c, 39c, *b, e, h-l, o*, Codex Madrid, pp. 87b, 95c, 22c, 17a, 99c, 83b, 73b, 64b; *p, q*, Codex Paris, pp. 10, 6.

every section of an almanac has its accompanying picture, but if there was no change in the general subject the picture in one or more sections was sometimes omitted to save space. The glyphic text, however, is always present, and when the picture is omitted, the repetition of the action glyph indicates that the general subject is the same, although the subject glyph, the *nomen actoris*, can change. For example, on Dresden 17b there are no pictures with Compartments 2 and 3 (Fig. 2 b, top right corner). However, the glyphs for monkey and dog at the head of their respective columns, each followed by the same action glyph, indicate that those animals are engaged in the same activity as is depicted in Compartment 1.

The first 3 glyphs in a compartment usually comprise the glyph of the deity who rules over the days assigned to the division or compartment, an action glyph or verbal-noun (verbs are weak in Yucatec), and the object of the action. The last glyph is the augural glyph which gives the result, beneficial or otherwise, of the deity's action on mankind. The order of the first 3 glyphs can vary. For example, the 4 glyphs above the picture of the moon goddess carrying on her back the manikin-like death god (Fig. 2 b, lower right) read: "The death god (1) her burden (2) the goddess Ixchel (3) death [the augury] (4)." In better English: "The burden of the moon goddess is the god of death. Death is the augury." In Maya the glyphs probably read: *Yum Cimil* [the death god] (1) *u cuch haab* (2) *Ixcolet* [Our Mistress, the moon goddess] (3) *multun tzek* (4). However, the Maya word for burden, *cuch*, means much more than merely the load one carries on one's back; it is a metaphor for the outlook for the future, the destiny in store for the community or the individual. The Motul dictionary somewhat pessimistically defines

cuch haab (*haab* is year) as "the labors, hunger, and pestilences which occur in this life." *Cuch* also signifies the duties and responsibilities associated with office or an administrative post, and corresponds closely to our "burdens of office." The transcendental importance of this conception and its well-established glyph are discussed elsewhere (Thompson 1950: 59-61, 267).

We are now in a position to restate the meaning of the glyphs which stand above this picture of the moon goddess carrying on her back the death god, bearing in mind that Ixchel, the moon goddess, is a deity of disease: "On the days Cimi, Etz'nab, Oc, Ik, and Ix the death god is the fate the goddess has in store for us. Much death is the augury." The day names are not written, but the associated numbers showed the Maya priest, as well as the modern decipherer, which days are intended.

In the left compartment of Dresden page 18b (Fig. 2 c, top left) the moon goddess is again seated, but she carries the death god not on her back, but perched on her shoulders. The glyphs above the picture are the same as those just discussed except that a spiral glyph with *u* prefix and *ti* postfix (Fig. 1 c-e) replaces the *u cuch haab* glyph. As the primary meaning of *cuch* is a load carried on one's back, the replacement of this glyph by the spiral compound might well reflect the change of position of the death god from resting on the back load support to crouching on the goddess' shoulders. However, just as the *cuch* depicted on the goddess' back stands for the metaphorical derivative *cuch*, "fate," which she decrees for mankind, so the action of the death god in perching on the goddess' shoulders should have a secondary meaning or possess a homonym which gives the key to the passage. Such a word is the Yucatec *koch*.

