

## The Year of 365 Days

Thou crownest the year with thy goodness.

—PSALM 65

FOR RITUALISTIC and divinatory purposes the Maya had their sacred almanac, the cycle of 260 days, but for agriculture and for the yearly round of mundane activities this did not suffice; a calendar approximating the annual travels of the sun was necessary. To fill this need the Maya had a year of 365 days, and, although they were well aware that this period fell short of the true length of the year, they did not intercalate days to make it conform to the solar year of 365.2422 days. However, careful calculations of the accumulated error were made, and the results set down as separate entries in the hieroglyphic texts, whereby the priests could easily calculate how much their year had gained on the true year in the 4000 years elapsed since the official point of departure of their calendar (App. V).

The intercalation of leap days would have wrecked the whole Maya scheme of utilizing the points at which the initial dates of the various cycles of time coincided. For instance, the interval of 37,960 days was of prime importance to the Maya because it was the lowest common multiple of 365, 260, and 584. Only after that number of days would the vague year, the sacred almanac, and the synodical revolution of Venus again coincide. The Maya paid a great deal of attention to such intervals, and many of their computations deal with the problem of obtaining numbers divisible by a maximum number of their cycles; the main purpose of seeking such periods was to relate all cycles to the sacred almanac so that it would be known after what interval celestial phenomena, such as heliacal risings, would repeat on the same day of the sacred almanac. The day 1 Ahau was particularly important in the Venus calendar. It was therefore necessary to know when a heliacal rising of Venus would again coincide with 1 Ahau: the answer was, after  $146 \times 260$  days. Positions in the sacred almanac and the tun (approximate year of 360 days) would be the same after  $18 \times 260$  days, but any intercalations of days to adjust the vague year of 365 days or the tun to the solar year would have upset all such schemes. The year of 365 days accordingly gained nearly one day in four years over the solar year, and no direct correction offset this.

### NAMES OF THE MONTHS

The year was divided into 18 "months" of 20 days each, and there was a final period of five days, which

was regarded as very unfortunate. "Month" is an incorrect term but will be retained because of its convenience and because it is well established in the literature.

As in the case of the day names, the month names employed by modern investigators of the Maya calendar are those which were in use in Yucatan at the time of the Spanish conquest. These differed radically from those in use in other parts of the Maya area. Information on month names for the whole Maya area is less satisfactory than for the day names; in some cases series are incomplete, and in others the sequence of the months is uncertain.

These sundry lists are given in Table 8. It will be noted that the position of the five unlucky days varies considerably. The least reliable set of months is that of the Ixil. Lincoln (1942) published six lists of Ixil months, but his informants were in complete disagreement as to the order, and, in one case, the same informant gave two different sequences. Clearly the whole arrangement is in the last stages of decadence; the combined series contain more than 19 names. I have arranged the names to make the few obvious correspondences (e.g. Yaxki, Molche, Chentemac, etc.), and filled in the rest more or less haphazardly.

I have started the Tzeltal and Tzotzil lists with Huc Uincil and Nichilkin, respectively, so as to correlate Yaxkin and Mac with their Yucatecan namesakes. We have no information as to when the sequences began.

La Farge's sundry informants on the Kanhobal months varied considerably in their lists, and in the number of months they could name; they were in fairly good accord for the sequence starting with Oneu and ending with Bak, but for the rest of the series I have depended on one informant. The order of two or three months is open to doubt, but I have confidence in the general reliability of this important list.

The Pokomchi list dates from the last period of regression, and one can be reasonably sure that there are errors in the arrangement. To check with lowland calendars Kazeu, Mox kih, Olh, and the sequences Yax and Zac and Chantemac to Muuan should be moved one or two places.

That changes in the succession do take place when the calendar ceases to function is demonstrated by innova-

tions in the sequences of the Tzeltal and Tzotzil months for which some informants are responsible. Thus Barbachano's Tzeltal informant at Tenejapa placed Yaxkin before Pom, and Vicente Pineda does the same thing; Pineda also has Olalti Tzun and Chaikin misplaced; Becerra, in one list, gives Chaikin after Tzun. With disintegration months are misplaced or forgotten.

We can, therefore, assume that the same sort of errors have crept into the Pokomchi, Kanhobal, and Ixil lists. This is a different situation from that which obtains so far as the 260-day cycle is concerned. In that case we are dealing with a highly ritualistic count divorced from seasonal influences, and with an immutable sequence, any tampering with which would send all divinations awry. Moreover, the almanac has for its maintenance a body of priests or shamans. Consequently, wherever the 260-day almanac still is used there is no confusion in the order of the days.

From the reports of ethnologists one gets the impression that among the Tzeltal and Tzotzil, who alone have lost the day series but retained the month names, there is no organized body of priest-shamans, such as keeps the tally of the days in the Guatemalan highlands. The greater impact of Christianity on these peoples is probably the cause of the absence of that group. Instead, the count of the months appears to be in the hands of the laity, who use it as an agricultural almanac. Mistakes in the sequence might occur more readily with no authoritative guardians of the count. The fates of the two systems reflect, I think, their degrees of sacredness.

#### PATRONS OF THE MONTHS

In texts of the Classical Period which give IS, the first glyph is the IS introductory glyph, the central element of which is a variable. Beyer (1931) has proved what Bowditch (1910) suspected, namely, that the variable element changes according to the month of the IS, and that there are 18 forms (several with variants) corresponding to the 18 months. A nineteenth form pertaining to Uayeb has not been identified because no IS falling in the five unlucky days has yet been found. There can be no doubt that these variable elements symbolize the patron deities of the months, and correspond in function somewhat loosely to the day gods. There was an analogous patronage of the months in the Valley of Mexico, for among the Aztec an important feast was held each month to at least one deity, and attributes of those deities became the symbols of the months, although a picture of the patron god more usually indicates the period of 20 days.

It will be necessary to identify briefly the patrons of the Maya months before the meanings of the names of the

months can be discussed. In many cases the heads are readily recognized (figs. 22; 23).

*Pop.* The jaguar, usually depicted in a naturalistic manner.

*Uo.* The jaguar god of the underworld, whose head serves also as the head variant of the number 7. Note jaguar ear and loop under eye and over bridge of nose.

*Zip.* The head of a monster, whose snout turns upward and backward to form a fret design. The lower jaw is generally, but not always, suppressed. An animal with this same unusual head appears several times in Dresden (pp. 43-45, 68) in the act of plunging downward from the sky, represented by bands of planetary symbols. Similar animals, but with human heads and legs, are depicted on Madrid 2 in the act of falling earthward. They carry axes in their hands and have a background of falling water (as does the animal on Dresden 68). Tozzer and Allen (1910, p. 352) identify this creature as a peccary; Seler (1902-23, 4: 551) regards it as a mythical monster, the lightning beast, which cannot for that reason be classified zoologically. A variant form from Piedras Negras 36 gives a clue to the identification of this creature, since it is the same as a conventionalized head frequently seen in planetary bands (fig. 22, 11). As is well established, planetary symbols not infrequently hang from planetary bands, but there is no reason to suppose that symbols or personifications of clouds, thunder, or lightning might not also figure in these bands or be pendent therefrom.

The fact that this head is prominent on pages dealing with the 780-day period led Willson (1924, p. 33) to identify it as that of the god of Mars, but there is considerable doubt that these pages really refer to that planet. Makemson believes that they may deal with Jupiter, although probably referring also to Mars; Spinden believes they are tables for Saturn; I myself am confident they are for prognosticating rain (p. 258).

The identification with the peccary made by Tozzer and Allen is a possibility that cannot be overlooked, but mythological animals elude rigid classification. The animal is not unlike a deer (the brocket), a determination not without elements in its favor, for deer are sometimes shown in Mexican art falling from the sky, and, as we shall see this month bears the name of a deer god.

*Zotz'.* The patron is the mythical *Xoc* fish, which is also the god of the day Muluc. The fins behind the nose and around the corner of the mouth are unmistakable (Thompson, 1944, p. 3).

*Zec.* The symbol for this month is usually one of two glyphs: the first is the sign commonly accepted as the sky symbol (p. 172); the second is the Caban sign, which represents the earth. On Morales 2 these are replaced by the head of a youthful deity, perhaps the god of number 11.

*Xul.* The patron of the month is not surely identified. The best-preserved head is that of a youthful deity with a line curving from his eye.

*Yaxkin.* The old sun god is the patron. His head or his glyph, the kin sign, is the variable element. (See also fig. 23, 33, 38.)

*Mol.* The head of an aged god, perhaps Schellhas' God D; the symbolic form is well established, but can not be identified.

*Ch'en.* This month belongs to the moon. The moon glyph or the moon goddess emerging from the moon sign constitutes the variable element.

*Yax.* Venus is the patron, and is represented by the Venus symbol or the head of the Venus monster.

*Zac.* The head corresponding to this month is probably that of the frog deity.

*Ceh.* The variable element is the upper part of the sky symbol

TABLE 8—NAMES OF MONTHS IN VARIOUS MAYA LANGUAGES

YUCATEC <sup>1</sup>	CHOL(?) <sup>7</sup>	TZELTAL <sup>8</sup>	TZOTZIL <sup>18</sup>	KANHOBAL <sup>26</sup>	IXIL <sup>32</sup>	POKOMCHI <sup>33</sup>	CAKCHIQUEL <sup>40</sup>
Pop	.....	Huc Uincil <sup>9</sup>	Nichilkin <sup>19</sup>	Nabich	Metchki	Kanhalam	Likinka
Uo	Icat	Uac Uincil	Hum Uincil <sup>20</sup>	Moo	Mu	Makux	Nabei Tokik
Zip	Chaccat	Ho Uincil	Xchibal Uincil <sup>21</sup>	Bak <sup>27</sup>	Zilki	Kazeu	Rucac Tokik
Zotz <sup>2</sup>	.....	Chan Uincil	Yoxchibal Uincil	Canal <sup>28</sup>	Tchotzcho	Kanazi	Nabei Pach
Zec <sup>3</sup>	Cazeu	Ox Uincil	Xchanibal Uincil	Cuhem	Xetki	Kanahal	Rucam Pach
Xul	Chichin	Pom <sup>10</sup>	Pom	Huachscin	Tzicinki	Tzikin Kih	Tzikin Kih
Yaxkin <sup>4</sup>	Ianguca	Yaxkin <sup>11</sup>	Yaxkin	Yaxacil	Yaxki	Mox kih	Cakam
Mol	Mol	Mux <sup>10</sup>	Mux <sup>23</sup>	Mol	Mol	Tih txehek <sup>34</sup>	Ibotan
.....	.....	.....	.....	.....	.....	KAXIK	.....
.....	.....	.....	.....	.....	.....	LAHKIH	.....
Ch'en <sup>2</sup>	Zihora	Tzun <sup>12</sup>	Tzun <sup>24</sup>	Khek Sihom	Petzetzki	Yax	Katic
.....	.....	.....	.....	.....	.....	.....	.....
Yax	Yax	Batzul	Batzul	Yax Sihom <sup>29</sup>	Avaxki	Zac	Izcal
Zac	Zac	Zacilab <sup>13</sup>	Zizac	Sah Sihom	Huiki	Tzi	Pariche
.....	.....	.....	CHAIKIN	.....	.....	.....	TZAPIKIH
Ceh	Chac	Ahelchac <sup>14</sup>	Muctazac	Khak Sihom	Kohki	Txip <sup>35</sup>	Tacaxepual
Mac	Chantemat	Mac	Moc	Mac	Chentemac	Chantemac <sup>36</sup>	Nabe Tumuzuz
Kankin	Uniu	Olalti	Olalti	Oneu	Ochki	Uniu	Rucab Tumuzuz
Muan	Muhan	Hulol <sup>15</sup>	Ulol <sup>25</sup>	Sivil	Muen	Muan	Cibixik
.....	.....	CHAIKIN <sup>11</sup>	.....	.....	.....	.....	.....
Pax	Ahkiku	Hoken Ahau <sup>16</sup>	Okin Ahual	Tap <sup>30</sup>	Pactzi	Tam <sup>37</sup>	Uchum
.....	.....	.....	.....	OYEBKU <sup>31</sup>	.....	.....	.....
Kayab	Kanazi	Alauch <sup>17</sup>	Uch	Uex	Talcho	Sackohk <sup>38</sup>	Nabei Mam
Cumku <sup>5</sup>	Olh	Mucuch	Elech	Sakmai	Nimcho	Ohl <sup>39</sup>	Rucab Mam
UAYEB <sup>6</sup>	MAHI IKABA	.....	.....	.....	OKI	.....	.....

<sup>1</sup>Various books of Chilam Balam. Sometimes vowels are doubled as in Uoo, Mool, Ch'een, Yaax, and Paax. This doubling appears to have no significance.

<sup>2</sup>Landa gives Zotz and Chen which has been generally accepted by modern epigraphers; Zotz' and Ch'en are almost certainly the old forms. Landa paid little attention to glottal stops.

<sup>3</sup>Landa gives Tzec, but the books of Chilam Balam and Sanchez de Aguilar use Zec or Zec.

<sup>4</sup>Tz'eyaxkin is an alternative form.

<sup>5</sup>Landa has Cumhu which has been accepted by most present-day students. Nevertheless, the books of Chilam Balam and Sanchez de Aguilar give Cumku. Probably the bowdlerizer of Landa's manuscript read a *k* as an *h*. Cumku is another spelling.

<sup>6</sup>Sanchez de Aguilar (1892, p. 95), who wrote in 1613, gives as alternative names for these five days *Uayeb*, *u tuzkin*, "the falseness or dissimulation of the days," *u lobol kin*, "the evil of the days"; Pio Perez (1864, p. 384) gives the names *Uayeb haab* and its contraction *Uayab*, which he translates "the bed or compartment of the year." He also lists *u yail haab* or *u yail kin*, "the misfortune of the year or of the day." The days were also called *Xma kaba kin*, "nameless days"; the Motul dictionary gives *u hitz' haab*, "last day of the year." *Hitz'* means "end or death."

<sup>7</sup>Based on Gates (1931c, pp. 30-32) and Thompson (1932). In that paper I give evidence suggesting that this is a Chol, not a Kekchi year, principally because of the use of *y* in *Yax*; in Kekchi one would expect *Rax*; Gates regards the month names as Kekchi. The accompanying text is Kekchi.

<sup>8</sup>Based on Redfield and Villa (1939) and Schulz (1942). Earlier lists are published by Vicente Pineda (1888, pp. 130, 31) and others are given by Marcos Becerra (1933), Villa (1945), and Barbachano (1946).

<sup>9</sup>Most sources give Huc Binkil, etc. There is no doubt that *binkil* or *uincil* is the word for twenty, and the first five months record 140, 120, 100, 80, and 60 days. Perhaps this refers to a feast held in Mux.

<sup>10</sup>V. Pineda has Pom and Mux interchanged; Barbachano reverses Yaxkin and Pom.

<sup>11</sup>V. Pineda has Chaikin immediately after Pom which would be Mux in the present calendar.

<sup>12</sup>V. Pineda has Tzun after Olalti; Becerra has Chaikin after Tzun.

<sup>13</sup>Schulz, Becerra, and V. Pineda have Sacilha; Villa has Zacilab.

<sup>14</sup>Schulz has Ahilchac, as does Villa.

<sup>15</sup>V. Pineda has Hulhol.

<sup>16</sup>V. Pineda has Hoken Hahab; Schulz Hokin Ahau.

