

**THE ETHNOBOTANY OF THE DRESDEN CODEX
WITH ESPECIAL REFERENCE TO THE
NARCOTIC NYMPHAEA AMPLA**

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ABSTRACT

An analysis of the glyphs and pictorial evidence in the Dresden Codex of the Maya provides an insight into the diversity of plants employed by these ancient people. While maize is the preeminent plant, being the essential food of the Maya, this codex reveals a host of plants of medicinal value. There is a disproportionately large representation of narcotic plants, if one assumes that inclusion is based merely upon nutritive, decorative or emblematic value. The white water lily of that region, *Nymphaea ampla* DC., is especially frequent in depictions. This inclusion is attributed to its narcotic properties (aporphine and quinolizidine alkaloids). The presentation of this codex by Thompson (1972) has served as a working model with respect to organization and visual sources. Interpretations herein are not necessarily in accord with those of Thompson.

Three authentic Maya Codices survive to this day: the Dresden, the Madrid, and the Paris, each name being indicative of the city in which they are to be found. In addition to these codices, we have the Grolier Codex of unknown provenance first seen publicly in 1971 and preserved in a private collection in New York. Several scholars had expressed serious doubts concerning the authenticity of the Grolier Codex based upon pictorial-ritual aspects of the document as well as its physical properties, but a radiocarbon analysis has produced a date of 1230 with a latitude of 130 years' error. 1

The Dresden Codex is of a ritualistic, divinatory and calendric nature. The astronomy of Venus, while accurate, was used as a means of predicting the fate of mankind. The glyphs and illustrations are figured on a screen of continuing folded leaves, each about 22 cm high and 11 cm wide; the whole manuscript is 6.70

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meters long. The paper was made by pounding the fiber from the inner bark (the bast) of *Ficus continifolia* HBK., native to Yucatán, which is probably *Tlilamatl*, or black fig. The glyphs and illustrations were executed only after the fiber had been moulded into a paper and both surfaces sized with lime. All surviving manuscripts mentioned are on this sized *Ficus* paper. In 1520, Peter Martyr wrote of the process by which the codices were executed using the inner bark of a plant which he believed that they called *philyra*; conjoined leaves were accomplished with fibers and what Martyr asserted to be bitumen. Diego de Landa, in 1579 (*fide* Pérez Martínez), asserted that some of the nobles were acquainted with the fields of knowledge found in these codices, but that they did not display this knowledge. Likewise, Antonio de Ciudad Real stated in 1873 that “only the priests of the idols, called *ah kins* in that language, and an occasional noble understood these figures and letters. Afterwards, some of our friars understood them, knew how to read them, and even wrote them.” In all of these books, it would seem that prophecy and history were integrally bound together, the reason being found in the belief that each *katun*, or twenty years of 360 days each, would recapitulate a previous *katun* that ended in the same number. Prophecies for a given *tun*, or 360 day year, would begin at the onset of that year and would relate to a previous sequence. Such sequences would necessarily include disease and pestilence and the shamanic cure by power. There is no evidence for the recording of mundane affairs in such important codices. Ritual and history were repeated in poetic forms that probably constituted litanies or musical chants and incantations.

The Maya probably believed, as the Mixtecas, that their ancestry originated in the roots of the ceiba tree, *Ceiba acuminata* (S. Wats.) Rose the seeds of which are enmeshed in a white cottony fiber that is in the sky like clouds. Families were seen as fruits on such a tree, according to Ximénez (1929–1931). Similar belief systems are to be found throughout the world, a notable example being that of the Eboka of equatorial Africa who venerate *Tabernanthe Iboga* Baill., a plant containing the spirits of the deceased and from which all of their people originated (Fernandez in Furst [ed.] 1972).

The tree *Theobroma Cacao* L. among the Maya was called *caca* and was usually indicated by the visual presentation of the prolate fruits of the plant. The seeds of this plant were highly valued and served the Maya as a currency. When made into a beverage, after being ground into a powder, theobromine in the seed was released and served as a mild stimulant. The beverage was undoubtedly bitter, as the innovation of adding sugar came much later, after the ancient Maya civilization had collapsed.

Apart from this brief commentary on two trees of some consequence with respect to Maya ancestry and currency, it would be desirable to peruse the entire Codex using the system established by Förstemann in his 1892 edition of the Dresden Codex as it has been used by scholars ever since the appearance of this edition, even though subsequent commentaries and editions have appeared. For those students of Maya scholarship wishing to locate a particular series of glyphs, the Förstemann system divides each page into three vertical sections (rarely four) that are conspicuous in the original manuscript, and these are lettered from top to bottom as a, b, c and rarely d. Where these *t'ols* are absent, the pages contain vertical columns; the width of each of these is lettered from left to right in alphabetical sequence. Captions for units of pages such as "almanac" or "lunar table", etc., have been retained, and each *t'ol* is numbered sequentially under such a caption. For example, "Almanac 6" has only two *t'ols*, numbered T1 and T2. In this commentary, I shall omit any *t'ols* that do not contain glyphs or images that relate to plants. It should be noted that the first two Almanacs of the Dresden Codex are in such poor condition that commentary cannot be made on such motifs or glyphs, if indeed they may have existed. Gl is used for glyph. Where lunar tables interrupt the sequence of Almanacs, they have been integrated into the sequence.