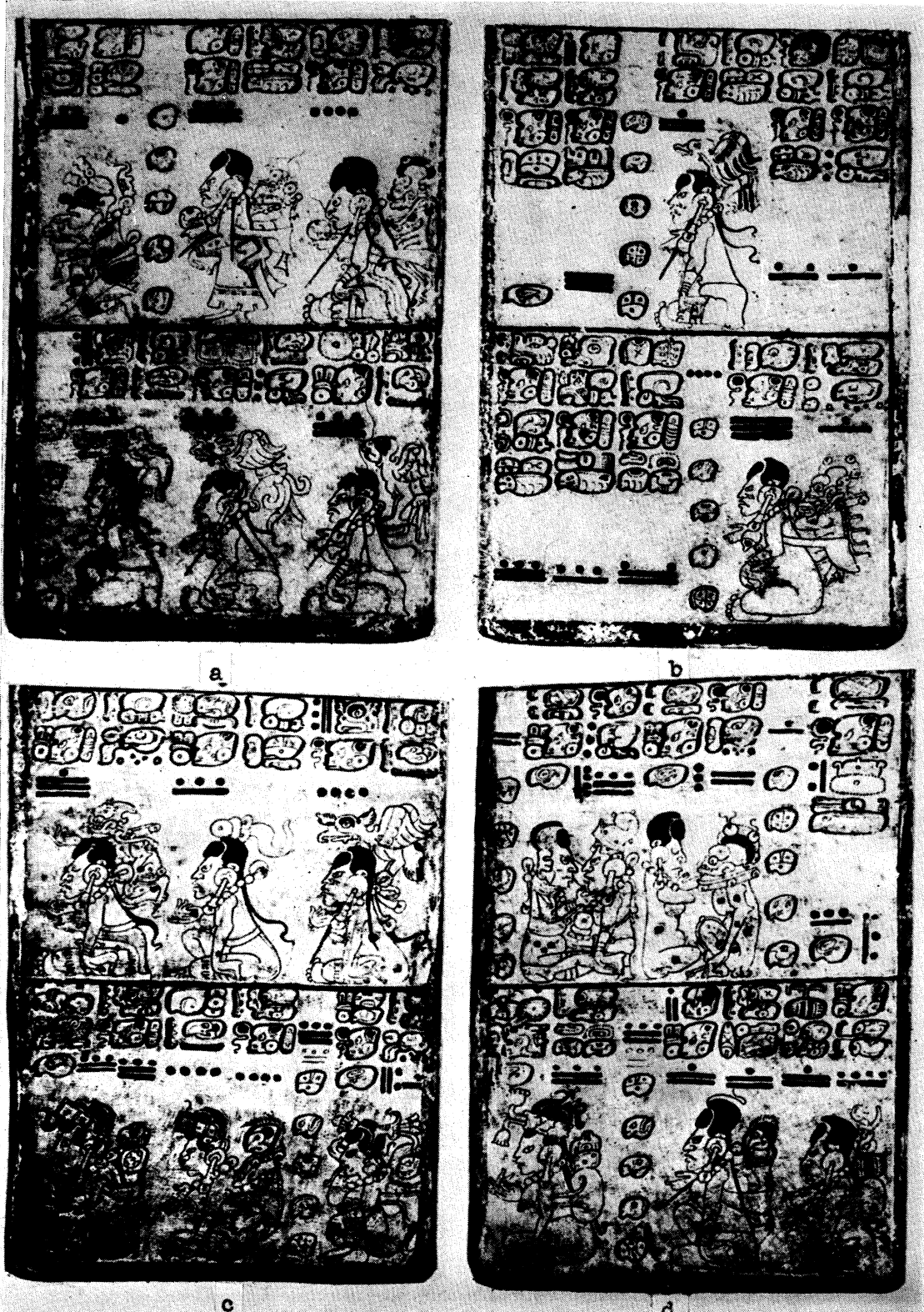


FIG. 2. Lower two-thirds (b and c) of Codex Dresden pp. 16-19. Read left to right across upper halves of pages and the same for lower halves. Vertical columns of 5 day signs mark starting points of almanacs. Bars and dots carry count forward, and each compartment has 4 hieroglyphs. *Cuch* almanacs run: from a top center to b top center; from b lower right to c lower center; from c lower center to d lower center; from d lower center to p. 20 (not shown). *Koch* almanacs run: from b top center to c top right; from a lower left to b lower center.

The Motul dictionary gives as a meaning of *koch*, to carry above one on one's shoulders a cross, wood, or such like things. *Kochcal* (*cal* is neck or throat) has the same meaning, and *kochhol* (*hol* is head) is to carry on one's head; *kochche* is to carry something, such as a litter, by means of a pole (*che*) resting on the shoulder, and *koch pixan* is the load of one's conscience (*pixan*, soul). The Pio Perez dictionary gives the translation to carry on one's shoulders and also lists *kochol*, the load one can carry on the head and *kochcaltah*, to carry on the shoulders. *Koch* also appears in both dictionaries with the meaning to attack with horns (*cornear*), a use which in pre-Columbian times must have been largely confined to describing the fights of deer. *Koch* is also the gullet.