<sup>17</sup>V. Pineda has Yaluch; Becerra gives Yalahuch, Yahuch, Alaluch, Alahuch, and Bikituch for various towns; Villa and Barbachano have Chinuch.

<sup>18</sup>Based on Rodaz (1688) and Schulz (1942). Emeterio Pineda (1845), Starr (1902, p. 72), Becerra (1933), Barbachano (1946a), and Güterras (1946) also give lists of Tzotzil months.

<sup>19</sup>Modern authors have Nichikin.

<sup>20</sup>Modern authors have Sba Bincil or Sba uincil.

<sup>21</sup>Schulz has Xibal Bincil.

<sup>22</sup>Schulz has Xanibal Bincil; Starr, Chanim Uincil.

<sup>23</sup>Rodaz has Mux.

<sup>24</sup>Starr has Tzim.

<sup>25</sup>Rodaz gives Ulol or Hoyoh.

<sup>26</sup>Kanhobal is the name used by La Farge for a linguistic group comprising two main languages, Kanhobal and Chuh, with Jacalteca as a major dialect of the former. In the lists of day names those of the Jacalteca and of the Chuh village of San Mateo Ixtatan are separated because of significant differences. The following list of months is based on Antonio Juarez list in La Farge, 1947, p. 168. See also Termer (1930, p. 391). I assume that Antonio Juarez was mistaken in saying that the sihom was a period of 80 days; I think that he should have said that the four sihoms total 80 days. They conform to the four Cauac months with their colors. I have made two transpositions in his sequence, and suppressed Bactan which no other informant lists. For variations in spelling see Table 2 in La Farge, 1947.

<sup>27</sup>Two of La Farge's informants place Cuhem here.

<sup>28</sup>Juarez has Yaxacil here. I have transposed it with Canal, and suppressed Bactan.

<sup>29</sup>Juarez places Sah Sihom here. I have transposed it with Yax Sihom to retain the color sequence of the glyphs: black, green, white, red.

<sup>30</sup>Termer has a month Tam, which corresponds to the Pokomchi.

<sup>31</sup>Termer gives Oyebin, with which all La Farge's informants disagree. Oyebku means "five days."

<sup>32</sup>Lincoln (1942). As already noted, there is complete confusion as to the order of the months, and the present arrangement makes no pretense to being correct.

<sup>33</sup>Termer (1930, pp. 394-95) and Gates (1932a). Both derive from a list made in 1906 by a certain Sr. Vicente or

with St. Andrew's cross infix. Sometimes this is worn as the head-dress of the earth monster.

*Mac.* The head of a deity with a peculiar cap represents this month. He is probably the god of the number 3. The symbolic variant is the Ik sign which is an insigne of the god of number 3. It has been shown that this deity is connected with the rains.

*Kank'in.* The symbolic form of the element is a doubled arch of unknown meaning; the head variant is that of a fantastic monster with a row of prominent fangs which curve backward.

*Muan.* A head which appears to vary from youth to old age, and is supplied with a prefix. Conceivably the Moan bird.

*Pax.* The personified form may be that of the night sun, since the features are those of the sun god, but without a lower jaw, the lack of which indicates a connection with the underworld and death. Before the face there is generally an affix which forms part of Glyph G7 (fig. 34,32,35) and of a form of Glyph X (fig. 37, 9,34,38,55,60,69). The symbolic form (fig. 23,36) has this same element before what is seemingly a jade symbol. (See also fig. 23,34.) Conceivably a puma god (p. 116).

*Kayab.* The young moon, earth and maize deity, patroness of Caban and the number 1, and goddess of childbirth. (See also fig. 23,37,39,40.)

*Cumku.* The head of a monster is the variable of this month, no symbolic form being yet reported. There is considerable variation in the details. Beyer considers that the identifiable element may be the ornament at the back of the head. The monster is most probably the Imix crocodile.

#### MEANINGS OF NAMES OR GLYPHS OF MONTHS

In discussing the meanings of the various names given to the months by the Maya, those which come from the Pokomchi, Chuh, and Ixil will receive less attention than those of the Yucatec and Chol lists, chiefly because their order is uncertain, but also because there is doubt as to how carefully they have been recorded. The Quiche and Cakchiquel month lists will be largely ignored because of the Mexican influences they show, and because there is no information even as to what the names are supposed to mean.

*Pop, Huc uincil, Nabich, Nichilkin* (fig. 16,1-9). The glyph for this month is a plaited pattern with the kan cross, a water symbol, as an infix. Pop means straw mat in almost all Maya languages and dialects, and therefore is in agreement with the sign, for the plaited symbol suggests

the mat pattern. The kan cross probably reinforces the idea that the mat was of reed. Pop, however, has a secondary meaning of chief in some Maya languages or dialects because the mat was the symbol of authority, and this mat of authority is sometimes called the jaguar mat (Roys, 1933, pp. 66, 74); it was probably a mat only in name, being in actual practice a throne with a jaguar skin over it or a seat carved as a jaguar, of which there are many representations in Maya art. The term corresponds to the Mexican *icpalli*.

The extension of Pop to mean chief is natural. In the Pokomchi dictionary of Cahcoh occur *Ah Pop*, "chief," and *Im pop im camha*, "I am chief." The jaguar, too, was a symbol of authority. Thus "jaguar mat" is a reinforced term for authority. Accordingly the first 20-day period of the Maya year was the symbol of chieftainship as shown by the glyph itself and by its Yucatecan name. Its patron was the jaguar god, the jaguar, too, connoting authority.

In the Tzeltal calendar the name Huc uincil means seven periods of 20 days, and presumably refers to a feast to be held seven months later. This system of numbering months in descending order may well represent a rather late innovation. Nichilkin means in Tzotzil "festival of the flowers." Schulz (1942, p. 13) makes the very interesting suggestion that this may correspond to the Aztec month Tlaxochimaco with the meaning "flowers are given." Evidence that Schulz's identification may well be correct is to be found in the fact that at the time of the Spanish conquest the first month of the Maya year and Tlaxochimaco were concurrent, both starting late in July. We might also deduce from this evidence that the Tzotzil and Yucatec years started at the same time, or within a few days of one another, but Nichilkin now starts on July 22, and there is some evidence that leap days are not intercalated; in that case it could not have fallen in July at the time of the Spanish conquest.

*Uo, Mo, Icat, Uac uincil, Hum uincil* (fig. 16,10-22). The glyph for the second month consists of celestial crossed bands, such as occur in planetary bands, with the symbol for black as a prefix or infix. The jaguar god of the underworld, who is the night sun and whose head is the symbol for the number 7, is the patron. We have already seen that this god is also the deity of Akbal, "night, darkness, and the interior of the earth." There is therefore a direct connection between this glyph with its black symbol and the patron deity.

Icat, or Ikat as it should be, in the Chol list from the Alta Verapaz carries the idea of darkness. The months Uo and Zip are similar except that the former has the color symbol for black as a prefix or infix; the latter has the symbol for red as its prefix. The names in the Chol

Victor A. Narciso. The dictionary of Cahcoh gives Petcat and Canazi, corresponding to the 2nd and 17th. months. See Thompson (1932).

<sup>34</sup>Gates has Tik-cheik.

<sup>35</sup>Gates has Kchip.

<sup>36</sup>Termer has Txantemac.

<sup>37</sup>Gates has Cham.

<sup>38</sup>Termer has Sacgohk.

<sup>39</sup>Termer has Oh.

<sup>40</sup>Calendario Cakchiquel (1685). Quiche lists are omitted for lack of space. The best are the Ahilabal Kih (c.1722), which is reproduced in La Farge (1934), and the Hernandez Spina (1854) list from Ixtlauacan. Quiche months do not differ radically from those of the Cakchiquel. Both diverge greatly from other Maya lists, and show fairly marked influences from Mexico.

list for these two months are respectively Icat and Chac-cat. *Kat* or *cat* (both forms are given) must correspond to the crossed bands since *chac* is the word for red in most lowland dialects, and *ek* or *ihk* means black in the same lowland group. These names, too, are evidence that this calendar is not Kekchi, since the Kekchi names for red and black are *caḱ* and *ḱehḱ*, respectively, whereas the Chol names are *chacchac* and *ik*, *ikh*, or *ek*. The meaning of *cat* in Chol is unknown, apart from jar or vase. However, there is a Yucatec root *kaat* which means something transverse or oblique, and is used for such actions as placing a beam transversely, and crossing from one side to another. One derivative, *kaat cunah* for example, means to place one thing transversely across another. Such meanings correspond rather closely to the crossed bands of the glyph, but the correspondence may be fortuitous. The Chol name for the month therefore means the black *kaat*.

Uo is the Yucatecan name for a variety of small frogs which are almost black in color but with a yellow line down the spine. They are usually found in the ground (p. 144). According to Maya legend they are the musicians of the Chacs, the rain gods, probably because the croaking of frogs announces rain. Nevertheless, I do not believe that the name of this month can have any connection with these small frogs, unless it be that because of their burrowing habits they were regarded as symbols of the interior of the earth. It is not improbable that the name Uo refers to some ceremony held during this month.

In the Tzeltal calendar the corresponding month is Uac uincil, "six periods of 20 days," but in the Tzotzil calendar of Rodaz this is Hum uincil, "one period of 20 days." This is the first of a series of numbered uinals in ascending order in contrast to the descending order of the Tzeltal. The only logical explanation is that the start of this month once fell 20 days after the start of the year. In the modern Tzotzil calendar this sequence is disrupted.

*Zip, Chacḱat, Ho uincil, Xchibal uincil, Baḱ* (fig. 16, 23-34). As already noted, the glyph for the third month is formed of the crossed bands with the symbol for red as the prefix, and the Chol name for it is red *kaat* or *cat* (crossed bands?). The Yucatec name *Zip* is almost surely due to the fact that an important festival in honor of the gods of hunting was held in this month (on the seventh day, Landa tells us). One of the chief gods of hunting was *Zip* or *Ek Zip*, "Black Zip" (p. 76). The Yucatec, therefore, appear to have named this month after that god, but this was probably a later innovation since a reference to the color red in all probability once was featured in the month's name, as in the Chol list.

The identity of the patron of the month, an animal with hoofs and an upper jaw which terminates in a fret,

has been discussed. It seems possible that these beasts represent an early Maya form of Mixcoatl, the Mexican god of hunting who has features of the deer. His name, which translates "cloud serpent," suggests that he was once a bringer of rain, but that idea, if it did once exist, had disappeared before the sixteenth century. Such an identification would account for the ophidian character of the beast's snout, and the crosshatched spots, like those on snakes, on the bodies of those depicted in Madrid, and also for the axes (insigne of the rain gods) carried by the beasts, and the glyphic texts which appear to deal with rain (p. 258). At the same time the connection with hunting would remain. The fact that Mixcoatl, as one of the Tzitzimime, fell head first to earth, whereas this beast is depicted in the same attitude in the codices, perhaps adds some force to this speculation, on which, however, I do not insist. Even though the identification with Mixcoatl may not stand, the fact that the patron deity has an animal form, whether deer, peccary or something else, might be the reason why the hunters held their chief festival in this month. The Tzeltal month is Ho uincil, "five periods of 20 days"; the Tzotzil is Xchibal uincil, "two periods of 20 days." The former a step in a descending order; the latter in an ascending series.

*Zotz', Chan uincil, Yoxchibal uincil* (fig. 16, 35-44). The glyph for the third month is the head of the leaf-nosed bat; the word *zotz'* has that same meaning. The equivalent month is missing from the Chol list. The patron deity is the *xoc* monster, a mythical fish (p. 108). It is very strange that one animal should form the glyph and another, totally unrelated to it, should be the patron of the month. So far as I know, there is no season of the year when bats are abundant, and no reason in nature why a month should bear the name of the leaf-nosed bat, and it is, therefore, not improbable that we have in the name of this month an example of rebus writing, and that the head of the leaf-nosed bat was chosen as the glyph of this month because its name resembled that of some activity which took place during this month. The Moran dictionary of Manche Chol, which completely fails to recognize glottal stops, lists *zutz*, "bat," *zutzil*, "winter," and *zutzil quiui*, "annatto of Christmas," presumably a variety ripening at that season. The first word is clearly the same as Yucatec *zotz'*, and appears also in Palencano and Chontal as *zutz'*, "bat."

The month *Zotz'* could not have fallen near Christmas during the colonial period. There is therefore the possibility (and it is no more) that *zotz'* had the meaning of winter, or rather the period when the days were shortest. There is also a Yucatec root *zutz'* which carries the idea of laying down or stretching out long objects.

Here, however, the connection with winter is not apparent. Pio Perez also gives *zuutz'*, "bitter," "vinegar." In Ixil *zutz'* is cloud.

The Tzeltal and Tzotzil lists continue their numbered months.

*Zec, Cazeu* (or *Kazeu*), *Oxuincil, Xchanibal uincil* (fig. 16,45-53). This is a geometric design resembling the uinal with the comb (count) prefix, which in personified forms becomes the headdress of a grotesque being. Once the count prefix is personified, becoming the main element with the uinal symbol infixed (fig. 16,50). The uinal-like sign is too conventionalized to give any clue as to its meaning. The patron of the month is a youthful deity, perhaps the god of 11. However, this head is extremely rare, and is in nearly every case replaced by the signs *caban*, "earth," or *caan*, "sky."

As noted, Landa writes this month as Tzec, and in that way the month has been spelled by modern writers. Nevertheless, the spelling Zec or Zeec of the books of Chilam Balam is supported by Sanchez de Aguilar, and Pio Perez also uses Zeec or Zec. I know of no satisfactory translations of Zec or of Cazeu or Kazeu, the corresponding month in the Chol and Pokomchi calendars, although displaced in the latter list. The Tzeltal and Tzotzil equivalents are units in the series numbered, respectively, three and four periods of 20 days.

The presence of the count prefix in the glyph for Zec may be significant. It occurs also with Mac, the glyph for which, to anticipate, probably indicates the count of the 260-day period, for the end of Mac actually is 260 days from the start of the year. If one counts from the end of Zec to the end of the year the distance is also 260 days. In other words there may be in the glyphs for these two months recognition of compartments of 260 days set within the year (exclusive of the five unlucky days). The evidence so far as Mac is concerned is fairly strong; in the case of Zec it is much weaker.

Bishop Landa states that the beekeepers held a festival in honor of the gods of the bees, especially the god Hobnil in the month Zec, but as Hobnil was the Bacab who ruled the Kan years, and as Bishop Landa's typical year had the year bearer 12 Kan, it is not improbable that this was a festival of the 260-day cycle. In effect the day 1 Kan chanced to fall in the month Zec of Landa's typical year. Accordingly it is probable that this festival had nothing to do with that month, but was a commemoration of 1 Kan.

*Xul, Chichin, Pom, Tzikin kih, Huachsicin* (fig. 16,54-64). The sixth month has as its glyph the head of an animal, generally recognized as that of a dog, to which is attached the "sun tail" such as is found with the kin sign (fig. 26,51-57). Only one glyph of the

patron deity is sufficiently well preserved to yield information. Morley draws this as a human head with an irregular line which is placed vertically on the face, passing through the eye. There is a prefix before the face, the *il* relationship element (p. 285). There is also a large circle at the back of the cheek which may represent an earplug. In view of the apparent canine associations, discussed below, it is worth remarking that Xolotl, the Mexican canine god, is sometimes shown with a line through his eye, and the Maya canine god is usually depicted in Dresden with a curved line on his face. This starts from the eye, and may represent a change of color of the hair.