MISCELLANEOUS ALMANACS

Almanac 3 (p. 2a)

- T2. Seated maize god with his glyph above
 - Gl. 1. abundance of maize
 - Gl. 4. maize god

Almanac 5 (p. 2c)

- T1. Maize god inserts needle with thread into frame
Gl. 4. abundance of maize

Almanac 6 (p. 2d)

- T1. Seated moon goddess. Her outstretched hand holds what appears to be a stylized water lily (note the petiole glyph opposite the flower). This is ritual divination (Thompson, 1972). I do not concur with Thompson's suggestion that this is the working of tortoise shell. The flower-like motif (Rands, 1953) suggests the water lily, *Nymphaea ampla* DC., that was used as a narcotic in ritual divination (Emboden, 1979).
- T2. While no botanical motif is suggested here, it is appropriate to mention that the death god represented is frequently associated with the water lily as is the jaguar and an aqueous underworld. The depiction may relate to the prognostication of the moon goddess, Ixchel, in the process of divination.

Almanac 7 (p. 3a)

- T1. The body of a sacrificial victim has become part of a stylized tree that is an amalgamation of botanical motifs. Hybridization of plant motifs was common to the Maya (Emboden, 1979). From the victim's gaping abdomen there arises a "world directional tree" common to temple reliefs and found in the Codex Borgia (pp. 49–52). In the crotch of the tree is a cormorant; Thompson (1972) believes it to be a vulture, but the figuring of the body and beak suggest a cormorant. This bird is seen in a stylized underwater tree in Coe (1973, polychrome vase 20 and others).
- Gl. 1. The jaguar paw. This may be associated with the figure that has become known as the jaguar of the water lily, for the flower is often seen on his head as he dominates the underworld.

- T2. The maize god holds a bowl of comestibles.
 Gl. 1. maize
 Gl. 2. maize god
 Gl. 3. abundance of maize
 Commentary: In the bulbous mass that constitutes the part of the tree under the victim's body, one may trace elaborate roots at the base. Upon these, at either side, are floral elements. That to the right suggests one of the water lily motifs delineated by Rands (1953) and may be a clue to the ritual nature of the sacrifice.

Almanac 8 (pp. 4a-10a)

- T1. (p. 4a) There is depicted a rare deity found nowhere else in the Dresden Codex. Tozzer and Allen (1910: p. 310) suggested that it was a tree toad. It would appear to be a toad of some sort holding a snake. More important to this discussion is the water lily emblem on the headdress of the figure. As pointed out by Emboden (1981), this toad-water lily association is probably related to the potential psychotropic properties of bufotenine from the toad and nupharine and aporphine from the water lily. It is part of a divinatory almanac (Thompson, 1973), and thus such an interpretation lends greater meaning.
- T2. The absence of a botanical motif still requires comment. The god is here identified as God N. It was this figure that, in the legend of the Hero Twins, was assassinated by one of them. He is often seen in his shell which usually has a water lily attached to the back of it (Coe, 1973, image 70). This figure reinforces the assertions made in T1 (above).
- T8. Gl. 6. abundance of maize
- T9. A death god wearing a pendant water lily in his complex head dress. The presence of the water lily (*Nymphaea ampla*) may be used in the emblematic sense of power.

T14. (p. 8a) The jaguar water lily is depicted with the flower emerging from the fore part of his head. This is the only occasion that Thompson found in his 1975 analysis of the Dresden Codex to identify the water lily. The figuring is no clearer than in other portrayals, so we must conclude that the iconography was deciphered by way of the jaguar association. In this connection, the reader is referred to the stimulating presentation by Coe (1973).

Gl. 5. abundance of maize

T15. (p. 8c) The figure depicted to the left in this representation bears a reflexed water lily on his head dress. The significance is not apparent to me, nor has it been discussed by those who have worked on the Codex.

T18. The maize god is depicted and glyphs 3 and 4, respectively deal with the maize god and the abundance of maize.

T19. (p. 10a) Barthel (1955) indicated that the affixes stand for a magical phrase "*che yetel tunich*." *Yetel* was one of several forms of tobacco used by the Maya (Roys, 1933: footnote p. 99). For an extended account of the use of narcotic tobaccos in ritual intoxication among the Maya see the account of Furst (1976). The associated glyphs translated by Thompson (1966) as "affliction of strife" would seem to bear upon this ritual intoxicant that was smoked, drunk, and possibly introduced as part of an enema (Furst, 1976).

Almanac 9 (pp. 10a–12a) Divinatory

T2. (p. 11a) The *Muan* bird wears a maize headdress.