Koch also means divine punishment. For this homonym the Yucatec Motul dictionary gives the meanings fault, offense, guilt (*culpa*) and illness which results from wrongdoing. The sense of chastisement appears in the expression given in the Motul dictionary *dz'a koch*, "punish and chastise with penalty." The divine origin of this is brought out in the example which reads "God now chastises us." Literally the phrase means to give (*dz'a*) punishment (*koch*). According to the Motul dictionary, *koch* is a term applied also to diseases of the maize crop, presumably as a result of divine intervention, although that is not stated. The San Francisco similarly translates *koch* as fault, punishment, or sickness, and the example reads "God has given me sickness." The Pio Perez dictionary gives for *koch* and *kochil*, guilt, sin, error, obligation, responsibility, but the meanings punishment or sickness are listed as no longer in use. Indeed, Pio Perez, as Ralph Roys has noted, translated *koch*, where it appeared in the annual calendar of the Chilam Balam of Mani which he presented to Stephens, as a day of service and even as taxation, but that was after 1840, by which time many of the old Maya ritualistic terms had fallen into desuetude. *Koch*, as dire fate in store, appears in the prophecies for katuns 11 Ahau, 5 Ahau, and 8 Ahau, in contexts of violent death. Roys (1954: 37, 39, 42) translates the term as punishment for guilt.

I suggest that in the passage under discussion *koch*, represented pictorially by the carrying of the death god on the goddess' shoulders, is to be read rebus fashion as *koch*, divinely inflicted sickness or punishment, supplying a close paral-

lel to *cuch*, pictured as a burden carried on the back, but to be read in its metaphorical sense as the fate in store for mankind. This juxtaposing of passages with *koch* and *cuch*, with semblances in meaning and sound is just what the Maya, with their love of play on words, strove for in their writings (Roys 1933: 70-4, footnotes; Thompson 1950:62).

With the translation of the spiral glyph as *koch*, and its affixes as "his" and "to," meanings long since applied to them (Thompson 1950: 50, 188), the 4 glyphs of the passage (Fig. 2 c, top left) would read: *Yum Cimil* (1) *u koch ti* (2) *Zac Ix Colel* (3) *Multun Tzek* (4), literally "Yum Cimil, the death god, his carried on the shoulders of Lady White Mistress. Heaped up death," but rebus fashion it reads "On the days Eb, Kan, Cib, Lamat, and Ahau the death god is the divine punishment the white goddess has in store for us. Much death is the augury." The passage is almost the same as that with the *cuch* glyph, merely a second way of expressing the same thing.

Before discussing other passages in which sundry creatures are perched on the moon goddess' shoulders below texts with our spiral glyph, let us test the meaning of divine punishment or sickness tentatively assigned it.

Altogether the main element, with its varying affixes (Fig. 1 a-r) appears some 85 times in the Maya codices, principally in Codex Madrid, less commonly in Codex Dresden, and very rarely in Codex Paris. This is Glyph 345 in the Gates (1931: 157-9) numeration and Glyph 1310 in the Zimmermann (1956: 84-5) system. A very similar glyph (Gates's number 353; Zimmermann's 1311) has the hook or spiral solid black. Previously I confused these 2 glyphs, and identifying the latter as an aquatic symbol, supposed that the former had the same value (Thompson 1950: 114); the two should not be confused.

Apart from the use of the glyph with scenes such as have been discussed, the most important use of the spiral glyph, the supposed *koch* sign, is as an augural glyph, that is to say a glyph, usually the last of the group, which records the influence of the ruling deity on the date in question, the luck of the day (Thompson 1950: 268). As an augural glyph in Codex Madrid it is always combined with the comb affix (Fig. 1 h-l), and it usually appears with glyphic or pictorial representations of the death god or the related god of misfortune and prob-

ably of human sacrifice, God Q (Thompson 1950: 131-2). Of the 44 examples in Codex Madrid, thirty-five are in short texts which include the glyph of one or the other of those 2 malignant deities, and the glyph for death is usually also present, but in none of these passages does the glyph for evil or misery, the *kas* glyph (Thompson 1950: 258), appear, although that glyph generally accompanies the death god and God Q. Clearly our spiral glyph is malignant in this compound and serves as an alternative to the *kas* glyph. The suggested interpretation of *koch*, disease as divine punishment, fits very neatly these passages in which the death god and the malignant God Q are in charge, and in which the death glyph also appears with frequency. Its substitution for the misery (*kas*) glyph is understandable for the two are nearly synonymous.

The spiral glyph with *u*-bracket prefix and comb postfix (Fig. 1 *g*) appears 9 times in Codex Dresden, in all cases in connection with the planet Venus. One appearance is in the introductory section on page 24 of Codex Dresden; the other 8 occurrences are in the texts adjoining the pictures on pages 46, 48, 49, and 50 of the same codex which illustrate the punishment the god of the planet inflicts on various categories of human being and of nature.