*Xul* means "end" in Yucatec, but I think it probable that this month name was not used in that sense. In Kekchi *xul* is a general name for animal. In central Mexico Xolotl, or Xulotl, as the name is often transcribed, was the canine god who descended to the underworld, and who may well have been the deity who led the sun each evening into the underworld, and in time came to be associated with the sun immediately after setting. Among the Nahuatl-speaking people of Nicaragua the name for dog was *xulo*. This suggests a derivation from the Mexican *xolotl*, and implies that that word is an ancient term for dog, although the usual word at the time of the conquest was *itzcuinili*.

The Zapotec name for the native hairless dog is *peco xolo*, but the word *xolo* also enters into the composition of the term for the tapir *peche xolo*. The Lenca name for dog is given in one vocabulary as *xuxu*, which suggests a connection. Elsewhere it is recorded as *xui* or *xuiy*, *xu* being given as the first letters (syllable?) of the names for coyote, rat, squirrel, and the mapache. Jicaque names for dog include *shio*, *soyo*, *choyo*, and *tzoo*. The Sumo word for dog is given as *sul* or *suul* or *sulu*.

In the various Maya languages and dialects the generic names for dog are *ch'i* (or *tz'i*) and *pek*, but Chicomulteca which differs from most Maya tongues and seems to have affinities with Huastec, uses the word *sul*, and *xolo* is the generic name for swine, domestic and wild.

Lehmann (1920) appears to regard some of the above terms as derived from Xolotl, the implication being that they were carried to Central America in Mexican penetration of relatively late date. I would be inclined to consider the distribution too widespread to be explained in that way unless we are to assume that the word was widely adopted to describe some new species of dog. Furthermore, the word appears to have become extinct in the Valley of Mexico, at least, by the early part of the sixteenth century, surviving only as the name of the canine god, Xolotl. I am inclined to believe that the term *xul* or a word with that root was used by the Maya of the Initial Series Period for a dog, although it may have

been a ritualistic word used only to describe the dog which led the sun to the underworld.

It is barely possible that Chichin, the Chol month, may convey the idea of the dog since *chichi* is a nickname for the dog in many parts of Central America and Mexico, and the picture of a dog represents the sound *chichi* in Codex Mendoza.

Tzikin kih is usually rendered as feast of the birds, but it is perhaps worth noting that the first syllable means dog.

The Chiapan name, Pom, signifies copal incense in most Maya languages. There is, nevertheless, another meaning, that of pus, perhaps because of a resemblance of pus to the yellowish white gum. Thus we find in Yucatec *pomactel*, "a fresh sore with pus," and *pomkāk*, "smallpox," although *kāk* by itself is the more usual word for smallpox. One is reminded of the sore ears exuding pus and the syphilitic character of Xolotl. It is therefore possible that this Chiapan name for the month refers to that feature of the canine god (cf. p. 79).

The evidence is far from satisfactory, but I am inclined to consider that this month was under the patronage of the canine god who appears to have conducted the sun to the underworld. That might account for the presence of the sun tail. With greater hesitation I would assume that *xul* was the liturgical name or the root of the name of that deity.

*Yaxkin, Ianguca, Yaxacil* (fig. 17,1-13). There is better agreement here than in any of the months so far discussed. Yaxkin appears in Yucatec, Tzeltal, and Tzotzil, and there is an Ixil month Yaxki, which has the same meaning; the Chuh name Yaxacil may belong here. Yaxkin means "new sun" or "green sun" or "first sun" or "dry season." The glyph itself is in complete agreement with this name, for it is the kin sign with the yax element as prefix. Furthermore, the patron of the month is the sun god, for his head or his glyph is the variable element in the IS introductory glyph corresponding to this month.

New sun or first sun is in accord with the suggested interpretation of the preceding month, for if the sun was believed to have been in the underworld during the previous month, a new sun would logically appear in this month. However, the name more probably refers to the morning sun who, refreshed by the sacrifices offered him, sheds the symbols acquired during his nightly journey through the underworld to appear in all his vigor.

In the various books of Chilam Balam this month usually carries the prefix *tz'e*, which means "small," but is also prefixed to certain terms of kinship as though to carry the idea of "not quite," or "nearly," e.g. *yum*, "father"; *tz'eyum*, "father's brother"; *na*, "mother";

*tz'ena*, "mother's sister." In that case *tz'eyaxkin* might mean "little first sun," or "not quite new sun." I can offer no interpretation of the Chol name Ianguca.

*Mol, Mux*, and probably *Molche* and *Moxkih* (fig. 17,14-22). The eighth month in the Maya year has as its glyph the symbol for jade or water (p. 78) surrounded by small circles. The patron deity is not well identified. The best example, preserved on Piedras Negras 10, resembles the aged sun god, who is patron of the month Yaxkin, but there appears to be a curving line behind the corner of the mouth; two other portraits of the patron of this month are badly weathered. There are several examples of the symbolic variant of this element; they appear to represent the gaping mouth of some monster with what looks like a large tooth in the upper jaw, but none of the surviving examples is sufficiently distinct to make this identification certain.

Landa describes a ceremony held in Mol in which utensils were painted with the sacred blue, and the children were given nine light blows on the backs of their hands so that they would become skillful in their trades. The girls were brought there by an old woman, called Ix Mol, and she administered the raps to the girls. Landa translates Ix Mol as *la allegadera*, "the collector"; the Motul dictionary applies the term to the woman who supervised others engaged in spinning and weaving, and collected from each cacao to supply refreshment for all. The word presumably derives from the collecting duties of this position since *mol* means to collect. The Moran dictionary of Manche Chol lists *molo* with the meaning of "to congregate," and *moloc* is given as "collect" in Wirsing's Kekchi dictionary, the *oc* being a verbal termination.

On the other hand Tzotzil dictionaries give *mool*, "old man," and *moltot*, "grandfather"; in Kekchi *mol* means "to bud."

As the central element of Mol corresponds to that of the day sign Muluc, and symbolizes water or jade, it seems highly probable that the name of the month refers to the gathering of rain, that is to say, the gathering of clouds, an interpretation first proposed, I believe, by Spinden (1924, p. 128). The fact that the central element, representing water, is surrounded by a ring of circles, which are almost surely simplified symbols for water, tends to confirm the identification.

*Ch'en, Tzun, Zihora, Kheḱ Sihom* (fig. 17,23-33). The ninth month in the Maya year is the first of four consecutive months which vary only in their prefixes, the main part in all four cases being the cauac element.

The cauac symbol is a section of the body of a celestial dragon, a rain-giving monster of Maya mythology; the name is that of the nineteenth day which is formed from

this element. Since *cauac* and its cognates mean storm, there can be little doubt that the cauac sign means rain storms when used as a day glyph (p. 87), but it might refer to the celestial dragon when it forms part of these month signs.

The four prefixes are, in their order, those of black, green, white, and red. A knotted element sometimes appears as a secondary prefix with all four months. It clearly belongs with the cauac element, and it is particularly prominent with Ch'en merely because the individual prefix of that month is often changed to an infix, leaving a space, which the knotted prefix is expanded to occupy.

As the names for the sequent months are Yax (green), Zac (white), and Chac (red), one would expect the ninth month to bear the name Ek or Ik or Kek (black), but such is not the case in the Chol list, which preserves old color terms for Uo, Zip, and Ceh, but gives for the ninth month the name Zihora, which sounds Spanish and is certainly not Chol. Nevertheless, the Kanhobal name Khek Sihom does mean black Sihom.

Ch'en, the Yucatec name, signifies in nearly all Maya languages a hole in the ground, such as a cave or well, or a large rock or crag. Actually, the two meanings are connected, for a crag is a wedge of earth thrust into the air, whereas a cave or a well can be regarded as a wedge of air thrust into the earth. Other Maya words, for example, Peten, "land surrounded by water" or "water surrounded by land" or "one kind of vegetation surrounded by another," are further examples of a single term for things which at first glance appear to be diametrically opposite, but which in fact have much in common. *Ch'en* is also a Yucatec root meaning "to cease," "to finish," "to be silent" (cease making a noise?), "to become quiet." *Tzun* has in Tzeltal the meaning of sowing. Neither of these names seems to yield any clue as to why the month was thus termed, but the connection may lie in the fact that at conjunction the moon was believed to retire to a well (p. 238), and the patroness of the month is the moon goddess, for the symbol of the moon or the figure of the goddess emerging from the moon is the variable element in the IS introductory glyph which heads IS falling in the month Ch'en.

*Yax, Batzul, Yax Sihom* (fig. 17,34-47). The tenth month, the second of the series of four cauac months, has as its glyph the symbol for yax as a prefix to the cauac element. This same symbol is the prefix of the month Yaxkin. *Yax* means new, strong, blue and green in Yucatec, and has the meaning of blue or green in practically every Maya language or dialect (in various highland dialects the word is *rax* or *chax*). The significance of the element in this case will be considered in the gen-

eral discussions of the four cauac months. *Batzul*, according to Vicente Pineda, means first amaranth, but this interpretation is somewhat dubious.

The patron of the month is the Venus monster, his head or the Venus symbol forming the variable element in the IS introductory glyph corresponding to this month.

*Zac, Zizac, Zacilha* or *Zacilab, Sah Sihom* (fig. 17,48-55). The eleventh month, the third of the series of four cauac months, has the prefix for white with the cauac element. The word *zac* means white in almost all Maya languages and dialects; *Sah* of Sah Sihom is Kanhobal for white. The patron of the month appears in only one text with full clarity of detail; it is the head of some reptile with a full complement of sharply serrated teeth. Beyer (1931) thinks that it is probably the head of the toad, which serves as the head variant of the uinal, an identification which must be accepted.

The patrons of the two cauac months already discussed are celestial bodies—the moon and the planet Venus. It is logical, therefore, to suppose that the patron of *Zac* should be a denizen of the sky. In effect, there is evidence that the frog represented a constellation or planet. Across the center of Madrid 13-18 there stretches a celestial band on which is inscribed an incomplete cycle of the 260 days. Above and below this are planetary symbols, and around it are twined celestial snakes. On the right of page 17 there hangs head-down from the band a turtle, and beside him an unmistakable frog also head-down. The turtle reappears in the same position in other groups of constellations and is the name among the present-day Yucatec of the square of Orion. It is, therefore, fairly evident that the frog must represent another constellation or some planet.

*Ceh, Chac, Ahelchac, Muctazac, Khaḳ Sihom* (fig. 17,56-65). The twelfth month, the last of the group of four cauac months, has the prefix for red with the cauac element. *Chac*, the name for this month in the Chol list, actually means red, as does *Khak* in the Kanhobal list, bringing this month into agreement with *Yax* and *Zac*, which are also named for the colors they represent.

The Tzotzil name, *Muctazac*, appears to signify "great *Zac*," and presumably contrasts with *Zizac*, "little (?) *Zac*," the preceding month. Similar pairings of months occur in the Quiche, Cakchiquel, and Aztec lists.

*Ceh*, the Yucatec name for the twelfth month, means deer. Presumably *Ceh* represents a more recent name for this month, which, perhaps arose from some hunting ceremony held in this period, although none is reported for this month in the scant ceremonies which have been preserved. On the other hand, it may be significant that the two months, *Zip* and *Ceh*, which share the color red

in their glyphs and in their names in the Chol list should both be connected with deer. A hunting festival in honor of various gods including Ah Zip, god of the deer, was held in Zip, and Ceh, as noted, means hart. Furthermore, there is a god of the deer called Ah Ceh.

Be that as it may, the original association of this month appears to have been something quite different. The variable element of the IS introductory glyph corresponding to Ceh is a sky symbol with a superfix which consists of two or three circles of dots with a hook in the center. Spinden (1924, fig. 56) identifies the main element as a bundle of sticks and considers that it represents the sacred fire which "was kindled after the ends of important time periods." Beyer (1931) also accepts this identification.

Nevertheless, it is unnecessary to see fire in the pictures or to assume that new fires were kindled after (at?) the ends of periods, although such ceremonies in all probability did take place. The sign in question is merely the celestial symbol, so frequent in Maya texts. Arranged as an elbow, it surrounds Glyph B of the lunar series (fig. 5,28-33); with one of the two flanking elements placed beneath the cross, it is one of the three signs that compose the glyph representing sunrise or the sun at the horizon (fig. 31,41-51). In this same composite form the glyph appears in planetary bands (fig. 20,15) and, with a coefficient of 10, is almost surely the glyph of Lahun-Chan, "10 Sky," a deity who is a manifestation of Venus (fig. 14,2,4). The central element may be two vertical bars with a St. Andrew's cross between them, or the space between the bars may be left a blank. The cross might represent an infix, but its presence or absence appears not to affect the meaning.

The symbol, as already noted, is one of the elements that appear in planetary bands, and almost certainly has the meaning of sky. Since it appears in the glyph representing what is in all probability sunrise, it may have in addition the more specialized sense of eastern sky. Some confirmation for this supposition is to be found in the fact that red, the associated color, is that of the east.

The four cauc months, therefore, have the following associations:

Ch'en—black (west)—moon goddess  
 Yax—green (south?)—Venus monster  
 Zac—white (north)—frog constellation (?)  
 Ceh—red (east)—god of the (eastern) sky (?)

In all four cases the patron would appear to be a celestial being; the colors suggest associations with world directions. West in the Mexican cosmology is the region of goddesses and women who, by succumbing in childbirth, had qualified for divine rank. The west, therefore, is the natural home of the moon goddess both because

she was a woman, and because she was the patroness of childbirth. In view of the very close connections between Maya and Mexican mythology, the same assignment of the moon to the west presumably was made by the Maya.

Yax, as noted, means green, but that color is not associated with the world directions unless there was a fifth (center) direction assigned to that color. On the other hand, the central element of the glyph for south, as drawn in the codices (fig. 41,23-27), is the same as the codical form of the yax prefix, although the identity does not hold good for the corresponding glyphs on stelae of the Initial Series Period. The color assigned to the south in sixteenth-century Yucatan was yellow.

Nevertheless, it is not improbable that the yax prefix represented the south. One would expect Venus to be placed in the west or the east, but in Dresden all four directions are assigned the planet. South is the direction of death and calamity, commodities which that planet freely distributed (p. 217). It is not impossible that there has been a change in world directional colors, that at the time the glyphs were invented green was the color of the south, but later yellow replaced it; but the yax element in the codical form of south preserves this ancient form.

As the presumed constellation of the frog has not been identified, it is impossible to seek any connection with the north.

Chac and Khek Sihom, the Chol and Kanhobal equivalents of Ceh, have already been explained as signifying red, the color of the superfix. Red is the color of the east, so if the symbol of the patron deity represents not only the sky in general but by extension the eastern sky, the association would be complete.

The Cauac glyph, as previously noted, is a symbol for storm and rain. Nevertheless, this is a derived meaning. The cauac sign is composed of symbols which appear on the bodies of celestial dragons, the Itzamnas (fig. 15,11-13). They are the beings who send the rain, and it is entirely appropriate that their markings should form the glyph of the day of rain and storms. On the other hand, in the cases under discussion the associations are primarily celestial. The celestial dragons usually carry planetary symbols, such as the signs for Venus, the moon, the sun, and the sky, on their bodies. Accordingly, there is reason to believe that when used as the main element of each of these four months, the cauac sign betokens not its secondary meaning of rain and storm, but its primary meaning, the celestial dragon. In that case, these four months were dedicated to, and named for, the four celestial dragons: the black dragon of the west associated with the moon; the green (?) dragon of the south (?) associated with Venus; the white dragon of the north associated with the

frog constellation; the red dragon of the east associated with the god of the (eastern?) sky.