T5. (p. 12a) The maize god holds a vessel containing pods of *Theobroma Cacao*. These are identified in Gl. 1.

Gl. 2. Maize god

Gl. 3. Abundance of maize

Almanac 10 (p. 12a) The almanac is designed to serve twice over; see Almanac 9 and Almanac 11.

- T1. (p. 12a) God K holds a dish of cacao seeds identified as such by glyph one.

Almanac 11 (p. 13a) Divinatory

- T1. (p. 13a) The God Chac (God B of Zimmermann, 1956) holds a bowl of *Theobroma cacao* and the seeds. The head dress bears three flowers that I identify as *Nymphaea ampla* emerging from two cup-like structures bearing cross hatching. The latter are common representations of the leaves of *Nymphaea*. This flower is particularly suited to Chac for reason of his identification with all watery elements.
- T2. (p. 13a) Death god holds a bowl of cacao fruits with one seeds visible. The seeds of the plant *Theobroma Cacao* were used sacrificially by sprinkling them with blood. When Sahagún (1956) described the cacao plant in the Florentine Codex he referred to the green fruit stating: "When much is consumed, especially if it is green . . . it makes the heart of people evil (Book 11, p. 119). We would have trouble ascribing this behavior to the xanthine alkaloids in the seeds, but it is possible that the fruit was fermented into an inebriating beverage that may have been further fortified. The frontal head dress of this figure is a bilabiate flower suggesting *Salvia divinorum* Epl. and Jat., a hallucinogenic member of the mint family cultivated in riparian habitats to-day by the Mazatecs and possibly corresponding to *pipilzinzintli* of the ancient Nahuas. One may argue that this is not the present distribution of the plant, but the same may be said of peyote, tobacco and a host of other sacred plants. This suggestion is only tentative, but the bilabiate flower in a conspicuous calyx on this death figure argues strongly for such an interpretation. Likewise, the water lily, *Nymphaea ampla* on the back side of the head dress reinforces the contention that we are dealing with a multiplicity of narcotic plant elements associated with a single figure in a divinatory almanac.

Almanac 12 (pp. 14a–15a)

- T1. (p. 14a) The Maize god with a maize head dress points a finger.

Almanac 13 (p. 15a) See Almanac 23 for similar motifs. T1

God D dives earthwards as though in water. From one foot there emerge two cacao pods and two more are attached to an elbow. Thompson (1972) associates this figure with the diving bee god. It is worthy of note that from his back a peduncle and bud of the hallucinogenic *Nymphaea ampla* ascends. Thompson takes this to be *Theobroma Cacao* again, but it is unlikely, as cacao has no peduncle but is sessile and attached to the branches of the cacao tree. It is consistently portrayed in this manner.

- T2. A diving death god has cordate leaved vegetation replacing his right foot suggesting the leaves of both *Turbina corymbosa* (L.) Raf. and *Ipomoea violacea* L. Both plants bear seeds containing amides of lysergic acid and are hallucinogenic. The relationship of this to the creation story is recapitulated in Almanac 23 as it is presented here. The diving god and *Nymphaea* will appear in a later paper.

Almanac 15 (pp. 5b–6b) Divinatory

- T1. According to Thompson (1972) the presentation is of the *chacah* or gumbolimbo tree (*Bursera Simaruba* L.) which is being drilled to produce fire.
- T2. Death god with the same drill and wood.
- T3. God D with the same fire drill and wood.
- T4. God Q with the same fire drill and wood.

Almanac 18 (p. 9b) Divinatory

- T1. The maize god squats before God D. Emerging from before the forehead of the God D is a pedicellate water lily.
- Gl. 5. The maize god.
- Gl. 1. Abundance of maize.

Almanac 19 (p. 10b) Divination involving *Theobroma*

- T1. A Chac is seated holding a pot of *Theobroma Cacao* seeds.
Gl. 2. Cacao
- T2. (p. 10c) God Q, associated with war and sacrifices holds a bowl of *Theobroma Cacao* fruit and seed probably indicating the blood sacrifice to be made over the seeds.

Almanac 20 (pp. 10b–11b) Divinatory

- T1. Glyphs indicate the giving of cacao beans. There is no accompanying picture.
- T2. The sun god holds a vessel of cacao seed; this may also be seen in Almanacs 10 and 19. Glyphs again indicate the giving of cacao beans.
- T3. The Maize god is seen with the same vessel of cacao beans and a double head dress of *Nymphaea ampla*. The fish in the head dress and the fish touching upon the frontal water lily suggest aqueous elements and the murals at Bonompak. Glyphs read “he gives cacao beans; 2 “abundance of maize; 3 maize god.”
- T4. Glyphs repeat the giving of cacao beans. This has now started to form a kind of litany by way of repetition.
- T5. The repetition of giving cacao beans. The frequency of this should be no more curious to us than the *kyrie eleison* repeated in western masses.