Seler (1904: 384-7) in a piece of brilliant research brought to light material on Mexican ideas concerning heliacal rising of Venus and showed that the pictures on pages 46-50 of Codex Dresden illustrated the same beliefs. In Mexican thinking the Venus god was particularly malignant at heliacal rising. Sahagun (1938, Bk. 7, Ch. 3) tells us that the light of the newly risen planet was unlucky and was believed to bring sickness. According to the Aztec text (Sahagun, 1950, Bk. 7, Ch. 3): "And when it newly emerged, much fear came over them; all were frightened. Everywhere the outlets and openings [of houses] were closed up. It was said that perchance [the light] might bring a cause of sickness, something evil, when it came to emerge. But sometimes it was regarded as benevolent."

Seler quoted a passage from Codex Chimalpopoca which expresses the effects of the malignant rays of light at heliacal rising as the spearing of the victim by the planet, and which names the various categories of victims, such as youths, chiefs, old people, the maize crop, and the rain. He demonstrated that this spearing

of victims by the Venus god is illustrated not only in Mexican codices, but also in the pictures in Codex Dresden which accompany the Venus tables.

It is logical that the spiral glyph should occur with these pictures of the sickness and evil caused by Venus at heliacal rising if the suggested interpretation of the glyph as *koch*, sickness or divine punishment, is correct. Moreover, in these texts treating of heliacal rising it appears to supplement or alternate with the evil (*kas*) glyph, which it is natural to find in these passages, as well as with a remarkable variant of the moon glyph found only in these passages of the Venus pages (very hesitatingly I suggest the phonic value *kalaan*, "shut up," for the moon stands for the number 20, *kal* in Yucatec). These 3 glyphs are principally in Glyph Blocks E7, E9, and E11, as well as in the shorter F groups of glyphs. Only on page 47 is the *koch* glyph absent. Barthel (1955) recognizes in these pages yet another glyph for the misfortunes Venus inflicts on humanity at heliacal rising.

In connection with the use of the supposed *koch* glyph to indicate the sickness sent sundry categories of mankind by Venus at heliacal rising, it is of interest to note that in the almanacs grafted on the Christian year in the books of Chilam Balam *koch* is given as the fate of priests on the day 12 Chuen, of nobles on the day 5 Caban, of the *ah kulel* officials on the day 11 Akbal, and of nobles again on 12 Kan, and the *koch* of the young men is brought to an end on the day 1 Manik. These dates are respectively 11, 17, 22, and 23 days after, and 13 days before, 1 Ahau, the great day of Venus at heliacal rising and the day name of the planet. I do not believe that this is coincidence, but that in these entries of the 18th century we have a confused tradition of the *koch* inflicted on those categories of mankind by the god 1 Ahau, Venus, at heliacal rising. At least, nobles and youths are among the groups listed in the Codex Chimalpopoca as threatened by the rising planet.

Once the *koch* glyph has a "knot" postfix (Dresden 18c; Figs. 1 *m*; 2 *c*, lower center), and refers to the little misery manikin which the goddess carries on her back. On Dresden 19c (Fig. 2 *d*, lower center) the glyph of God Q stands in the same position above an exactly similar representation of the goddess carrying the misery manikin. It is reasonable to suppose

that the *koch* glyph here denotes the personification of divine retribution, although, so far as I know, no word for a sender of punishment has survived.

Once the *koch* glyph has the *ax* prefix (Madrid 73*b*; Fig. 1 *d*). In the accompanying scene God B, the rain god, is seated in what may be a cenote and holds what may be a bean or some other seed, and an awl. Opposite is a Muan bird. Although this scene is not readily explained, the accompanying glyphs include that of the death god and the death sign so again the *koch* sign probably refers to divine punishment.

We have now accounted for most of the appearances of the *koch* glyph, and have found that they can be satisfactorily assigned the meaning *koch*. There remain a few examples where the interpretation is more obscure.

One *koch* compound (Fig. 1 *n*) appears 4 times in an almanac on Dresden 4*c*-5*c* above as many pictures of gods holding the same *koch* glyph. The subject of the almanac is not obvious. Among the meanings of *koch* is that of something true or which turns out to be true, infallible, and certain. The Motul dictionary cites as an example *koch uayak*, a dream which turns out to be true, suggestive of a prophetic meaning for the word, and that might be the meaning in this almanac, but I hesitate seriously to advocate it.

In the divinatory almanac of Madrid 97*c*-98*c* the *koch* glyph with comb affixes (Fig. 1 *j*) appears in three or four of the 5 compartments. The associated pictures show gods holding germinating plants which rise from seeds (?) labeled with the *Ik*, "life," sign. As *koch* is also applied to diseases of crops, this is a possible explanation of the occurrences here, but I am not satisfied that that is the correct interpretation. Possibly *koch* was a somewhat general term for a certain class of medicinal plants, including *Ricinus communis* believed to be of European introduction. Roys (1931: 255, 256) discusses *xkoch*, *koch*, *xkochle*, and *kaxilixkoch*, all medicinal plants. Once the

spiral element serves as the glyph for the month Muan (Fig. 1 *a*), and for that I can offer no reasonable explanation.