*Mac, Moc, Chantemat, Chantemac, Chentemac* (fig. 18,1-20). The thirteenth month has retained the same name or a variant form in most Maya languages, for *Mac* appears by itself or in a compound in seven different calendars.

The glyph itself shows considerable variability. In the personified forms the main element is the head of the *xoc* fish, with the meaning of "count"; in the symbolic form the main element is either a sign resembling *Imix* or the so-called snake markings, which forms the lower part of the glyph *Akbal* and a variant of the *kin* sign (fig. 31,12-15). In the latter case there are crosshatched (black) infixes. In the symbolic form the *xoc* element takes the form of the comb affix, often doubled, for the comb has the same value of "count" as the *xoc* fish (Thompson, 1944, pp. 5-10).

On the monuments the personified *Mac* usually has a well-known prefix, which is Landa's glyph for *ma*, and which Beyer has named the two balls of down. The symbolic *Mac* lacks this prefix but appears to incorporate one-half of it, although changed from the horizontal to the vertical position, as an infix of the main element, which has features of the *Imix* sign. The same process has probably taken place in the two examples on the monuments which lack this prefix. A very slight change in Morley's drawing of the *Mac* on Aguas Calientes 1, which I have followed (fig. 18,13), would convert this into the required infix corresponding to the codical form. Unfortunately, no photograph is available to check this point. Likewise, the *Ahau*-like infix of *Yaxha* 13 (fig. 18,16) may be the same element, for details of the photograph are not too sharp. What may be the same sign appears as an affix with certain examples of *Glyph D* of the lunar series (figs. 36,25,39; 37,48,59,67), and with other glyphs.

The word *mac* means "to enclose" or "to cover" in a number of Maya languages and dialects. I have suggested elsewhere that both the glyph and the name of this month may refer to the fact that with the end of *Mac* 260 days of the year have been counted, and that this period, equivalent to the length of the sacred almanac, was regarded as a sort of compartment within the year. The *Imix* and comb variant would then signify "the count of *Imix*" or perhaps "*Imix* counted," *Imix* referring to the 260-day cycle. *Mac* would then mean that the period was enclosed, forming a sort of compartment within the year. Nevertheless, I hesitate to reaffirm that explanation, for it now seems more probable that the main part is not *Imix*, but one of the "down-balls" of the prefix set upright and converted into a main element.

The patron of the month is a deity, identified by Beyer as the youthful head for the number 3. His distinguishing marks are a close-fitting cap and the *Ik* symbol on the side of the cheek or worn as an ornament. The symbolic form of this head is the *Ik* sign, clearly displayed in the introductory glyph of the *IS* of the Tablet of the Foliated Cross, Palenque. There is no obvious connection between this god and the glyph or names of the thirteenth month.

*Kankin, Olalti, Uniu, Oneu* (fig. 18,21-30). The fourteenth month is endowed with a plethora of names; the glyph itself presents some difficulties. The symbolic form on the monuments consists of an object resembling a leafless tree with a circular infix on the left, the interior of which is sometimes filled with crosshatching to indicate black. In the drawing of *Kankin* on the Tablet of the Inscriptions, Palenque, which Maudslay published, this infix is shown as a *kin* sign, but as in the photograph the interior of the infix is blurred, one hesitates to accept this *kin* infix since it does not seem to occur with other examples of *Kankin*.

The head variant of *Kankin*, which is somewhat rare, represents the head of an animal. The canine teeth are prominent, and so are the rather oddly shaped ears. There are quite a number of lines on the face, particularly behind the corner of the mouth, and the snout is large and slightly upturned. There appears to be an orbital plate, but that feature is not very clear.

The symbolic form of *Kankin* appears in the codices in combination with an apparent death sign as the glyph of the dog (fig. 14,10). As such it was recognized by Schellhas as long ago as 1897, and this identification is accepted by Förstemann, Seler, Beyer, and others, and tentatively by Tozzer and Allen. Most of these writers see in the symbolic form of *Kankin* the ribs of the dog (note prominence of ribs on dogs, fig. 14,7,8). The codical form certainly bears a resemblance to ribs, but the earlier forms of the monuments of the Initial Series Period are much more cursive, and twist and curve in a way that invalidates the identification. Whatever the symbolic form of *Kankin* may be intended to depict, there can, I think, be no doubt that it represents the dog. It is also worthy of note that dogs are almost always depicted in Maya codices with black markings, particularly around the eye (fig. 14,8,9). The circular infix with crosshatching (a well known symbol for black) in the symbolic form of *Kankin* presumably refers to the black spots on the dog.

In view of the probable identification of the symbolic form of *Kankin* as a canine sign, there can be little doubt that the animal of the head variant is a dog. In fact, these heads accord fairly well with representations of dogs in Maya and Mexican codices, particularly in such details

as the ears and the snout. Possibly the orbital plate, which can be recognized in the best-preserved examples, represents the black markings around the eye.

The Yucatec name does not refer to the dog, for Kankin means "yellow sun." Likewise, whatever meanings Olalti and Uniu may have had, they do not contain Maya names for the dog. On the other hand, there is a Pokomchi month, Tzi, which signifies dog, but it probably does not correspond to this position. A number of the Pokomchi months clearly have been displaced, and the calendar was obviously in the last stages of decay when recorded by Sr. Narciso. There is, therefore, a bare possibility that Tzi and Uniu were alternative names for the same month. There is also an Ixil month called Tzihep. The order of the Ixil months is completely chaotic. The symbolic form of the variable element in the IS introductory glyph for the month Kankin takes the form of an arch above another, or of one arch above a double arch. The meaning of the design is not apparent. The two personified forms recorded (Pusilha P, Quirigua Alt O) are heads of a fantastic monster with prominent canines and fangs, but without a lower jaw. One would like to identify it as the head of the canine deity, since that god is sometimes depicted with prominent fangs in addition to canines (Dresden 36a, 39a) but the long arched snout hardly suggests the nose of a dog. There seems little doubt that this is an earth monster, similar to, but perhaps not identical with, the Imix monster. Thereby the association of the dog with the underworld is retained.

*Muan, Muhan, Muen, Muenchin, Ulol, Hulol, Sivil* (fig. 18,31-45). The Yucatecan name of the fifteenth month appears also, with minor variations, in the Chol, Pokomchi, and Ixil lists; Chiapas uses Ulol and Hulol, and Chuh has Sivil. No symbolic form of the glyph is known on the monuments; the head form is that of a bird with a prominent beaked nose. On the monuments of the Initial Series Period a tail, of the kind found with the kin sign, Xul, Yaxkin, and the winged cauc, is usually attached as a postfix, but this element is absent from the personified representations of Muan in Dresden.

One symbolic variant of the glyph occurs in Dresden (fig. 20,18). This consists of a spiral enclosed in a ring with two postfixes, one above the other. The lower is the tail, to which reference has just been made, and is the only example of this postfix with Muan in the codices; the upper is a common affix, which I identify as indicating a connection with vegetation, new growth, and rain, and to which I tentatively attach the meaning *ak* (p. 282). This sign, but with a different postfix, is one of the two glyphs of the Moan bird (fig. 20,19,20). In Middle America the spiral is a symbol of water. It is often set in representations of water in Mexican codices (fig. 20,31-34),

and is placed in the eyes of God B and other Maya deities, including the Moan bird, connected with water and vegetation (fig. 20,13,14,16,21,35). It is also an element of the codical form of cauc (fig. 20,29), the aquatic value of which is beyond dispute, and appears as a water symbol above pictures of water in Dresden (fig. 20,30). It is held by gods in divinatory almanacs (fig. 20,21,22) and appears in hands or in other combinations in texts of the Initial Series Period (fig. 20,25-28), although it should be pointed out that in those cases there is no direct evidence connecting the sign with water. This symbolic form of the glyph, therefore, indicates that the month is connected with water. As we shall see, there is ample evidence for this.

In Yucatec *moan* means cloudy and drizzle. Pio Perez lists in his dictionary *moankin*, "a cloudy and drizzling day," but *moan* is also the Yucatec name for the screech owl, and since *u* and *o* are not uncommonly interchangeable in Spanish transcriptions of Maya and Mexican words, it is very probable that the glyph and the Yucatec name refer to the screech owl, although so far as the pictures are concerned, it is perhaps being too precise to indicate the actual species. The Chol vocabulary of Friar Moran gives sparrow hawk or kite as the translation of Muhan.

The rôle of the Moan bird in Maya mythology has led to much confusion. The deified bird appears on three occasions in Dresden with a maize plant as headdress (fig. 20,14). Its glyph is the head of the bird itself with a coefficient of 13 or the sky sign also with a coefficient of 13 (fig. 20,19,20,23,24). Seler (1902-23, 4:615) has suggested that the Moan represents the 13 layers of clouds which are said to compose the sky. He based this conclusion on two lines of evidence: firstly, that one of the glyphs for the bird is the sky symbol with a coefficient of 13; secondly, that *moan* means in Yucatec cloudy and rainy. To these one might add that the vegetal aspect of the Moan bird, as emphasized in the headdress of maize leaves, accords well with a deity of clouds and rain.

Tozzer and Allen (1910, p. 336) take Stempell to task for confusing the Yucatan horned owl with the Yucatan screech owl. Since pictures of the first are distinguished by those writers through the "horns" or tufts of hair on the sides of the head, and the second is admitted to have similar horns, one can only conclude that the distinctions are of more importance to the zoologist than they were to the Maya artist.

I see no reason for not accepting the owl carved on the wooden lintel of Tikal, above the celestial serpent (fig. 20,10), as the same bird as that shown in the codices. In fact, there are several cases where an owl is placed on or immediately above celestial dragons (fig. 20,11,15).

Assuming that this is the screech owl, these designs can be brought into relation with the supposed associations of the screech owl. If the Moan god represents the 13 layers of clouds or the 13 skies, it would be perfectly natural to place him on or above the celestial dragons who send the rain.

Finally, attention might be called to the almanac which runs across the bottom of Dresden 33-39. The subject is rain, and God B occupies each of the 20 divisions. With the days 1 Chicchan, 1 Oc, and 1 Men he stands in the rain. On the days 13 Oc, 13 Men, 13 Ahau, and 1 Ahau he stands on a receptacle full of water; on 13 Chicchan he stands in the rain. On 9 Muluc, 9 Ix, 9 Cauac, and 9 Kan he is in his house, which in two cases has the celestial crossband on it, and in one case stands on a cauac glyph.

In the four pictures which accompany the days 7 Ahau, 7 Chicchan, 7 Oc, and 7 Men God B is seated. On 7 Ahau and 7 Chicchan his seat is the sky symbol with crossed bands, to which is attached a poorly defined prefix; on 7 Oc his seat is a planetary band, that is to say, a segment of the body of a celestial dragon; on 7 Men he is seated on the head of the Moan bird.

In view of the certainty that the subject of this divinatory almanac is rain, and in consideration of the similarity of the pictures with the subdivisions of each group, the close relation of the Moan bird to the sky symbol and to the celestial dragons is beyond dispute.

An interesting confirmation of the above thesis comes from Mexican sources. On the Mexican plateau one of the names for the celestial abode of the gods, the land of flowers and abundance, was Tamoanchan. In the hymn to Xochiquetzal we read, "From the land of the rain and the mist, from Tamoanchan I, Xochiquetzal, come." This name is pure Maya of the Chiapan group. *Ta* is the locative "at," "in," or "from" in Tzeltal, Palencano Chol, and other languages of the Chiapan group, and corresponds to the Yucatec *ti*; *moan* is the Moan bird; *chan* is snake in nearly all the Maya languages of the Chiapan group, and also means sky in several of them, corresponding to the Yucatec *can* and *caan*. The Yucatec equivalent would be *Timoancan*. Tamoanchan, as the celestial land of rain and mist, the land of abundance, corresponds to the Maya representations of the celestial serpent surmounted by the Moan bird (fig. 20, 10, 11, 15, 17). The celestial snake surmounted by the Moan bird can be regarded either as a literal representation of a mythological concept of the heavens or as a form of rebus writing for rainy, misty sky, since Moan and snake (*can*) have those alternative meanings.

The idea of deriving Tamoanchan from Moan was first proposed by Selser (1902-23, 2:1034), but was not carried to its logical conclusion because Selser failed to

identify the celestial snake surmounted by the Moan bird and, therefore, did not recognize the Maya origin of the syllable *chan*.

This digression has been necessary because of the general belief that the Moan bird is a symbol of death. This theory originated with Schellhas, who mistakenly identified a certain glyph with the Moan bird (Beyer, 1929). It has been repeated by a number of writers on Maya mythology. Actually, there is an owl of ill omen, but it is the *cui*, a different species.

Muan, accordingly, is the month of the Moan bird, a deity who lived in the sky, was intimately associated with the celestial dragons, and symbolized the cloud-filled heavens. Perhaps the Moan bird appears because this was originally a month of rains and clouds.

The variable element in the IS introductory glyph corresponding to Muan is not clear. Only head variants are known, and these, unfortunately, are not well preserved. That on Quirigua G appears to be a youthful head; that on Piedras Negras 3 seems to be aged and provided with a hooked nose. It might even be the Moan bird. In all known cases the head has a prefix.

*Pax, Okinahual, Hokenahau, Tap, Tam* (fig. 18, 46-52). The symbolic form for the sixteenth month is the tun sign with a pair of stalklike objects which start from the center and curve outward immediately above the main element. The whole resembles a somewhat cursive  $\Upsilon$ , and suggests a vegetal origin.

The tun sign (p. 144) is derived from the symbol for jade and, by extension, water. The picture might conceivably represent vegetation nourished by the precious water. The one personified form of Pax is the head of a frog with the same projecting stalks above its head.

Brinton has suggested that Okinahual, the Tzeltal name for this month, might be derived from *kin*, "time, day or season," and *auhal*, "to sow," and the whole would mean "planting time." This would agree with the possible significance of the glyph, but both the translation and the interpretation of the glyph rest on shaky ground.

The patron of the month is an anthropomorphized feline, whose features recall those of the jaguar but are also reminiscent of those of the sun god (fig. 23, 18-20, 34). In the full-figure representation the god, like the jaguar, is decked with a water lily, which seems to emerge from his mouth, and he lacks a lower jaw. On his temple is the claw of some animal, and it is not improbable that this is a reference to *chac mol*, "giant paw," a name for the jaguar. On the three heads the lower jaw is vestigial or absent, and the mouth contains a variable element, in one case a St. Andrew's cross. In all three cases there is before the face a symbol, to which I shall refer as the three-circles-and-bundle variant. The early example on

Yaxchilan L 48 has a paw above the earplug; in another head a sign resembling the symbol for white replaces the earplug. The full figure has an ornament with a St. Andrew's cross, reminding one of the same sign in the mouth of one of the heads. This device seems rather closely connected with the jaguar god of 7, for it is prominent on the full-figure representation of number 7 on Quirigua D, and is worn as a pectoral by the jaguar gods on Quirigua A and C and on Piedras Negras MSS 19 (fig. 12,15). The sandals of the jaguar gods of Quirigua A and C are adorned with heads (but not of jaguars), each of which has a St. Andrew's cross in the mouth, and the same design is on one of the heads at the side of the chest of the jaguar god of Quirigua C. Moreover, the jaguar god of Stela C has this St. Andrew's cross in his mouth. Unfortunately, this creature has his feline character less emphasized, but that he is a jaguar god can, I think, be accepted without much question.