Almanac 21 (p. 12b) Divinatory

- T1. (p. 12b) A female death goddess with black spots wears a water lily to the front and rear of her head dress with a rhizome-like appendage between the flowers (note root-like extensions on the rhizome).
- T2. Goddess H wears a nose rod that terminates in a flower that is unidentified. It should be pointed out that the size of a flower as it is portrayed in any codex has little to do with its actual size but relates to its importance in what is being portrayed. The relationship to one of the

sensory modes suggests that perhaps the flower is of ritual significance.

Almanac 22 (pp. 13b–14b) Divinatory

- T1. (p. 13b) A squatting death god with the body of an insect hold a maize glyph in his left hand. The frontal floral motif is that seen in Almanac 10 (T2, 13a) and identified as the hallucinogenic labiate *Salvia divinorum*. It should be noted that the insects that feed on these psychotropic plants carry the chemicals in their bodies. For this reason some beetles and their larvae have been used to induce altered states of consciousness.
- Gl. 2. Sprouting maize
- T2. Maize god with maize headdress and maize glyph in his right hand sits with his legs crossed. He wears the maize head dress and in the beak of the bird as two cacao pods.
- Gl. 1. & 2. He takes care of new maize
- Gl. 3. Maize god
- T3. God C is seated with a maize glyph in his right hand. In his headdress, slanting backward, is the water lily with quetzal feathers inserted in it.
- Gl. 1. & 2. Are repeats of T2
- T4. A seated Bacab holds the maize glyph in his right hand.
- Gl. 2. Ripening maize
- T5. Seated God Q with maize glyph in his left hand.
- Gl. 1. & 2. Are repeats of T4
- T6. Seated God D with a maize glyph in his right hand. Thompson (1972) interprets the complex head dress as that of a centipede. I would suggest that it is a rhizome-like extension terminating in a flower in front. The back of the head dress is a giant water lily with quetzal feathers inserted.
- Gl. 1. & 2. Repeat T4
- Gl. 4. Phonetic equivalent of maize ripening

Almanac 23 (pp. 15b–16b) Divinatory

- T1. A complicated presentation of the god Chac diving with cacao pods on his left heel. In his left hand is a maize glyph with cacao pods beneath it and a sprouting plant with cordate leaves above. This relates to Almanac 13 and according to Thompson (1972) may relate to the creation story in Chilam Balam of Chumayel in which there are references to the descent of flowers and gods bearing vegetation. The plant motif suggests to Thompson a sprouting tree trunk. I do not see it as such; rather, the leaves and vining aspect suggest the sacred *Ipomoea violacea* (also *Turbina corymbosa*) the seeds of which have amides of lysergic acid and were widely used in the area of Mesoamerica for ritual intoxication and resulting divination. Such an explanation is in keeping with the divinatory nature of the codex as well as the morphology of the plant presented. This idea had occurred to Thompson (1972), for in Almanac 11 (p. 13a) he first believed that the pointed, obovate fruits in the bowl might have been *ololiuhqui*. He was convinced to the contrary by Caso who pointed out the associated round beans (the seed of *ololiuhqui* is pointed). Thus my suggestion at this point is not beyond the belief system of Thompson with respect to these people.
- Gl. 1. The glyph *lah* suggests bee keeping and/or the diving bee god (questionable).
- T2. The diving death god repeats T1 and has cacao pods on the left elbow and shoulder.
- Gl. 1. & 2. Repeat of T1.
- T3. A youthful goddess with a coiled serpent in her hair sits holding a bowl with stylized flowers emerging from the surface. This is much like some of the portrayals of the *balché* ceremonial vessels in the Codex Vindobonensis which show, in color, three white flowers on the surface. I have suggested (Emboden, 1979) that the flowers

are *Nymphaea ampla* even though they are not in proportion to the size of the vessel. We know that *balché* was a drink fortified with several other plants, and that *N. ampla* is implicated. This would permit the ritual beverage to transcend the ordinary inebriated state that one might expect from a mere fermented alcoholic beverage. The associated glyphs are indecipherable, but Thompson's suggestion that they are associated with T1 and therefore also with Almanac 13 implies the bee which produces honey. It was honey that was fermented to produce the mead-like *balché*. Honeycombs, hives, and *N. ampla* are seen together in the Codex Vindobonensis Mexicanus. It is suggested by Thompson that this is possibly Xcolel (Our Mistress), but she may well be one of the shamanic caste of women who played an important role in Maya shamanic stratification and were most probably the preparators of *balché*.

The serpent in the hair of Xcolel may be emblematic of the cordate-leaved plant and I have suggested as *Ipomoea violacea* in T1 and T2. The Aztecs knew the morning glory as *coatl-xoxuhqui* or "green snake plant," because of its vining habit. This may imply one more additive to the *balché*. Glyph 3 indicates white God H who may be a prophet or priest of either sex. There can be little doubt that we are dealing with shamanic divination in this picture and the two previous ones.