There are, accordingly, a few isolated examples of the spiral glyph where the interpretation is uncertain, but I think I have demonstrated that the Yucatec root *koch* satisfactorily translates most of the occurrences. With greater confidence, therefore, we can return to a fuller investigation of the *koch-ti* compound and the *cuch* which the goddess carries in those almanacs which, it is suggested, treat largely of disease.

In the 5 compartments of the divinatory almanac on Dresden 19*c*-20*c* the seated moon goddess carries on her back in sequence: the personified figure of the misery (*kas*) glyph (Fig. 2 *d*, lower center); the fire symbol with flames rising from it (Fig. 2 *d*, lower right); a second representation of the misery (*kas*) glyph; the young maize god; and, lastly, a youthful deity, perhaps the ambiguous God H. The figures are about half the size of the goddess. The 4 glyphs in each compartment read as in Table 1.

The white prefix makes no difference to the identity of the goddess. She is the same moon goddess, Ixchel or Colel, "mistress" (perhaps denoted by the earth curl, like a query mark before her face — *col* is *milpa*). The destinies she has in store for mankind are both good and bad; she brings good crops on some days; on others death is the destiny she imposes on mankind.

The burning fire on her back and the *kak*, "fire," glyph which it illustrates do not fit the context if taken literally. However, *kak* means not only "fire"; it is also the Maya name for a number of eruptive skin diseases. Roys (1931: 138-94) lists the names of no less than 33 skin diseases, including smallpox (post-Columbian?), which contain the term *kak*. In view of the texts previously cited which had to be read, not literally, but metaphorically, we can be certain that this passage does not tell us that the moon goddess is carrying a lighted fire on

TABLE 1. READING OF GLYPHS IN DRESDEN 19*c*-20*c* (see text for explanation).

God Q	her destiny (<i>cuch</i>)	the white goddess	<i>tok-te-unknown</i>
Fire (<i>kak</i>)	the white goddess	the end of her destiny	<i>flame-te-haab</i>
The death god	her destiny (<i>cuch</i>)	the white goddess	death (<i>multun tzek</i>)
The maize god	her destiny (<i>cuch</i>)	the white goddess	abundance of maize.
The white lord	her destiny (<i>cuch</i>)	the white goddess	good tidings

her back, but that eruptive skin diseases are the fate she has in store for mankind on the days in question. The lady's not for burning.

In examining the little misery manikin, we are reminded that the Yucatec word *yaah* means sprite or imp (*duende de la casa*) and also disease in general, dangerous sores, poison, and venom.

It is also worthy of note that the augural glyph in the first compartment has the flint sign (*tok*) prefixed to it, and God Q whose glyph is the first in this compartment is the malevolent god of the flint knife (Thompson 1950: 132). *Tok* enters into the names of 2 Maya diseases: *u lom tokil hubnak*, diarrhea which stabs like a flint knife, and *akab tok*, "dark flint," a skin disease. *Tok* is also the term for remedial bleeding (Roys 1931: 52, 53, 136, 137). Nevertheless, the flint prefix here may have a derived meaning, for the knife was clearly regarded as something which bit into the flesh, and in some Maya languages the term for mouth is incorporated in the name for knife (Thompson 1950: 87). *Chibal*, the Yucatec term for bite or sting, is also used for aches and pains, such as headache, aching bones, abdominal pains, and earache, and it may well be that the flint prefix in this text is to be used in that sense.

In 2 other almanacs, occupying Dresden 17c-19c (Fig. 2 *b*, lower right, to *d*, lower left) the moon goddess is again shown with her burdens and the *cuch* glyph stands above in each compartment. The burdens comprise respectively: the death manikin; the *yax-kan* compound of unknown meaning; the misery manikin with death attributes; a skull in a kind of bag; and, again the *yax-kan* compound.