The patron of the month Pax, then, has features reminiscent of those of the jaguar, but the two are not identical, for the addition of various attributive affixes—the circles-and-bundle variant, the pseudo-white symbol, and the feline claw or paw—indicates that we are dealing with a variant of the normal jaguar god. Landa states that in the month Pax warriors held their ceremonies in the temple of Cit-Chac-Coh, "father red [or great] puma." This may have been a ritual brought to Yucatan by the Mexicans, but it is also possible that the patron of the month was from the earliest times Cit-Chac-Coh, and that he is the god under discussion. The jaguar also symbolized war in sixteenth-century Yucatan, but, again, this may be a concept of Toltec derivation, connected with the orders of Jaguars and Eagles. All that we can say for the moment is that the patron of Pax was a feline, possibly the puma but more probably a jaguar, and perhaps a representation of the night sun. We shall meet this unsatisfactory deity again as the seventh lord of the nights (p. 209) and as Glyph XI of the lunar series. No connection with the glyph of the month Pax is apparent.

*Kayab*, *Kanazi*, *Alauch* or *Yaluch*, *Uch*, *Uex* (fig. 18,53-64). The glyph of the seventeenth month is the head of a creature which has been identified both as that of a parrot and of that of a turtle. This confusion was a source of innocent merriment to G. Elliot Smith, as he gaily swam his elephants across the Pacific to the shores of Central America (Smith, 1924, pp. 14-18).

Förstermann, Selser, Gordon, and Tozzer and Allen recognize the *Kayab* glyph as the head of a turtle; Spinden sees in this hieroglyph the head of the blue macaw. It must be admitted that both parties can cite much evidence in their favor. I think the decision should go to Selser because of a feature which has hitherto been dis-

regarded. That is the prominent kan cross in the creature's eye. The kan cross has two values: it is a symbol of water (p. 275) and also the sign for yellow. Whichever value it has in this case, it agrees better with the identification as the turtle, for that is an aquatic animal and has a brilliantly yellow under side. The blue macaw, on the other hand, has nothing to do with water, and has little yellow plumage.

In Maya legend the tortoise or turtle is connected with the sun because when he fled with the moon, he escaped destruction by donning the shell of a turtle (the moon sought safety in the carapace of an armadillo, a crab, or a turtle). This, however, is a slight connection. In codices from southern Mexico the sun is depicted on sundry occasions wearing the shell of a turtle. The turtle shell is also the insigne of one of the four Bacabs set at the cardinal points to sustain the heavens, although there is no information on which point of the compass was assigned to the Bacab who wears that costume.

There is also a Maya constellation called *ac*, "the turtle," which, according to an informant, is the square of Orion, although the Motul dictionary has: "*ac ek* 'the stars which are in the sign of Gemini, which with others form the outline of a turtle.'"

Finally, one of the Aztec hymns given by Sahagun is dedicated to Ayopechtli or Ayopechcatl. This name means without much doubt "the one on the tortoise seat." The content of the hymn makes it abundantly clear that the auditor is a goddess of childbirth. Sahagun's picture of the goddess and description of her attire reveal that she shares many features with Mayauel and with Teteo-Inan Toci.

After her name Sahagun adds the information "in the house of Tezcacoac [mirror-serpent]." On Magliabecchi 75 there is pictured a goddess who has as her glyph a rattlesnake above a mirror. She is identified as Atlacoaya, and the information is added that at her festival people were sacrificed to the 400 Tochtli gods. These are the gods of pulque; Mayauel is the goddess of pulque. In the pictures on Magliabecchi 58 Mayauel and Atlacoaya are rather similarly garbed. As a final link in the chain Mayauel is depicted on Laud 9 seated on the back of a turtle.

The turtle, therefore, was associated in Mexican thought with a goddess who was close to Mayauel yet shared features with Toci and Xochiquetzal and, like them, was a patroness of childbirth.

In Maya religion no goddess equivalent to Mayauel has yet been reported, but the moon goddess corresponds rather closely to Toci and Xochiquetzal who, without serious doubt, were the old and young moon goddesses of central Mexico.

The word *kayab* is not Yucatec, nor does the root *kai*, "to sing," produce any lead. As *ab* in an instrumental suffix, the whole could mean "with what one sings," but that is hardly a promising clue. *Kan*, the name for yellow, appears in *Kanazi*, the Chol name for this month, but the old Pokoman name was *Canazi*. Unless the initial letter is glottalized, the word yellow is not contained in this month name. *Uch*, the Tzotzil name of this month, means in the closely related Tzeltal the animal called *huitzilacualtzin* according to Vicente Pineda. Tlacuatzin is the Aztec name for the opossum. *Uch* presumably is the same as the Yucatec *och*, "opossum."

Disregarding the meaning of the month names, there seems to be a connection between the patroness and the glyph of Kayab. The patroness is the young moon goddess, patroness of medicine and childbirth, and a goddess of the soil and of maize. In Mexican mythology a goddess of childbirth is called "the one on the tortoise seat." The glyph for Kayab in all probability represents a tortoise.

*Cumku, Olh, Ohl, Mucuch, Elech, Sakmai* (fig. 19,1-16). The glyph for the eighteenth month is composed of the sign Kan, which represents the ripe maize, and an irregularly formed prefix. This prefix, as Beyer (1936d) has noted, is the main element of Glyph G8 in the series of lords of the nights (fig. 34,39-45), and it also occurs in a variant of Glyph X of the lunar series. Beyer considers that it represents the tail end of a serpent. I myself regard it as probably representing a section of a conch shell. The irregular outline, the three or more dots, sometimes joined with smaller dots, and the cleft at the base are all consonant with this interpretation (see fig. 21,4-7; Spinden, 1924, fig. 8,33-35). As the conch shell is a symbol of the earth and the underworld, its use as symbol for one of the nine lords of the underworld and of nights (p. 173) would be appropriate.

The patron deity of Cumku is a dragon, whose head is seen in the introductory glyphs corresponding to IS which terminate in Cumku. Usually he has a series of curved fangs set in his mouth, a projection before his forehead, and a somewhat unusual element at the back of the head.

The head at the top of the west side of Copan 3 is somewhat more anthropomorphized, but the element behind the head is the same as on portraits of this deity, supporting Beyer's belief that this feature served to distinguish the head from those of other snakes or dragons. In one case (fig. 23,32) the head shows barbels which would associate it with the *Xoc* monster; in another portrait (fig. 23,30) the quincunx sign is set in the headdress.

Cumku is listed in the Motul dictionary with the meaning of potters' oven; *cum* is used for oven and apparently for any large receptacle resembling an oven, for *cumche*,

literally a wooden *cum*, is a maize granary. The Motul dictionary also lists *Cumhau*, "Lucifer, chief of the devils," which might be a contraction of Cum Ahau, "*Cum* lord," just as *Cumku* could mean "*Cum* god."

It is possible that the name means the god of the corn bin, who was associated with the garnered maize or the seed that was reserved for sowing. To judge by the portraits of the patron of the month, this deity would be a dragonlike monster. The glyph for the month—the apparent conch element, a symbol of the earth and its interior, over the sign for ripe maize or maize seed—appears to bear out this interpretation. The peculiar ornament at the rear of the head of the patron deity, with its three circles on what resembles a curling leaf, might well be a conventionalized maize plant.

In the earth crocodile we might have the origin of this presumed god of the stored corn. He often appears with maize leaves growing from his head, and he is a god of the soil. An objection to this interpretation is that earth monsters usually lack a lower jaw or have bared jawbones. In other respects they closely resemble the patron of Cumku. Since deities could don and doff the markings of death with facility, the objection is not fatal. It would, however, seem more probable that the head represents the sky monster, Itzamna, in view of the presence of a lower jaw. The Itzamnas sent the rain and thereby controlled the harvests. One of the names of these dragon monsters was Itzamna Kauil, the last word having as one of its meanings "food." Furthermore, sacrifices were made to the Itzamnas to petition good crops. The Itzamnas are usually depicted as saurian monsters but they were also represented as snakes. Usually they have a second head at the rear of the body.

The Tzeltal name, Mucuch, pairs with Alauch, just as Zizac and Muctazac do in the Tzotzil calendar. The prefix *muc* means "great" in Tzeltal, just as does *mucta* in Tzotzil. For Olh or Ohl I can suggest no plausible translation, although, just conceivably, it is connected with Olontic, the Tzotzil name for the underworld.

*Uayeb* or *Uayeab* or *Uayeb haab, u tux kin, u lobol kin, u yail haab, u yail kin, xmaqaba kin, u tich kin* (all Yucatan), *Mahi ikaba Chaikin, Oyebku, Oki, Kaxik lahkih* (fig. 19,17-20). The many names for the period of five days at the end of the year have four main meanings: the evil or deceptive or misfortunate days (*u lobol kin, u tux kin, u yail kin, kaxik lahkih*); nameless days (*xmaqaba kin, mahi ikaba*); five days (*oki, Oyebku*); the misfortune of the year (*u yail haab*); and the days left over (*u tich Kin*).

The Yucatec names *uayeb, uayeab* and *uayeb haab* have been translated as the bed (*uay*) of the year, but it is more probably that they derive from a homonymous

root meaning poisoned, damaged, or infected, and therefore convey the same idea as the unlucky days.

Of the days of Uayeb Landa says that they were considered unlucky and bad. He lists a number of ceremonies for the entering year. These commenced in Uayeb and varied according to the year bearer. In another place he says that during these five days people did not wash

that reason nothing is known of the patron deity of the period save that Landa lists the names of deities connected with the five unlucky days.

Such information as can be garnered concerning the meanings and associations of the various months is given below in tabular form. Much chaff has produced a fistful of grain.

TABLE 9—THE MONTHS, THEIR PATRONS, AND THEIR POSSIBLE ASSOCIATIONS

NAME OF MONTH	PATRON	GLYPH	COMMENT
Pop.....	Jaguar	Mat, chief	Mat and jaguar symbols of chieftom
Uo.....	Jaguar of underworld	Black sky symbol	Jaguar-night-blackness
Zip.....	Fret-nosed sky being. A deer?	Red sky symbol	Maya version of Mixcoatl?
Zotz'.....	Xoc fish	Bat (zotz')	Rebus for winter?
Zec.....	Sky and earth	Count of uinals?	260-days to end of year?
Xul.....	Canine god??	Dog with sun tail	Dog who led sun to underworld?
Yaxkin.....	Sun god	Sun with yax prefix	New or strong sun
Mol.....	?	Water symbol	Clouds gather?
Ch'en.....	Moon	Black sky monster	Sky monster of west
Yax.....	Venus	Green sky monster	Sky monster of south?
Zac.....	Frog constellation	White sky monster	Sky monster of north
Ceh.....	Sky god	Red sky monster	Sky monster of east
Mac.....	God of number 3	Count set in order?	End of 260 days?
Kankin.....	Earth monster?	Dog	Both connected with underworld
Muan.....	Moan bird	Moan bird	Deity of rain and clouds
Pax.....	Jaguar or puma	Water dispersing??	Rising sun disperses mist and dew?
Kayab.....	Moon goddess	Turtle	Turtle symbol of parturition?
Cumku.....	Crocodile?	Conch (?) over maize seed	Itzamnas, gods of rain and plants?
Uayeb.....	.....	Tun with prefix	Deity perhaps Mam, the earth god

or comb their hair or rid themselves of fleas, and they did not undertake any arduous tasks for fear misfortune should overtake them. Instead, they kept to their houses as much as possible.

Lincoln reports that among the modern Ixil the five days, called Oki (*Okih?*), are regarded as dangerous and very unlucky. Everyone fasts, and nothing is eaten save a small piece of tortilla spread with chili sauce. Sins are confessed and certain ceremonies, involving offerings at the village crosses, are held or have fallen into desuetude only in recent years. It is believed that children born during these five days will be impotent, and boys will be effeminate.

The Jacalteca, who have lost all names for the months, still remember the five days at the end of the year. They call them *ho pix*, for which the translation "five women" has been suggested, but perhaps this is the numerical affix *bix* (p. 170). The Kekchi also have lost their months, but retain a memory of the five unlucky days. They have been transferred to Easter, and are called *rail cutan*, "grievous days" (Wirsing, 1930).

The Uayeb glyph is a tun sign with an indeterminate prefix. In view of what has been written above, the prefix might represent the idea of evil. There is no IS introductory glyph for Uayeb among surviving texts, and for

The evidence, although far from complete, suggests that the months were under the patronage of various deities, and that the glyphs of some of the months refer to those gods. The changing seasons may not have played any part in the formation of the glyphs or in the original names for the months. Thus, if this thesis is correct, one cannot attempt to arrange the months so that, for instance, Yaxkin falls in a hot dry spell and Muan at a time of cloudy or rainy weather. According to the interpretation here advanced, Yaxkin would mean "vigorous sun" because the morning sun, who is patron of the month, is vigorous as he renews his flesh after emerging from the underworld; Muan is so named because it was the month of the Moan bird, a deity of the sky connected with clouds and rain.

It is highly probable that in the various Maya languages there were often two or more names for a month. In some instances the old sacerdotal name was retained; in other cases a popular name became pre-eminent. Thus in Chol the old name for the twelfth month Chac, "red," was retained; in Yucatec Ceh, "deer," became the common designation for this month, perhaps because at that time special festivals in honor of the gods of venery may have been held. This duplication of names is illustrated in the Tzeltal and Tzotzil calendars, and in the many

names for the five days that close the year. Similarly, there were alternative names for many of the Aztec months.

It will be noted that several of the gods, to whom the months were dedicated or, more probably, whom the months represented, are the same as those already noted in discussing the gods of the days and of the numbers 1-13.

The gods of the numbers 1-13 appear to have been associated with the following months:

1. Moon goddess. Ch'en (month 9).
1. Moon goddess. Kayab (month 17).
2. ?
3. God of storms. Mac (month 13).
4. Sun god. Yaxkin (month 7).
5. Old god of earth. Uayeb?
6. ?
7. Jaguar god of underworld. Pop (month 1).
7. Jaguar god of underworld. Uo (month 2).
8. ?
9. Chicchan god. Perhaps Mol (month 8).
10. ?
11. Hunting god. Perhaps Ceh (month 12).
12. Venus monster. Yax (month 10).
13. Xoc fish. Zotz' (month 4).

There is no clear parallel in the sequence.

#### NUMBERING DAYS OF MONTHS

Each of the 18 months consisted of 20 days. Numbers 1-19 inclusive are found with month signs.

These numbers are written in the various books of Chilam Balam with the month names as *tu hunte Pop*, "on first of Pop," *tu bulucte Zeec*, "on eleventh of Zeec," etc. Such month positions are usually transcribed as 1 Pop, 11 Zeec, but the Motul dictionary gives examples showing that when *tu* (contraction of *ti* and *u*, literally "on its") precedes the number with the numerical classifier *te*, the number should be translated as an ordinal. For simplicity I shall continue to write 3 Uo, 13 Xul, etc., although more correctly these should be written 3rd of Uo, 13th of Xul, etc. A prefix which almost certainly corresponds to *tu* has been discussed (p. 57; fig. 39, 1-8).