- T4. (p. 16b) The God M sits holding a bone as a sort of scepter. From his turban there emerge two flowers. The attendant glyphs in no way clarify the nature or function of these.

Almanac 24 (pp. 4c-5c) Divinatory

Commentary: Kinich Ahau, the sun god, and Itzam Na, God D, both figure in this almanac and this has led Thompson (1972) to suggest that the almanac deals with divining the outcome of disease.

- T3. God H is seated on a dias and has in his head dress a water lily flower on a peduncle.

Almanac 25 (pp. 5c–6c) Divinatory

- T1. (p. 5c) God D is seated and holds a small cup of *balché*. The usual preparation of this ritual beverage seems to have been fermentation of honey to which had been added the bark of the tree *Lonchocarpus yucate-nensis* Pitt. (*L. longistylus* Pitt.). Several other plant additives have been suggested by this author (Emboden, 1979).

Gl. 1. abundance of maize

- T2. A seated death god holds what Thompson (1972) has suggested is a seed bag. I cannot add to this.

Gl. 1. repeat T1

- T3. (p. 6c) God C walks carrying before him what appears to be an incense burner. The use of copal in ritual purification was a common practice among the Maya and their successors. While copal may be derived from several plants of that area, the investigations have demonstrated the plant to be *Icica Copal* Schlecht. & Cham., a small tree of the family Burseraceae. Upon wounding, the plant releases resins that harden and may then be heated to produce clouds of smoke. In the book of Chilam Balam it was called “brains of the sky.”

Gl. 1. Repeat of T1 subsequent glyphs portend good

- T4. God Q walks carrying the copal censer. Another suggestion is that it is a bag of maize, but I think this is less likely due to its complex nature and the manner in which it is held. No indication of seeds are evident.

Gl. 1. Repeat of T1 followed by malevolent indications

Almanac 26 (pp. 6c–7c) Divinatory

- T1. A death god is seated and holds a victim’s head. He wears the pendant water lily motif.

- T2. God D with a yellow face holds two affixes in a circle of dots that Thompson tentatively translates as *caca* referring to *Theobroma cacao*, and has a water lily head dress.

Gl. 1. Cacao.

Gl. 4. Abundance of maize.

- T3. An anthropomorphic Muan bird is seated and has a water lily flower protruding from its forehead.

Almanac 27 (p. 8c) Divinatory

Commentary: These figures of gods or their impersonators are reminiscent of scenes from the Codex Bologna 12-13 and Codex Fejervary-Mayer 33-34 and suggest prophetic divination appropriate to a *chilan*. Thompson (1972) believes that the diminutive figures entering the temple are in a hallucinatory trance and suggests mushrooms (probably *Psilocybe* species).

- T1. God D walks into a temple in which is seated God C as a small monkey-like figure who functions as the *katun* giving prophecy. Note *Nymphaea* in the head dress.

Gl. 1. Reddening all over. This may be due to the ingestion of some narcotic other than mushrooms. Such a flush is felt in *Datura*-intoxication.

Gl. 2. These glyphs convey the idea of half-dead. This is the trance state appropriate to a *chilan* during shamanic exstasis. This condition may have been due to drinking *balché* fortified with any of several narcotic plants to include *Datura*, *Psilocybe*, *Lonchocarpus* and *Nymphaea*. The idea of a single plant intoxicant is probably oversimplification.

- T2. God Q walks into a temple with a *kaz*, or evil glyph inside.

Gl. 1. Reddening all over to once more imply narcotics. Painting the face red to imitate the *duende*, or spirit person is discussed by Thompson.

Almanac 28 (p. 9c) Divinatory

- T2. The death goddess, probably Goddess O, is seated and wears a bilabiate flower in front of her head dress (*Sal-*

via divinatorum?) and a water lily on the rear of it.

Gl. 1. abundance of maize

Almanac 29 (pp. 10c–11c) Divinatory

T2. God D is seen seated wearing over his head dress the pendant water lily motif that Thompson previously indicated as a centipede.

Gl. 4. This is interpreted by Thompson as Successor in Office or Lord of Recompense, indicating strong shamanic overtones.

T4. The seated maize god wears an unidentified flower on the terminus of his nose rod, or as a substitute for the more usual nose rod.

Gl. 2. Maize god

Gl. 3. Abundance of maize

T5. The seated sun god with a *kin* sign on his forearm wears a retrorse water lily in his head dress.

T6. God B is seated and makes elaborate gestures with his hands. The association with water is seen in the action glyph of the jade symbol surrounded by dots and the circles forming an arc in the head dress. This is further reinforced by the two water lily-like flowers in the rear of the head dress.

Gl. 3. Lord of the jaguar skin cushion; lord of the jaguar stool, may imply the water lily jaguar in this augury.

Almanac 30 (p. 12c) Divinatory

T1. God D, the diviner, is seen wearing the head dress of Chac. This establishes the divinatory nature of this almanac associated with the casting of lots.