Of major interest here are the glyphs above the scene showing the goddess carrying the kind of skull in a bag (Fig. 2 *c*, lower right). The first of these, representing the destiny of the goddess is the death symbol (*cimil*) with the affixes *chac*, "red" or "great," and *zac*, "white" or "pseudo." *Zac cimil*, "pseudo death," is a common Maya term for fainting spells. According to the Motul and Vienna dictionaries the term also means *gota coral*, "epileptic fits," and the Vienna dictionary adds *mal de corazon*, which in the context can only be taken as heart attacks. Logically, the addition of affix *chac* would indicate a severe attack. The word *chac* is used with other diseases, notably with *hoch ka*, "perforating ulcers," *muclah kak*, "swelling

and eruption," and *dz-unuz*, "cancer," where it seems to carry the idea of "severe" rather than "red." It is worth noting that I advanced this interpretation of the *chac zac cimil* glyph several years ago when I had no thought that this could be an almanac treating largely of disease (Thompson 1950: 191).

On Dresden 18c (Fig. 2 *c*, lower center) the glyph corresponding to the misery manikin with death attributes is the *koch* sign with knot (?) postfix, which presumably should be read as divinely sent disease in general (Fig. 1 *m*).

In brief, then, the pictures of the moon goddess with diverse burdens on her back and the glyphs they accompany tell us that the fate (*cuch*) the goddess has in store for mankind on specified days (to simplify the presentation I do not cite the positions in the various almanacs, but they are given) are death, misery, the *yax-kan* compound of unknown meaning, plentiful maize, rain, God D, Itzamna (good crops?), various eruptive diseases of the skin, heart attacks and epilepsy, and general punishment or disease sent from on high.

The glyphs of the birds, animals, and gods which appear in the almanacs with the *koch-ti* (perched on shoulders or head) glyph on Dresden 16c-17c (Fig. 2 *a*, lower to *b* lower center) and 17b-18b (Fig. 2 *b*, top center, to *c*, top right) are as follows: The Yucatecan screech owl, *ah coo ti akab* or Muan; quetzal, *kuk*; macaw, *mo*; black vulture, *ch'om*; black vulture, *kuch*; turkey, *ah tzo*; and, on 17b-18b, *ch'om*, vulture, again; monkey, *maax*; dog, *pek*; death manikin; God D; and the Yucatecan screech owl, *ah coo ti akab* or Muan.

Of the birds and animals listed above several are the names of skin diseases or of kinds of fits or madness. *Ah coo ti akab* means the one who is mad at night and *ah co tancax*, "mad frenzy," is an important disease in the Ritual of the Bacabs. *Mo* is the generic term for macaw; *mo tancax* or *balam mo tancax*, "macaw madness" or "jaguar macaw madness," and *tzitz mo ik*, "spotted macaw spasm," are important diseases in the Ritual of the Bacabs. *Kuch* signifies not only vulture, but also scabies, remedies for which are published by Roys (1931: 158). I follow Tozzer and Allen (1910: 331) in identifying the bird on Dresden 17b as the zopilote or black vulture, *ch'om*. *Ch'om ch'om* is the term used for the pittings of the skin left by diseases such as smallpox. *Pek* is the generic term for dog, and is also the name for

more than one type of spotty infection of the skin (Roys 1931: 166). *Ah tzo* is the term for the male ocellated turkey, and *ah tzo* or *tzo* is also a term for pimples on the face. (The turkey is not shown in this text, but his glyph stands above the turkey caught in a trap on Codex Madrid, p. 91a). *Maax* signifies both spider monkey and an inflammation of the gums called in Maya *chac nich' maax*, "red gum monkey" or "monkey chile" (Roys 1931: 184). It will be noted that all the diseases listed are skin diseases or forms of frenzy or madness. Among the *mo* frenzies is *auat mo*, "crying out macaw," listed in the Motul dictionary as a violent paroxysm of shrieking, usually ending in death.

Finally, we have the picture of the quetzal bird, the Maya name for which, as Roys (1933: 121) has shown, was *kuk*, with *yaxum*, "green bird," as a more generalized term. *Kuk* also means shoot or sprout, and, metaphorically, children. The glyphs in this compartment with the picture of the quetzal bird perched on the goddess' shoulders is different from the remainder. In this section alone the *koch* glyph is not shown, and, in contrast to the ill-fortune of most of the sections in these divinatory almanacs, the augural *ox-oc*, "good tidings," glyph is given. Here then the news is excellent and no *koch* is to be inflicted on mankind. Perhaps it is not farfetched to suppose that here the goddess is giving children, "little sprouts," to mankind. This is not unreasonable for Ixchel is above all things a patroness of childbirth. Parenthetically, the use of *kuk* for child perhaps derives from the precious nature of the quetzal. In Nahuatl a midwife spoke of the child about to be born as "jade" or "quetzal feather," and the same terms were used by a father of his son on ceremonial occasions, for instance when he arranged his entrance at the *calmecac* (Sahagun 1938, Bk. 3, app. Ch. 7; Bk. 6, Ch. 27).