#### SEATING OF MONTHS

A problem which has provoked much discussion in the past 40 years is how the day before, for example, 1 Pop (more correctly first of Pop) was designated. It can be easily proved by simple arithmetic that the sign commonly called the spectacle glyph is found with the Pop glyph under conditions which can only indicate that it represents the day before 1 Pop and, similarly, when attached to the sequent month glyphs, denotes the day before 1 Uo, 1 Zip, 1 Zotz', and all the other months.

It has been assumed that in designating the days of a month the Maya counted only elapsed time. Therefore, as the first day of Pop was not yet concluded, it could not be called 1 Pop. The deduction was made that the first day of the month was 0 Pop, and that the days of any month bore the designations 0-19, and that 0 Uo followed 19 Pop. This view has been widely accepted, but it is certainly fallacious. On the other hand, Seler (1902-23, 1:851-62) suggested for the spectacle glyph the interpretation "eve of" (*Vorabend*), but this meaning could hardly apply to its use with another glyph, now to be discussed.

The spectacle glyph occurs also in other combinations, of which the commonest is one in which it is attached to or merged with the winged-cauac glyph (fig. 19, 37-41). The winged cauac is a variant form of the tun sign, never employed in IS but used to designate, customarily with the addition of prefixes for count or completion, an even tun from 13.0.0.0.0 4 Ahau 8 Cumku.

Beyer (1932a, pp. 105-13), who was the first to comment on the combination of spectacle glyph and winged cauac, interprets the sign as 0 tuns, having assumed that the spectacle glyph was correctly deciphered as zero. He cites a number of cases at Palenque where this combination occurs with the recording of the ends of katuns. There are, however, two very cogent reasons for rejecting his interpretation.

From all we know of the Maya philosophy of time and from all we can gather from the glyphs, the Maya were interested in recording the completion of time. Such and such a date marks the completion of a period, not its beginning. The date 8 Ahau 13 Ceh is the end of nine baktuns, not the beginning; 8 Ahau 8 Uo is the end of 13 katuns, not the beginning. In the books of Chilam Balam we read "the count of [Katun] 11 Ahau was not ended when . . .," and "for six years the count of 11 Ahau will not be ended," and in the Chronicle of Chaculubchen "in this year the katun ended." Instances of such references to the ends of time periods could be repeated; none refer to the beginning of a time period.

The spectacle glyph with a month sign, if it means zero, can only indicate the commencement of that month, not its end; if it is used with the winged-cauac sign to indicate that the tun was also that on which a katun ended, it can only mean completion. The ideas are diametrically opposite. Had the Maya failed to distinguish between a count not started and one completed—and the possibility is well nigh inconceivable—the spectacle glyph and the normal signs for completion (the hand with affixes, the shell, or the face with hand on cheek) should be interchangeable. They are kept rigidly apart.

The second objection to the Beyer interpretation is that his 0 tun glyph occurs with a date 9.8.13.0.0 5 Ahau

18 Zec, which is followed by the glyph for 13 tuns. A date can hardly be both 13 tuns and 0 tun. Beyer's explanation for this refutation of his thesis is not convincing.

There is probably a second case of the use of the spectacle-winged-cauac glyph with a date that is not a katun ending. The last two glyphs of the step leading to the inner chamber of Temple 22, Copan, are composed of the spectacle-winged-cauac glyph and a day sign, which is probably Ahau, with a coefficient of 5. No katun near the date of the erection of Temple 22 is completed on 5 Ahau, but 9.17.2.0.0 ends on 5 Ahau 8 Cumku. As this date occurs elsewhere at Copan, it is probably the one meant in this inscription, and in that case the supposed 0 tun glyph again occurs with a tun which is not 0. The Beyer interpretation of this glyph must be rejected.

The spectacle glyph also occurs in other combinations. Merged with the winged cauac and with an added postfix, it follows distance numbers which are counted forward or backward to reach the end of a katun or a tun that is not also a katun ending (fig. 19,42-44). In other forms the glyph follows distance numbers which lead to dates which are not even tun endings (fig. 19,46-51).

The problem is to seek an interpretation which will cover these different uses. In Tizimin (pp. 41-52) there is a combined Maya and Spanish almanac. Similar almanacs occur in most of the books of Chilam Balam except that of Chumayel, and all appear to derive from a single source since all begin with 10 Oc on January 1. At 20-day intervals the names of the months are given, starting with Pop on July 16 (as in Landa). Before each month name occur the words *u cutal*. With 10 names these words occur alone; in the remaining instances the word *licil*, "at that time," or *uai c*, "here," precedes the phrase. Similar phrases occur in Mani and Ixil.

*U-cutal* means "the seating of." On July 16, then, Pop was seated. Twenty days later the seating of Uo took place, and so at 20-day intervals all 18 months were seated. The year is obviously based on the same one that was frozen into the European year, with the beginning of Pop falling on July 16 (O.S.). Thus it is virtually certain that the seating of each month took place at its start.

Actually the word *cutal* is a contraction of *cultal*, "the seating." The root of the verb to seat is *cul*. On page 76 of Chumayel we find *caanil Kan cumlahci Pop ti lak'in*, "4 Kan, Pop was seated to the east"; on page 1 of Tizimin occur the words *ca bin culac hun Muluc*, "when 1 Muluc will be seated."

The expression is also used for the seating of the tun, for on page 7 of Tizimin is written *ti cutal ti tun*, "there the seating at the tun." It occurs also in the same book (p. 36) in connection with the katun: *Buluc Hix cu cutal*

*oxlahun Ahau katun ti lah [ca] bil Cauac*, "11 IX, then the seating of katun 13 Ahau on 12 Cauac." The expression is similarly used for the night, for in the Motul dictionary we find *ak'ab culen cul*, "entre dos luces," at nightfall. The seating, therefore, is when the period enters.

The problem then is whether the seating of the month took place on first of Pop, etc., or on the day previous, the so-called 0 Pop. The tun and katun obviously must have been seated at the time of the completion of the previous period. Katun 14 was, one can be reasonably certain, seated on the day 9.13.0.0.0 8 Ahau 8 Uo, not on 9.13.0.0.1, for it was immediately on the completion of one katun that the next one began. It is, therefore, logical to assume that the month was seated also at the moment it entered, and that would coincide with the exit of the old month.

It will be shown that for the spectacle glyph with one month can be substituted the glyph of the previous month with a tun sign as a prefix. The only deduction possible is that the day before the first of the month could also be regarded as the last day of the previous month.

If the spectacle glyph is translated as "the seating of," it agrees with the sundry occasions on which it is used. With month signs and with the winged cauac it would mean respectively "the seating of the month" and "the seating of the tun"; with the postfix and placed after a distance number, it would mean "[the distance number] leads to the seating of a tun." The last variant which lacks the wing (fig. 19,46-51) would mean "[the distance number] leads to the seating of a day," and the variant, in which the inverted Ahau is the main element, would have the same meaning as the last (p. 165).

#### THE LAST DAY OF THE MONTH

As noted above, there are cases where the spectacle glyph with a month sign is replaced by the tun sign used as a prefix or as a prefatory glyph of the previous month (fig. 19,21-27; Thompson, 1935, p. 101; 1943a). There are nine known occurrences of this substitution including two dubious examples (Table 10).

The IS values of only three are beyond question (1, 6, and 7). Calculations lead respectively to 13 Ik, Ch'en seated; 1 Caban, Mol seated; and 2 Eb, Pop seated. In nos. 1 and 6 the preceding month glyph is given without any question. In the case of no. 7 the bottom part of the glyph clearly shows the tun sign, the main element of Uayeb. The top part of the glyph is weathered, but I think I recognize on the left a hand; on the right, an indistinct element which might be the prefix of Uayeb. The hand, if it is present, would correspond to the tun sign, both conveying the idea of completion. It is just possible that the main element is the tun sign and is used

TABLE 10—DATES RECORDED AS TWENTIETH DAY OF MONTH

1. Palenque Cross, D9	13. 0. 1. 9. 2	13 Ik, Mol with tun prefix.
2. Palenque Palace, W. court	( 9. 8. 18. 3. 7)	13 Manik, Yaxkin with prefatory tun.
3. Yaxchilan 9, B1	? ? ? ? ?	11-13 day sign, Mac with tun prefix.
4. Yaxchilan L9, A2-A3	( 9. 11. 11. 16. 12)	1 Eb, Yaxkin with prefatory tun.
5. Piedras Negras MSS 16, B1	( 9. 14. 16. 1. 7)	8 Manik, Ceh with tun prefix.
6. Piedras Negras shell plaque	9. 14. 17. 14. 17	1 Caban, Yaxkin with tun prefix.
7. Naranjo HS, A1b	9. 10. 3. 2. 12	2 Eb, Uayeb completed?
8. Naranjo 19, C10-C11	( 9. 17. 5. 8. 12)	9 Eb, Yaxkin with prefatory tun.
9. Quirigua G, U'2-V'2	9. 17. 14. 13. 17	13 Caban, Yax (?) with prefatory tun.

here with a hand to show that 2 Eb coincided with the end of the year (p. 122), but I do not consider this likely.

No. 9, at the close of the text on Quirigua G, follows three dates in this arrangement:

H'1-G'2	9. 17. 14. 13. 0	9 Ahau 3 Yax
K'1-L'1	9. 17. 14. 13. 2	11 Ik 5 Yax
U'1a	10	Add
U'1b-V'1a	9. 17. 14. 13. 12	8 Eb 15 Yax
U'2-V'2a	9. 17. 14. 13. 17	13 Caban tun glyph, Yax (?)

The day sign has a coefficient of 13, but is too weathered to show whether or not it represents Caban. The prefatory tun is very clear, but the subsequent glyph bears little resemblance to Yax in Miss Hunter's drawing. A good photograph is not available.

It is to be regretted that the position of several examples of the use of this tun glyph with month signs is not fixed in the LC. The fact that of the only three thus securely placed, two (nos. 1 and 6), which are perfectly clear, show the use of the glyph of the month prior to that normally to be expected, while the third (no. 7) almost certainly does the same, is full evidence for accepting the theory. One can not assume that mistakes have been made, when that involves classifying 100 per cent of the examples as errors.

There is linguistic confirmation for reading the tun sign in these cases as "end of" or "last of." Roys has called my attention to a very similar use of the word *tun* in Yucatec. The Motul dictionary lists among the many meanings of that word: *postpuesta á la primera dicción, ya, o finalmente*. The Vienna gives: *u lahi tun, u nak, and u xuli tun* as translations of *ya no mas*. In the San Francisco dictionary *finalmente* is translated as *tz'ocbali tun* and *tu tz'oc tun*. Roys, on supplying these quotations, adds that the most frequent meaning of *tun* in the texts seems to be "then, after that," but it can mean "finally."

The word seems to be used frequently with expressions of finality to give added emphasis.

As the prefix of the tun sign can be omitted (nos. 2 and 3), its meaning can not be of much importance. In the best preserved example (no. 8) it is identical with the prefix of Glyph F of the supplementary series, and other examples seem to confirm this identity.

We must conclude that the days of the months were numbered 1-19, and that the day between the nineteenth of one month and the first of the sequent month was usually called the seating of the new month, but sometimes was called the last of the old month. It is possible that "seating of" is not the correct translation, and that the glyph actually represents some other phrase, such as "entrance of." In any case we can be sure that the translation zero is incorrect.

#### HANDLING OF LEAP DAYS

The Maya made no attempt to intercalate days in the count of the years to bring the year of 365 days into conformity with the solar year. Such a correction would have played havoc with the whole orderly plan of the calendar and would have disorganized the elaborate system of lowest common multiples of different time cycles, which were of the highest importance for divinatory and ritualistic purposes.

Naturally, the Maya were well aware that their year and the solar year were at variance. They made excellent calculations as to the rate at which the error accumulated, but these were merely noted as corrections; they were not used to change the calendar (App. V).

#### NAMES OF THE YEAR AND ITS DIVISIONS

I think it is doubtful that the Maya had any distinct name for the year of 365 days, but instead they probably used the names for the year of 360 days loosely to refer also to the 365-day period, for actually, there was no year of 365 days, but one of 360 days, to the end of which were added the five nameless days.

Spanish writers and the Motul, as well as other dictionaries, give the meaning of year to the word *haab* or *hab*. This also occurs as *haab* or *hab* in western and eastern Chol, Chontal, and Pokomchi; as *habil* in Tzeltal and Tzotzil; as *habil* or *hail* in Chaneabal; as *ab* in Mam and Quiche; and as *yab* in Ixil. The word has been rather widely accepted by Maya epigraphers as meaning the year of 365 days. Long (1925), however, has shown clearly that as employed in the chronological passages of the books of Chilam Balam it refers to the year of 360

days, and that as used in the combination *cuch haab*, "year bearer," it also means the year of 360 days. He points out, furthermore, that in the hieroglyphic texts the year of 365 days does not have its own glyph, but that the period would be written as 1 tun and 5 kins.

Beyer (1936f), on the other hand, calls attention to passages on Copan U, in which two dates, 3 Caban, Pop seated, and 3 Eb, Pop seated, occur. Following the first date is a glyph "expiration of 13 tuns"; immediately before the second date are two glyphs. The first is that of 13 tuns with the postfix indicating that it is a distance number; the second is the anterior date indicator, which denotes that this number is to be counted back to reach the date which follows. Actually that is precisely the relationship between these two dates provided the tun is translated as a year of 365 days.

A1-B1	(9.18. 2. 5.17)	3 Caban, Pop seated
A2		Expiration of 13 tuns
O2-P2	13. [3. 5]	Count back
O3-P3	(9.17. 9. 2.12)	3 Eb, Pop seated

Perhaps the tun glyph is used in this passage because the count is made from the start (or end) of one haab to another, and the distance might be thought of as 13 haab because of the important positions the two dates hold. Also in this particular case there would be little danger of confusion between the tun alone and the tun plus the nameless days. Whatever may have been in the mind of the Maya priest, it is reasonably certain that in this unique arrangement the priest-astronomer twice used a tun glyph to indicate the year of 365 days. The lateness of the text may account for this aberrant treatment.

The rather pedantic differences the Maya established for the usage of the tun glyph and the cauac glyph, both of which stand for the period of 360 days, and for the words *tun* and *haab* are discussed on page 190. Suffice it to say that in the books of Chilam Balam only the word *haab* is used in describing the period of 18 months whereas *tun* is principally used to chronicle the passage of time in direct or indirect relationship to the LC. No word for the period of 365 days is surely known, although it is just possible that the term *buk* served that purpose.

The word *haab* appears in Mam with the meaning of rain, and as *hab* is translated in the Guzman dictionary of Cakchiquel as "shower," there seems little doubt that the word contains the root *ha*, "water." Perhaps the final letters *ab* represent the instrumental termination; that is to say, *haab* is that which causes water. The main part of the winged-cauac glyph is the section of the body of a celestial dragon, a creature which sent the rains. Similarly,

the main element in the tun sign of geometric form is the symbol for jade or water (p. 144). The word *tun* has a similar connotation since it means jade, the symbol for water. The head form of the tun may be that of the Moan bird, deity of the clouds, but that identification is open to question (p. 145).

The names for the divisions of 20 days which compose the 260-day cycle have been discussed (pp. 69-88). It was noted that there is some uncertainty as to whether those terms for 20 days refer to divisions of the divinatory almanac, which run from Imix to Ahau, or to the months which start with Akbal (or Ik, if the seating of the month is regarded as the first day). The difference may seem very small, but was almost certainly of sufficient importance to the Maya to require separate terms, just as slight variations in context led to the substitution of *haab* for *tun*.