T2. A seated Bacab holds the *kin* sign.

Gl. 4. Maize god

Almanac 31 (pp. 13c–14c) Divinatory

T3. The wife of God D is seated holding an animal whose nature is not identifiable and may be a transmogrified

animal or supernatural being. The head dress is unusual in that the pendant water lily now stands straight out from the headdress and emanates from a water glyph as indicated by the circle of dots.

- T4. God L is seen seated wearing a head dress that includes a maize sign and a crested bird. Before him is a diminutive figure of the moon goddess holding a maize sign.

Almanac 32 (p. 15c) Divinatory

- T2. God D is seated holding the *kin*, or sun (also priest or diviner) sign. The head dress has a pendant water lily that drops to meet the *kin* sign. It also emerges from a glyph suggesting water. Thompson indicates that Gl. 4 indicates one who divines by the casting of lots.

Almanac 33 (p. 16a) Divinatory

- T2. The Lord of Vegetation who is probably the Moon Goddess in disguise.
Gl. 4. Maize god

Almanac 34 (pp. 16a–17a)

- T1. God D with a *kan-imix* sign on his back indicating an abundance of maize or good fortune.

Almanac 35 (pp. 18a–19a) Divinatory

- T5. Since almost all of the text of this almanac has been lost, the five divine goddesses are identified only by conjecture. T5 is of interest in that she wears a nose rod that terminates in an unidentifiable flower the base of which is comprised of a circle of dots which are used in water and sun signs.

Almanac 37 (pp. 21a–22a) Divinatory

- T3. No depiction
Gl. 3. Abundance of maize

Almanac 38 (pp. 22a–23a) Divinatory

- T1. A diving diety of uncertain character holds a maize glyph (he may be the maize god). His turtle head dress suggests aqueous elements as do the numerous *Nymphaea*-like motifs around the back of this figure. As with previous diving figures, he seems to share in some concept of magical or divine vegetation.

Almanac 40 (pp. 17b–18b) Divinatory, medical

- T2. This is a very elusive *T'ol* as there is no picture, but Gl. 1 of a monkey head with the down prefix and Gl. 4 suggest shaman, curer and Our Lady. There may also be a double meaning, not uncommon to this codex, Thompson points out that *maax* (*max*) is the name for both the spider monkey, for a variety of eruptions, inflammations and swellings, and for wild chile (*Capsicum*) of which there are several species in the Maya territory. The use of *Capsicum* fruits in shamanic divination is known from this area, and the plant serves effectively to help in healing as it is bacteriocidal and the vitamin C content would have helped to prevent a number of the diseases that are suggested by *maax*. The argument that there should then be portrayed a wild chile plant does not hold, for maize is most often mentioned but rarely portrayed except by the abstracted maize glyph. Capsacin is the active constituent in the fruit of the *Capsicum* plant.

Almanac 42 (pp. 19b–20b) Divinatory

- T2. The seated moon goddess holds a small figure of God H before her. He wears the reflexed *Nymphaea* on his head and through his nose is a rod terminating in an unidentifiable flower.

Almanac 45 (p. 22b) Divinatory

- T1. The youthful Chac is depicted as wearing the head of a dog and holding in his hand the maize sign.

- T3. Goddess I is seated and holds the maize sign. In her hair is a knotted water lily.
- T4. In the absence of a picture the glyphs indicate the rule of Chac. It is the assertion of Thompson that the signs indicate harm to the crops because even though Chac, the maize and the moon deities are present, strong sun in the tropics is often harmful to crops. There are however a high proportion of favorable glyphs and auguries. This would be decidedly to the advantage of the shaman-priest in accounting for predictions. It allows a margin of error in that it is enigmatic.

Almanac 46 (p. 23b) Chants and offerings.

T2.

Gl. 1. Thompson suggests that the name *chai* is implicated both as a homonym for obsidian and for *Jatropha aconitifolia* Mill. This member of the Euphorbiaceae was stripped of its leaves which were then boiled and eaten by the Maya. He also suggests *chaya*, another Mayan name for the same plant. Leaves had to be gathered at the correct time and then pressed. As many members of the Euphorbiaceae have toxic latex at maturity, this was probably a usual mode of treating the young leaves. Since a food glyph followed by the eating sign occurs in four of the five t'ols this is probably correct.

- T3. While there is no picture, the glyphs implicate maize and eating.
- T5. Glyphs only are present, and repeat T2 and add the maize god and his eating.
- T6. Glyphs from T2 are repeated, as well as adding abundance of maize and his eating.

Almanac 47 (pp. 16c–17c) Divinatory, medical

- T6. Gl. 4. Abundance of maize.