The second glyph in this compartment (Fig. 2 a, lower center) is the *kax*, "evil" or "misery" glyph, and this is the only passage in Codex Dresden where it is not an augural glyph. The Motul and Pio Perez dictionaries list *kaxil* and *kaxal* as the male and female sex organs and as semen. In view of the suggested translation of *kuk* as "children," and taking into consideration the moon goddess' close connection with the sexual act, it seems logical to translate the *kax* glyph in this passage as generative powers.

The whole passage would then read: "children from the generative powers of the goddess. Very good tidings." It may be no more than chance that the first day sign associated with this compartment is Oc, which has definite associations with the sexual act (Thompson 1950: 79).

In identifying the glyph of the turkey as *ah tzo*, I have assumed that the male turkey is intended. At least, the bird on Madrid 91a over which this glyph stands is surely a male. *Ah tzo* is the normal name for the turkey cock, both the wild ocellated and the tame turkey. It is used in the ritual of the chiefs in the Chilam Balam of Chumayel (pp. 39, 40, 69, 70). The term *cutz* apparently was once confined to the female ocellated turkey, for it is translated as female in the Motul and Ticul dictionaries, and is used to denote a hen bird, in contrast to the masculine *ah tzo*, in the last passage cited from the Chilam Balam of Chumayel. However, in the Vienna and the Pio Perez dictionaries the term *cutz* is applied to both male and female turkeys, suggesting carelessness or a widening of the term in later colonial times. For dog, I use *pek*, the everyday Yucatecan term.

Almanacs on Codex Madrid 93d-94d and 94c-95c closely parallel those of Codex Dresden just discussed. In the former the *cuch* glyph again appears above pictures in which the same goddess carries sundry deities on her back; in the latter the supposed *koch* glyph replaces the *cuch* glyph and birds are perched on the goddess' head in all 8 sections. Because of the much cruder draughtmanship in Codex Madrid, reliable identifications of the birds are harder to make, and the glyph sequence is more complex. Accordingly, I shall not discuss these sections in detail. Clearly, the subject matter and approach is along the same lines as those of the parallel passages in Codex Dresden, and on the interpretation of those the whole thesis will stand or fall.

When the identifications of the various diseases were first made I was discouraged by the fact that several of the names were not of dangerous and widely diverse diseases, but were of skin ailments of somewhat minor importance and all very much of a sameness. A review of the problem of diseases and its senders proved an effective medication.

Among the peoples of Central Mexico the belief was widespread that specific related dis-

eases were under the control of certain deities. Thus, skin diseases such as varieties of pox, pustules and eruptions, scab, and infections of the eyes were sent by Xipe Totec, and those suffering from such diseases could be cured by donning the flayed skins of the god's impersonators. Ome Acatl, god of banquets, an aspect of the all-powerful Tezcatlipoca, sent throat diseases, pressings on the chest (indigestion?), and caused blockages of the gullet with food, whereas the gods Amimitl and Atlaua, who hailed from the region of Xochimilco, sent dysentery and diarrhea, and coughs, catarrh, and consumption. Atlatonan was the goddess of lepers and those with groin tumors, and the Tlalocs had in their care all those who suffered from dropsy, leprosy, gout, and mange. Sufferers from those diseases, as well as those who drowned or were killed by lightning went to Tlalocan, the paradise of the Tlalocs. The goddess Tzapotlatena, discoverer of the medicinal turpentine called *uxitl*, cured a number of skin diseases of the scalp, face, and lips. The goddess Tlazolteotl, the Mexican equivalent of Ixchel, also sent diseases to mankind, but these are not specified. Still other deities sent other ills.

Clearly, for central Mexico certain categories of diseases were controlled by certain gods. Information from the Maya area is much sparser.

Ruth Bunzel (1952: 144, 145, 267, 292) notes that in Quiché-Maya belief sickness results from sin, but may be sent from God or by one's ancestors or by the *idolos* or may result from black magic, but generally speaking — and such contradictions are not unnatural — all sickness, serious or trivial, is sent by the "Lord of Sickness and pain and his cohorts, the gods of special sicknesses, poisoning, alcoholism, and all forms of violent death, and physical torture." Accordingly, among this important Maya group special gods control special diseases and quite possibly groups of related diseases.

Our best source for the ideas of the lowland Maya on this matter will eventually prove to be *The Ritual of the Bacabs*, which contains 46 medical incantations, but these are extremely recondite and largely untranslated. Diseases are certainly linked to deities, but invocations embrace so many deities that it is difficult to establish specific associations. According to one incantation the sun god sends burns for "The great circle of the sun in the sky is its [the burn's] father" (Roys translation).