Landa writes that the 18 months were called *uinal hunekeh*. It would appear that two names are here given: *uinal* and *hun* (one?) *ekeh*. The latter is probably the result of miscopying (p. 97).

Several words connected with moon are listed in various dictionaries with the meaning of month. It is not improbable that in some cases the word for the month of 20 days was transferred after the Spanish conquest to the Spanish months.

In Cakchiquel and Pokoman *uinaħ* was used for a count of 20 days, whereas the respective terms for month are *ikh* and *po*, both of which denote moon. In Yucatan, according to Landa, the 30-day month (more correctly, alternating months of 29 and 30 days) was called *u*. Expressions such as *canpel u*, "[the war lasted] four months," *oxte uu*, "three months," and *hun řalab ti u*, "one whole month," in the books of Chilam Balam, and the Motul dictionary confirm this usage. *U* is the Yucatec name for the moon. The Motul dictionary also lists *ho uen*, "a matter of five months." The Tzotzil word for month, *uh*, is close to Yucatec, and has the same meaning; the Chancabal word is *ixauh*, which also denotes the moon. At Santa Eulalia *xahau* is the term used for the *uinal*, and also signifies moon. *Uinac* may have once described the 20-day period.

The reason for believing that some of these terms now used for the lunar or civil month may once have been used for the month of 20 days is that the moon glyph is used as a sign for 20 both in distance numbers (stelae and codices) and in the lunar series. Santa Eulalia use of *xahau* for both moon and *uinal* conforms to this supposition. I do not know the derivations of *toh amac* and *tachbal amac*, the Ixil terms for the *uinal*.

## THE CYCLE OF FIFTY-TWO YEARS

The sacred almanac of 260 days and the year of 365 days were concurrent. Naturally at the end of the year of 365 days, one cycle of 260 days had been completed, and 105 days of the second cycle had elapsed. It is, therefore, clear that after one year of 365 days the day name had advanced five places, and the day number one place ( $105 \div 20$ , remainder 5;  $105 \div 13$ , remainder 1). As the day name advanced five places each year, at the end of four years the same day name returned, but with a coefficient four points higher. It follows that only four day names could coincide with any one month position.

The originators or reformers of the calendar made Imix coincide with the fourth (or ninth or fourteenth) of each month, with the result that the day names which could accompany each month number were as follows:

Caban, Ik, Manik, Eb	on seating of month and 5th, 10th, and 15th days.
Etz'nab, Akbal, Lamat, Ben	on 1st, 6th, 11th, and 16th of month.
Cauac, Kan, Muluc, Ix	on 2nd, 7th, 12th, and 17th of month.
Ahau, Chicchan, Oc, Men	on 3rd, 8th, 13th, and 18th of month.
Imix, Cimi, Chuen, Cib	on 4th, 9th, 14th, and 19th of month.

Thus there are only four day names which can occur with a given month position. If a date is deciphered as, for instance, 7 Ahau 14 Zip, there is an error in the decipherment or in the original text, or the standard system was not being used (p. 124), for the day Ahau could fall only on the third, eighth, thirteenth, and eighteenth of Zip. On the other hand, only the day names Imix, Cimi, Chuen, and Cib can coincide with fourteenth of Zip. This arrangement is often of great help in deciphering weathered or incomplete dates. For example, if the day sign is eroded, but the month sign is preserved, one knows from the latter's coefficient that the day sign must be one of the corresponding group of four. Thus if the month coefficient is 2, 7, 12, or 17 the day sign has to be Kan, Muluc, Ix, or Cauac. As these four signs are quite dissimilar, any small detail that has survived will usually lead to the identification of the glyph. In other cases the popularity of a day sign may be of assistance. If the month coefficient is 3, 8, 13, or 18, the day sign has to be Chicchan, Oc, Men, or Ahau, but as the last is more frequently represented than the other three together, one has a strong hint that the day is Ahau. Furthermore, as Ahau ends every period in the Maya count from the uinal to the great-great cycle, a month coefficient of 3, 8, 13, or 18 prompts one to be on the lookout for a tun ending.

Because of the surplus of 105 days of the year over the cycle of 260 days, Pop will be seated on 1 Ik one year,

on 2 Manik the next, on 3 Eb the third, on 4 Caban the fourth, on 5 Ik the fifth, on 6 Manik the sixth, etc. The thirteenth seating of Pop will be on 13 Ik, the fourteenth on 1 Manik, the twenty-seventh on 1 Eb, the fortieth on 1 Caban, the fifty-second on 13 Caban. After the fifty-second year the series starts again with 1 Ik. Naturally the same interval of 52 years of 365 days must pass before any combination of day and month sign can repeat. The reason for this can be shown in another way. The highest common factor of 260 and 365 is 5, therefore  $260 \times 365 \div 5 = 52 \times 365$ .

This interval of 52 vague years is called the Calendar Round, and any specific date, such as 13 Ahau 18 Cumku or 5 Muluc 17 Ceh, is a CR date. The Maya name for this period is unknown. It may have been an expression which included the word *uazaklom*, since that term is used to describe the cycle of katuns; the Motul dictionary lists *uaçaklom, cosa que es de buelta o que se vuelve*.

There are altogether 18,980 ( $52 \times 365$ ) CR dates, but the same day name and month will recur after 1460 days (four vague years) although the day number will be four units higher. For example, 13 Ahau 18 Cumku falls on 9.17.0.0.0. Four vague years later the date will be 9.17.4.1.0 4 Ahau 18 Cumku. This is so because the interval of 4 tuns, 1 uinal, and 0 days is 1460 days. This is four years of 365 days, and therefore the month position is unchanged. Dividing 1460 by 13 leaves a remainder of 4, the coefficient of the day sign therefore increases by that amount. As 1460 is divisible by 20, the day remains Ahau (p. 67).

## POSITION OF MONTH GLYPH

The full CR date is almost always given in texts on the monuments of the Initial Series Period. Sometimes, however, particularly in the repetition of a PE date, the month position is dropped, but the month position never occurs without the day. The normal position of the month glyph is immediately after the day sign in the case of CR dates, but rather rarely they are separated by one or more glyphs, notably Glyphs G and F (p. 208), the first of which gives the name or emblem of the lord of the night. In the case of IS the day and month glyphs are usually separated by Glyphs G and F and the lunar series, the month sign following Glyph A of the lunar series (fig. 50,1,2); in about 15 per cent of the IS the two are together, and precede Glyphs G and F and the

lunar series (fig. 53,1) or, more rarely, both follow Glyph A of the lunar series (Copan 10, 13). Quite rarely the month sign lies between Glyphs G and F and the lunar series, the day sign preceding Glyphs G and F. Glyphs connected with the cycle of 819 days form a sort of parenthetical clause, with its own day and month glyphs, between the day and month signs of the IS, so that, disregarding other glyphs, the order is: 1, day sign of IS; 2, day sign of cycle of 819 days; 3, month sign of cycle of 819 days; 4, month sign of IS.

#### THE YEAR BEARERS

The days which fell on first of Pop were of great importance at the time of the Spanish conquest. In the standard system first of Pop coincided with the days Akbal, Lamat, Ben, and Etz'nab, but in parts of Campeche and Yucatan a shift took place, starting as early as 9.12.0.0.0 (Proskouriakoff and Thompson, 1947; fig. 35,8-15) and was apparently accepted generally in Yucatan in the sixteenth century. The months were displaced one position so that 1 Pop was made to coincide with Kan, Muluc, Ix, or Cauac. Naturally this shift applied to all the days, so that, for example, Ahau fell only on the second, seventh, twelfth, or seventeenth days of a month (fig. 35,9-11,15) instead of the third, eighth, thirteenth, and eighteenth days, as was the practice during the Initial Series Period.

These days falling on first of Pop were called in Yucatan *ah cuch haab*, "bearer of the year." Among the present-day Jacalteca the year bearers are called *ikum habil* which means precisely "bearer of the year." The Chuh name is *cuchlum haabil*, which has the same meaning, and is very close to Yucatec, for the terminations *lum* and *um* denote the agent. Presumably, the Ixil term *ih yab* has the same meaning, for *yab* signifies year.

The codical form of the glyph for the burden of the year, now identified (p. 267; fig. 43,37,49,61), occurs several times, as would be expected, on the pages dealing with the new years and their prophecies. What is probably a postconquest variant appears in Mani (fig. 46,32).

#### FUNCTIONS OF YEAR BEARERS

The year bearers served two main purposes: they influenced the luck of the years and they served as a ready designation of the current year.

Landa gives a rather full description of the ceremonies, which commenced in Uayeb, for the installation of the new year bearer. The year bearers were associated with world directions and colors: Kan was placed to the east and its color, accordingly, was red; Muluc was set at the north, and its color was white; Ix ruled in the west and was associated with black; to Cauac fell the

south and yellow. Naturally, after four years the cycle started again with the association Kan-east-red. In addition, each year, through its association with a world direction, was under the patronage of important deities who ruled over that quarter. These included the four Bacabs who were stationed at the four points of the compass, and were known as the red Bacab, the white Bacab, etc., although they also possessed individual names. Other important deities connected with the years were: Bolon-Tz'acab, who held sway during the Kan years; Kinich-Ahau, the sun god, who ruled the Muluc years; Itzamna, the celestial dragon, patron of the Ix years; and Uacmitun-Ahau, a god of death, whose dire reign influenced the Cauac years.

Kan years were lucky and generally free of calamities, because, Landa informs us, the ruling Bacab, Hobnil, had never sinned, as his brother had done. Muluc was also an auspicious year bearer because the ruling Bacab was the greatest of the four. The fortunes of Ix years were calamitous. They were favorable for the cotton crop, but the maize harvest would be very meagre because of drought and hot spells; famine would follow, and this would lead to theft. Thieves would be sold into slavery, and that, in turn, would cause discords, wars, and revolutions. Locusts would plague the land, towns would be depopulated, and chiefs might die. Cauac years were also unfortunate, as one would expect since they were under the baneful god of death. Many persons would die; hot spells of weather, and plagues of birds and ants would destroy the crops in many parts. Some of these auguries are given in glyphs in Dresden (pp. 268-73).

Propitiatory ceremonies might alleviate distress, and these took place, according to Landa. Nevertheless one suspects, although there is no direct evidence to support the suspicion, that the coefficient of the year bearer affected the auguries. A lucky number probably offset the evils inherent in Ix and Cauac; an unlucky number presumably modified the good cheer of Kan and Muluc years. That would be normal procedure for the Maya, and would present those opportunities for hedging, so needful for all who essay to chart the future. The importance of the year bearer in the ceremonial round of the year is well illustrated in accounts of the practices of present-day Maya in the Guatemalan highlands, notably the Jacalteca and Ixil (p. 95).

Besides shaping the fortunes of the years, the year bearers served as names for the years, and thereby afforded a rapid and simple method for identifying any year within a CR. Assuming that the first of the 52 year bearers was 1 Kan, it is a very easy matter to find the position of any given year bearer in the sequence. One merely finds by subtraction the preceding year

bearer with coefficient of 1, and notes the division it heads (Table 11, p. 127). Thus, to find the position of a year 10 Cauac, one subtracts nine years to reach 1 Ix, and notes that this heads the third division, and therefore is the twenty-seventh year. Adding 9 and 27 gives the answer that 10 Cauac is the thirty-sixth year bearer.

#### CONCEPT OF BURDEN

The term year bearer appears to have arisen because the Maya conceived of the year bearer carrying the year as a load on his back. The same concept was applied to other periods as well. Thus we find in Tizimin (pp. 2, 9, 10, 12, 13) statements such as *tu kin u ch'a cuch*, "at the time he takes the burden," apparently referring to the year bearer 3 Cauac; and *u kax cuch katun* which probably means "the binding of the burden of the katun"; and again in *tu kin u kaxal u cuch ah ho Ahau*, "on the day [or at the time] of the binding of the burden of Lord 5 Ahau," 5 Ahau being the day which gave its name to the current katun. Other references to the burden have been discussed at some length (pp. 59-61).

Each year has his burden with which he traverses his course to pass it at journey's end to his successor. It is a poetical imagery, not devoid of beauty, and in keeping with the Maya concept of time.

#### LOCATION OF YEAR BEARERS

Alfonso Caso (1939) has advanced evidence that among the Aztec the year bearer was the last (360th) day of the year; but Maya sources, such as the various books of Chilam Balam, are unanimous in placing the year bearers on first of Pop. The question arises as to the reliability of these colonial sources. It is known that late in the eighteenth century an attempt was made to reform the Maya calendar by making the length of the katuns 24 years instead of 20 tuns (p. 34). Could there have been in the seventeenth century a similar but more successful attempt to shift the year bearers from the end of the year to first of Pop?

Evidence in favor of first of Pop is as follows:

1. Page 66 of the Chronicle of Oxkutzcab lists the dates on which a succession of 13 tuns, running from 1532 to 1544, ended. There are also listed the year bearer as 13 Kan on first of Pop, etc. Despite certain inaccuracies in transcription this document bears every evidence of being the purest writing on Maya chronology which has survived. At the end Juan Xiu signs the entry, dates it May 29, 1685, and states that he copied it "from an ancient book, namely in characters as they are called, *Anares*" (p. 23). Entries on some events were probably added in script to a chronological frame in glyphs, but it is the latter which interests us for the moment.

2. A series of year bearers occurs on pages 1-13 of Tizimin in connection with prophecies for years or tuns for a Katun 5 Ahau (Roys, 1949). The sequence runs from 13 Kan to 8 Muluc, and in most cases the year bearer is stated to fall on first of Pop. The first in the series, 13 Kan, is said to have occurred in 1593. Under 13 Kan there is a reference to the Katun 5 Ahau declaring its name on 15 Zec. If by this is meant the CR date 5 Ahau 17 Zec, this actually fell in a year in which 13 Kan was on first of Pop. The sequence is in agreement with page 66 of the Chronicle of Oxkutzcab. In fact the authors probably drew from a single source. These prophecies in Tizimin are written in an archaic manner and are full of a ritualism which was certainly lost within a century after the Spanish conquest (Roys, 1949). This early material, provided it has not been tampered with by colonial transcribers, supplies very strong evidence for the year bearers having coincided with first of Pop.

3. Bishop Landa, after noting that Kan, Muluc, Ix, and Cauac were employed as Europeans use dominical letters, says that they begin the first days of the months of twenty days, and "the letter which is the dominical letter always comes out on the first day of their year. . . . the first of their month Pop" (Tozzer edition of Landa, pp. 135, 149-50).

4. Entries stating that the year bearers coincided with first of Pop are frequent in the books of Chilam Balam. For instance, Perez 130-31 lists year bearers for 1752 to 1796, and in every case 1 Pop follows the name of the year bearer. Similarly, year bearers are connected with 1 Pop on page 99 of Ixil (Berendt copy, p. 77). In Chumayel references to year bearers are very infrequent, and in no case is the position in the year stated. Of course, that information was not really required; every Maya must have known when the year bearers fell.

5. Tovilla, in his brief account of the calendar of the Manche Chol, does not specifically state that the year bearers fell on the first day of the year, but he does say that the month bearers fell on the first day of each uinal. There are traces in the sundry Chilam Balam that the year-bearer name had a secondary function as bearer of the month. Thus, we can indirectly infer from Tovilla's description that the year bearer coincided with the first day of the year.