Almanac 49 (pp. 18c–19c) Divinatory

- T1. A seated goddess has a well figured water lily in the front of her hair.
Gl. 1. Fainting, or epileptic fits were often considered a divine manifestation under control of the moon goddess (cf. our “lunatic”).
- T2. A seated goddess wears a fillet of water lily petals and two water lilies, one up and one down, extend from the front of this fillet.
Gl. 2. Her divine burden.
Gl. 3. Maize god.
Gl. 4. Abundance of maize.

Almanac 50 (pp. 19c–20c) Divinatory

- T3. The seated goddess wears in her hair the “white” glyph with feathers emerging from it. I would take this to be *Nymphaea ampla*, the white water lily, with quetzal feathers inserted.
- T4. The seated goddess carries the maize god on her back.
Gl. 1. The maize god.
Gl. 2. The divine burden of maize.
Gl. 4. Abundance of maize.
- T5. A seated goddess carries a figure identified by Thompson (1972) as Sac Uacnal or “bursting forth of new white maize.” (Gl. 1.)

Almanac 52 (pp. 22c–23c) Divinatory

- T5. The moon goddess is seated opposite a death god. In his head dress is a complex of a frontal water lily that is a bird as viewed from the back. From above the eye of the bird are two mushroom-like projections. They are not the crest of the bird, and may represent sacred hallucinogenic fungi used in divination. The context of the glyphs suggest misfortune.
- T6. A kneeling goddess has what Thompson has identified as a “white sign” in her hair. It would appear to be the

white water lily in a stylized presentation and turned to the back.

Gl. 1. Abundance of maize.

Almanac 53 (pp. 29a-30a)

- T1. A Chac is seated on what Thompson has called "a world directional tree." Beneath him is a jar with a *cab* scroll indicating that it holds honey. I would conjecture that this association might imply *balche'* made from fermented jars of honey and utilizing the bark of *Lonchocarpus yucatanensis* Pitt. and previously mentioned plants.
- T2. A Chac is seated on what Thompson again identifies as a "world directional tree." Since the artist has taken the liberty to figure a pinnatifid leaf we might suggest that the plant is *Bursera* from which copal is derived. This was used in the most sacred Mayan ceremonies. The Chac wears a head dress of reversed water lilies that appear knotted.
- T3. A Chac is seated on another tree so identified by Thompson as associated with a world direction. It has one flower pointed upwards and another down. The figuring of the flower is much like some of the water lily identifications made by Rands (1953). It may be a hybridized plant motif.
- T4. The "world tree" portrayed here has protruding thorns on the trunk and is probably, as suggested by Thompson, a ceiba tree also known as the pochoté tree, *Ceiba aesculifolia* (HBK.) Britt. and Baker. Roys (1933) notes that in *The Book of Chilam Balam* it is stated (p. 91) "It is not bad to gnaw the trunk of the *pochote* tree."

Commentary: Thompson believes these pictures represent the Chacs seated on "the red tree of the east, the white tree of the north, the black tree of the west, the yellow tree of the south." He has not implicated *chacah* which may be a homonym closer than *chai* for the gods (i.e. Chac rain dieties). *Chacah* is mentioned in *The Book of Chilam Balam* as the wood comprising the first hut of the Canul family in "The Ritual of the

Four World Quarters.” In this same work the white tree is *uaxim* (*guaje*) and is *Leucaena glauca* (L.) Benth. used in building. As mentioned previously, *chacah* is *Bursera simaruba* (L.) Sarg. figuring as copal. Thompson notes that all of these colors are also associated with the ceiba tree, a sign of fertility and abundance. However, it is clear from the pictures in the text that is not the ceiba tree that is figured in each instance. In the ritual of the Bacabs four surrogate plants become directional in the aforementioned ritual: the red *Plumeria acutifolia* Poir. is east, the white *Callisia repens* L. (or *Commelina elegans* HBK. is the north, the white flowered “black laurel” *Stemmadenia insignis* Miers. is the west, and the yellow flowered *Tecoma stans* (L.) HBK. is the south. This is a derived later manuscript, but it reinforces the idea that a single tree need not be used regularly in directional ritual. When the aqueous underworld is represented in the Dresden Codex it would appear that the white water lily is allowed to stand for all four directions. In the ritual of the Bacabs these colors also stood for the hues of the winds and were not to be taken in a literal sense.

Almanac 55 (pp. 31a–39a)

- T2. An unidentified god kneels on the edge of a sort of boat. From the back of his neck a long pedicellate water lily is clearly figured. Opposite him is a Chac who appears to be holding a large water lily. Between them there is a vessel (*balché?*) with effluvia figured as coming from the top.
- T3. The decapitated head of The Impersonator of Maize is on a three tiered altar. Three dieties play two different drums a rattle and a flute.
- T4. God C posing as a Chac sits in a temple holding a maize glyph while a true Chac is on the ridge pole of the building.
- T5. In front of a seated Chac are dishes of maize, a tall incense burner for copal (*Bursera*) and a vessel of foaming *balché*. The plant ingredients of *balché* have been discussed.