Landa (Tozzer 1941: 154-5) lists Ixchel, Itzamna, Cit Bolon Tun, and Ahau Chamahes as deities of medicine, but he does not say whether they merely cured diseases or whether they also sent them. In view of the evidence from central Mexico cited above and the information from the Quiché and hints in the Ritual of the Bacabs, we may conclude that it is highly probable that the pre-Columbia Maya of Yucatán believed that disease was controlled by a number of distinct deities, each one of whom had in his power one or more groups of related diseases.

Clearly, the discovery that the *koch* sent by Ixchel is restricted to certain fits and a single group of related skin diseases is in complete accord with the pre-Columbian pattern of belief concerning disease which the above study has made patent, and that encourages the belief that these passages are correctly deciphered.

I have no desire to enter into polemics on methods of interpreting the Maya codices, but in fairness to the reader it should be noted that some of the glyphs here discussed have been read quite differently by a recent interpreter of the Maya hieroglyphs.

SUMMARY

In view of the divinatory nature of the Maya codices, one may logically conclude that among the almanacs which treat of divine intervention in the affairs of man there should be some covering days connected with disease which were believed, at least in part, to have been sent by various deities as punishment for wrongdoing.

A single glyph, the main element of which is a spiral, seems to represent the term *koch*, "divinely sent sickness or punishment." The 3 main uses of this glyph are:

(1) As an augural glyph, that is a glyph which indicates the good or bad luck of the day resulting from the action of the god in charge. As an augury, this supposed *koch* glyph occurs almost invariably in passages recording that the death god or God Q, an ill-omened deity of violence, was in control. It usually replaces the *kas*, "evil" or "misery" glyph as the augury of the day.

(2) The glyph appears, together with the *kas*, "evil," glyph in texts dealing with the heliacal rising of Venus, when, as early sources state and as the associated pictures on these

pages declare, the planet was believed to inflict sickness and death on certain categories of mankind, as well as on the crops. Here the interpretation *koch*, "divine punishment or sickness," fits perfectly.

(3) The *koch* glyph appears in almanacs in which the moon goddess, patroness of diseases, of human generation and birth, and also of the crops and weaving, has birds or animals on her head or shoulders, but from the adjacent almanacs it is clear that this action of having various types of fauna on her head or shoulders corresponds to the *koch* glyph (Fig. 2 *a, b*). It is suggested that here *koch*, which also means to carry on one's head or shoulders, is to be read rebus fashion. The birds and animals represent certain diseases which are the divine punishment (*koch*) the goddess sends, but that idea is expressed pictorially by showing the birds and animals carried on her head or shoulders (*koch*). These birds and animals are also the names of a series of skin diseases and certain kinds of fits.

Kuch, ch'om, pek, maax, moo, ah tzo are not only vulture, king vulture, dog, spider monkey, macaw, and ocellated turkey cock, they are also the names of diseases. Similarly, in an adjacent almanac the goddess carries on her back the symbol for fire (Fig. 2 *d*, lower right), the Maya word for which is *kak*. *Kak*, however, also signifies skin eruptions such as smallpox, and as the glyphs above inform us that *kak* is the destiny the moon goddess has for mankind on that day, it is virtually certain that *kak* should here be read as skin disease.

The fact that the diseases fall into 2 categories only, skin diseases and fits, is significant. Data, particularly from the allied cultures of central Mexico, indicate that in pre-Columbian times certain categories of diseases were controlled by one deity, others by another; a single god or goddess would not have associations with a series of unrelated diseases.

The moon goddess was patroness of other activities in addition to disease, and such associations appear to be partly indicated in these almanacs. In one compartment the goddess, who is also a patroness of generation and of childbirth, has on her shoulders a quetzal, *kuk*, but in this compartment the *koch* glyph is absent, its place being taken by the *kax* glyph, and the augural glyph is of very good tidings (Fig. 2 *a*, bottom center). *Kuk* is an allegorical

term for children, and *kaxil* can mean semen. This compartment therefore would indicate that the goddess' influence is favorable for generation.

There appears to be good evidence that these almanacs do treat, in part, of divinely sent disease, and that a general glyph for this as well as glyphs for particular diseases and illnesses have been identified. The material reinforces the deduction previously made that the pictures supplement the glyphs, not the reverse, and that they must often be read rebus fashion, as, for instance, where the birds are carried by the goddess on her head or shoulders, this is to be read as *koch*, divine punishment. Similarly the quetzal bird is to be read as *kuk*, burgeoning and, allegorically, children.

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