6. In the calendars used by the present-day Ixil and Jacalteca, the year bearers fall on the day after the close of the five unlucky days. These five unlucky days do not occur in the same position as in the Yucatan calendar, but structurally the arrangement is the same, in that the year bearers are at the beginning of the year following the five unlucky days.

These six lines of evidence make a very strong case for the first of the month following the five nameless days as the position of the year bearer. During the Initial Series Period and in Yucatan in the middle of the sixteenth century that was Pop. Whether year bearers fell on the first of the month or on the seating of the month will be discussed below.

There are certain arguments which slightly favor the position of 1 Uayeb for the year bearers in sixteenth-century Yucatan:

1. The Maya named baktuns, katuns, and tuns by the days on which those periods were completed; it would be logical to apply the same system to the year. However, in this case, the presumed month position would not be the last day of the year, but the first day of the nameless days, 1 Uayeb, for Kan, etc., could not fall on the last day of Cumku.

2. There is a good case (Caso, 1939) for the thesis that Tititl was the last month of the Aztec year, and that the year bearer fell on the last day of that month. However, Weitzel (1948) has produced astronomical evidence against this thesis.

3. The series of prophecies in Tizimin for the years or tuns of a Katun 5 Ahau starts with the year bearer 13 Kan, which is dated 1593 (Roys, 1949). The katun therefore started in 1593 and ended in 1613, but the evidence is strongly against a katun having ended in that year; according to the 11.16.0.0.0 correlation a Katun 5 Ahau, which was also a baktun completion, ended in September 1618, and that was 12.0.0.0.0 5 Ahau 13 Zotz'. The year bearer for the end of the katun is given as 7 Kan or 8 Muluc, but 5 Ahau 12 Zotz' (as it would be in the Campeche-Yucatan system used in the books of Chilam Balam) could not fall in a year of which the first day was either 7 Kan 1 Pop or 8 Muluc 1 Pop. On the other hand, 8 Muluc 1 Uayeb does occur in the same year as 5 Ahau 12 Zotz', and the sequence of 20 year bearers from 1 Muluc to 8 Muluc would correspond to the katun which ended on 5 Ahau 12 Zotz'. In order to accept this arrangement of year bearers on 1 Uayeb one must assume that the statements as to the year bearers falling on first of Pop and the reference to 1593 are interpolations. In view of the innovations made by colonial scribes this assumption is not out of order. However, it is much more probable that the compiler of this text had access to the series of year bearers used by the compiler of page 66 of the Oxkutzcab chronicle, and added a CR, thereby getting the year bearers correct, but throwing a wrench into the katun chronology. The material can be used in favor of the 1 Uayeb hypothesis, but the argument is weak.

Against these arguments must be set the very much

stronger case for the year bearers on first of Pop. I was attracted by the Caso thesis, and tried to apply it to Yucatan, but the arguments against it are too overwhelming.

#### CORRELATION OF YEAR BEARERS WITH EUROPEAN YEARS

The year bearers fell on the first of the first month after the five nameless days, but the position of the last varied, as can be seen in Table 8 (p. 106). The Yucatec system, however, agrees with that of the Initial Series Period in that Pop follows the nameless days, and the same is true of the Chol system, although in the Chol list the equivalent of Pop is missing.

Because the Yucatec year started in the middle of the Christian year, one cannot correlate the former with a single European year, but one must say that it corresponds, for example, to 1517-18, or that it started in 1517, or that it ended in 1518. Of these three methods, the last two appear to have been used in colonial Yucatan.

On page 66 of the Chronicle of Oxkutzcab a sequence of 12 year bearers is assigned to the years 1534-45, and in this sequence the year bearer for 1542 is given as 13 Kan. The *Crónica de Yaxkukul* states that the Spaniards settled permanently at Merida in 1542, and the year bearer was 13 Kan. The formal foundation of Merida was in January 1542, so we can deduce that the year bearer covered the period middle of 1541 to middle of 1542. The Tizimin prophecies (Roys, 1949) give 1593 as the equivalent of 13 Kan, and deducting a CR, one gets 1541 as the year when 13 Kan had previously been the bearer. We thus have statements that 1541 corresponded to 13 Kan, that January 1542 fell in a year 13 Kan, and that 1542 was the year 13 Kan.

From these statements it seems safe to assume that the Maya correlated the Maya year either with the European year in which the year bearer began his course, or with that in which he finished it. There is, however, a fragmentary entry in Perez 184, which equates an incomplete date in Zip with August 1537, and the year bearer (subsequently designated as such) was 8 Cauac. According to the system just discussed, 8 Cauac would have been the bearer of a year running from July 1536 to July 1537. The scribe, of course, was reckoning back, for we can be sure that in 1537 the year bearers had not been correlated with the European year. Did he associate 8 Cauac with 1537, and therefore add that information arbitrarily, or did 8 Cauac correspond to 1537-38, and 13 Kan, likewise to 1542-43?

Long has shown that Landa's typical year with year bearer 12 Kan can not be placed by the European dominical letters, as Spinden had supposed, but there is indirect evidence that his year must be that of 1553-54. Reckon-

ing back from one of the calendars of the present-day Indians of the Guatemalan highlands, one finds that 12 Kan fell on July 15, 1553, whereas Landa places 12 Kan first of Pop on July 16. The nearest other occurrences of 12 Kan near July 16 in the middle of the sixteenth century can be reckoned by the same method to have been July 21, 1548, and July 9, 1558, neither of which agrees so closely with Landa's statements. Moreover, 12 Kan will not fall anywhere near July in 1554. We must, therefore, conclude that Landa's equation was 12 Kan first of Pop equals July 16, 1553. In that case the year 8 Cauac ran 1536-37, and the statement in Perez 184 is technically incorrect.

The round of year bearers from 1529-30 to 1580-81 is given in Table 11, together with source materials. Note that those cases, such as the Chronicle of Oxtutzcab, which give the year in which the bearer ended his course are included.

and Cauac. Is there any reasonable explanation of this lack of conformity?

On the assumption that the Akbal set was used by most cities of the southern area, the Yucatec system can be explained satisfactorily. It is now known that the Maya of Campeche, at least as early as 9.12.0.0.0 (p. 304) changed the month positions on which the day Ahau fell, so that under the new arrangement the end of Katun 12 was not 10 Ahau 8 Yaxkin, but 10 Ahau 7 Yaxkin. The days remained unchanged; the month positions advanced one place. Similarly, Kan, Muluc, Ix, and Cauac had perforce to fall on first of Pop in place of Akbal, Lamat, Ben, and Etz'nab. Why this shift took place we do not know, but that it did take place without loss of a day is now established. This explains the shift to the Kan set of year bearers, and also locates the original home of Codex Madrid.

If the month were seated on o Pop, to use the old

TABLE 11—YUCATEC YEAR BEARERS

1 Kan	1529-30	1 Muluc	1542-43 <sup>4</sup>	1 Ix	1555-56	1 Cauac	1568-69 <sup>7</sup>
2 Muluc	1530-31	2 Ix	1543-44	2 Cauac	1556-57	2 Kan	1569-70
3 Ix	1531-32	3 Cauac	1544-45 <sup>5</sup>	3 Kan	1557-58	3 Muluc	1570-71
4 Cauac	1532-33	4 Kan	1545-46	4 Muluc	1558-59	4 Ix	1571-72
5 Kan	1533-34 <sup>1</sup>	5 Muluc	1546-47	5 Ix	1559-60	5 Cauac	1572-73
6 Muluc	1534-35	6 Ix	1547-48	6 Cauac	1560-61	6 Kan	1573-74
7 Ix	1535-36 <sup>2</sup>	7 Cauac	1548-49	7 Kan	1561-62	7 Muluc	1574-75
8 Cauac	1536-37	8 Kan	1549-50	8 Muluc	1562-63	8 Ix	1575-76
9 Kan	1537-38	9 Muluc	1550-51 <sup>6</sup>	9 Ix	1563-64	9 Cauac	1576-77
10 Muluc	1538-39	10 Ix	1551-52	10 Cauac	1564-65	10 Kan	1577-78
11 Ix	1539-40	11 Cauac	1552-53	11 Kan	1565-66	11 Muluc	1578-79
12 Cauac	1540-41	12 Kan	1553-54	12 Muluc	1566-67	12 Ix	1579-80
13 Kan	1541-42 <sup>3</sup>	13 Muluc	1554-55	13 Ix	1567-68	13 Cauac	1580-81 <sup>8</sup>

<sup>1</sup>Given on p. 66 of Chronicle of Oxtutzcab. The first of a series of twelve year bearers covering the years 1533-34 to 1544-45, all of which are correct save the last, which gives 13 Cauac instead of 3 Cauac.

<sup>2</sup>Given in Ixil as the year bearer of 1743 ( $4 \times 52$  years later), but on this same page the wrong years are given for year bearers.

<sup>3</sup>Given in the Cronica de Yaxkukul (p. 18) and the parallel Cronica de Chicxulub as the year 1542, that in which Merida was founded in January 1542. This is correct. Given 52 years later in Tizimin (pp. 1-13) as the first of a series of 21 year bearers.

<sup>4</sup>Given in Mani (Perez 124) as the year bearer of 1750 ( $4 \times 52$  years later).

<sup>5</sup>Starts series of year bearers in Tizimin (p. 35) and Mani (Perez 130) with 1752 ( $4 \times 52$  years later).

<sup>6</sup>At the head of a sequence of 17 year bearers in Mani

(Perez 124-25). The series starts with 1758 ( $4 \times 52$  years later).

<sup>7</sup>The first of a series of 24 year bearers on page 36 of Tizimin correlated with 1776-99 ( $4 \times 52$  years later). However, on the next page all 52 year bearers are given in a table which starts with 1 Kan as the year bearer for 1758. This is incorrect, throwing the whole series awry. It should be 9 Muluc, as correctly given in Mani (see note 6 above).

<sup>8</sup>At the head of a sequence of 53 year bearers in Mani (Perez 122) starting with 1736 ( $3 \times 52$  years later). The references to year bearers could be expanded considerably by citing their occurrences in connection with the reformed katuns of 24 years. In one place (Perez 165) year bearers are given up to the year A.D. 2003, but the coefficients are uniformly one digit under the correct numbers. Corrections are made in the margin.

#### SHIFTS IN YEAR BEARERS

The Quiche, the Ixil, the Tlapanec of Guerrero, and the Zapotec and Cuicatec of Oaxaca used their equivalents of Ik, Manik, Eb, and Caban as year bearers; the Tzeltal, the Chuh, the Jacalteca, the Aztec, the Mixtec, and the compilers of the Dresden and Paris codices had Akbal, Lamat, Ben, and Etz'nab as theirs; Codex Madrid and sixteenth-century Yucatan used Kan, Muluc, Ix,

designation, and the year bearer fell on the following day, that is first of Pop, it would not be difficult for the two events to be confused or merged by a people not overly strict on the preservation of old ways. The Quiche and Ixil, with no stela cult and, apparently, no LC, might have had little interest in keeping those two ceremonies apart, and in time the days on which the years were seated might have acquired more importance, and finally replaced the next group of days as bearers of the years.

One suspects that the two functions were confused by the colonial scribes of the books of Chilam Balam. The situation then might have developed thus:

	<i>Chiapas, etc.</i>	<i>Yucatan and Campeche</i>	<i>Quiche, Ixil</i>
Seating of year	1 Ik 0 Pop	2 Akbal 0 Pop	1 Ik 0 Pop
Year bearer	2 Akbal 1 Pop	3 Kan 1 Pop	for both events

One must suppose that in the Central Area during the Initial Series Period the year bearers were Akbal, Lamat, Ben, and Etz'nab, and that the month and the year were seated on the previous day. So far as the texts on the monuments are concerned, there is no direct evidence that the year-bearer cult existed; but I make no doubt that it did function, but probably in ways that did not call for its recording on stelae. No glyph for the year bearer has been isolated on the monuments, and the number of dates falling on seating of Pop or first of Pop is no larger than would result from chance. This is hardly strange, for with the elaborate IS system, a notation of the year bearer would have been superfluous. Such a system was convenient in Yucatan prior to the conquest when the IS method of dating had fallen into desuetude, for a combination of year bearer and katun ending would fix a year in a cycle of 260 tuns.

The identification of clauses which give the world direction glyph followed by a glyph which records the count of the year makes it highly probable that year bearers were in use in the Initial Series Period, for this information is closely related to the year-bearer system in sixteenth-century Yucatan.

#### GROUPING OF YEAR BEARERS

It will be noticed that the table is readily divisible into four parts of 13 year bearers apiece. Each part starts with the coefficient 1 attached to a year bearer in its correct sequence. This naturally follows because the thirteenth year bearer has the same name as the first, and, consequently, the fourteenth (also twenty-seventh, and fortieth) is the next year bearer in sequence and has a coefficient of 1.

One would expect the Maya to have given some attention to such an arrangement since it conformed to the kind of division they sought in that the whole formed a re-entering cycle (of 52 years of 365 days). The divisions were four in number and therefore could be assigned to the four world directions and colors, and the day at the start of each division had a coefficient of 1.

In Tizimin (p. 37) the 52 year bearers are thus arranged in four columns, headed respectively by 1 Kan, 1 Muluc, 1 Ix, and 1 Cauac. Beside each of these four year bearers at the head of each division is written its

world direction, "to the east," "to the north," "to the west," and "to the south" respectively. Possibly the year bearers were arranged hieroglyphically in four quarters of a wheel (p. 247). There is some evidence that a wheel-like presentation of this kind was called *cuceb* from the root *cuc*, "to roll or turn like a wheel." This term heads the sequence of year bearers on Tizimin 1-13.

It is only in the last few years that such a system has been reported in use among a Maya group. Lincoln notes that these four divisions of the round of year bearers is of some importance among the present-day Ixil. The year bearer with coefficient of 1 at the start of each division of 13 years is known as *ih lenal ki* or *el presidente*. It dominates the whole period of 13 years in which it is in power, its influence combining with that of the year bearer of the current year to affect the fates. I do not know the meaning of the phrase, although *ki* or *kih* is "day" or "sun," and *ih* may be connected with the Jacalteca root *ik*, "bear a burden."

#### SUMMARY

The bulk of this chapter has been devoted to a somewhat tedious inquiry into the meanings and religious affiliations of the months. The results have been summarized in Table 9 (p. 118), and it is not necessary to repeat that information here. This was followed by a discussion of the meaning of the element which indicates the so-called zero position of each month, and evidence has been produced to show that that glyphic element probably had the meaning "the seating of." It has been demonstrated that the seating of a month coincided with the last day of the previous month; the Maya artist could carve "last of month *n*" or "seating of month *n* + 1."

Attention has been called to the Maya system of reckonings on the side to take care of the error accumulated by a calendar which did not intercalate leap days. It has been demonstrated that the various names for the year and tun, as well as for the sundry glyphs which correspond to them, without exception refer to water, and that the idea presumably derives from a count by rainy seasons. This was followed by a discussion of the structure of the CR.

Much space was devoted to the year bearers, particularly as to whether the generally accepted ideas on their placement on first of Pop and on their correlation with the European years were correct. It was shown that the evidence in favor of those ideas was overwhelming. An entirely new light on Maya mentality is shed by a reconstruction of their concept of time as a burden borne by relays of travelers marching without respite through all eternity. An explanation for the shifts in year bearers is offered, and the grouping of year bearers is discussed.