- T6.
Gl. 4. Abundance of maize.
- T7.
Gl. 2. Maize offering.
- T11. This is the only known example of God X who has the attributes of the toad and the frog. In this picture, the god is a toad as the paratoid glands that contain bufotenine are depicted quite clearly and bear three black dots. In his head dress are the retrorse white water lilies. These are knotted, as is usually the case with a shamanic portrayal.
- T13. Chac with a water lily head dress, knotted and reversed, embraces the moon goddess in a act of coition.
Gl. 4. Abundance of maize.
- T14. A Chac sits on a jaguar skin dias contemplating a maize sign. In his hair are the appropriate water lilies.
- T15. A Chac impersonates a dog carrying two torches. His head dress reveals his true identity and includes two vegetative forms.
- T16. A Chac with a knotted, retrorse water lily head dress walks through the rain carrying a seed pouch.
- T17.
Gl. 4. Abundance of maize.

Almanac 56 (pp. 40a–41a) Divinatory chant

- T2. A Chac is seated on a large fish upon the back of which are motifs associated with the fruit of the ceiba tree, *Ceiba acuminata* (S. Wats.) Rose.
Gl. 4. This is down or cotton, probably from the ceiba fruit. Thompson suggests that it is clouds.
- T3. Chac is seated on a tree and holds one of two branches. One root terminates in a Chac head, suggesting that this is some kind of sacred plant.
- T4. A Chac with a water lily head dress sits on a tank or pool of water and holds an unidentifiable object.
- T5. A Chac with a water lily to the front and a knotted water lily to the rear, sits on the head of God D and is

clad in a turtle shell mantle.

Gl. 3. Abundance of maize.

- T6. A Chac with a water lily head dress sits inside a small temple or hut.

Almanac 57 (pp. 42a–44a) Chant (not augural).

- T1. A Chac sits on a coiled rattlesnake upon the head of which rests a vessel with three maize signs above it. The Chac has a single retrorse water lily in his head dress.

Gl. 5. Maize and ?

T4.

Gl. 5. Maize.

T5.

Gl. 5. Maize.

- T7. A Chac with a retrorse water lily head dress holds a fish.

- T8. A Chac is seated in a small temple and wears the retrorse water lily head dress.

Gl. 4. Abundance of maize.

Almanac 58a (pp. 30b–31b)

T1.

Gl. 5. Venison and maize.

T3.

Gl. 5. Iguana and maize.

Almanac 59 (pp. 31b–35b) Divinatory chant

- T1. A Chac with water lilies in front and back of his head dress walks with a torch and seed pouch (?) in imitation of a Bacab.

- T2. A Chac with elaborate water lilies in his head dress is seen walking.

Gl. 4. *Theobroma Cacao* L.

- T3. A Chac with torch and axe and frontal water lilies in his head dress.

Gl. 6. Maize god.

T7.

Gl. 5. Abundance of maize.

Gl. 6. Maize seed.

T8.

The head of God B is attached to the body of a snake which is so devised as to encircle a body of water. In the head dress of God B is the retrorse water lily, and from the four corners of the lake there are protrusions suggesting what Rands (1953) identified as the "mammi-form water lily." I would support this identification and suggest that the water lily in this context takes on the meaning of the directional trees, colors, winds, etc., that are typically Mayan. The association between the water lily and the serpent was pointed out by me (1979), and the serpent may be *Hapi Kan*. There is a seed pouch in his right hand. The festival is *u hanli*.

Almanac 60 (pp. 35b–37b) Divinatory chant

T2.

Gl. 4. Glyph of maize god, *Uaxac yol kauil*

T3. A Chac paddles a canoe containing a goddess, who wears a peculiar water lily frontally.

Gl. 1. A dessicated maize crop.

T6. A Chac walks holding a vegetal form that defies identification.

Gl. 2. Abundance of maize.

Gl. 4. Wood (*che*) of chastisement.

T7. A Chac, seated on water, grabs an eel or a water snake. He wears the retrorse water lily head dress. Beneath the water a bacab (or perhaps God N) emerges from a conch shell. On the front of his head band is a water lily.

Gl. 3. Chastisement over *balché*.

Almanac 61 (pp. 38b–41b) Augural weather almanac

T2. A Chac with the retrorse water lily head dress is sowing seed in the rain.

Gl. 3. Abundance of maize.

- T5. A Chac with a planting drill walks with an open hand as though planting seed.
Gl. 4. Abundance of maize.
- T6. A Chac with a retrorse water lily head dress is seated in a rain that falls from celestial bands.
Gl. 4. Woe to the maize.
- T7. A Chac dives from a celestial band with an axe in his hand in a manner similar to previously figured diving personages.
Gl. 3. Maize god.
Gl. 4. Abundance of maize.
- T9. An anthropomorphized toad-dog dives from a celestial sky. Thompson interprets this figure as a dog for reason of the associated second glyph "*pek*" which may mean either dog or unfavorable weather. The form, the long extended tongue and the water lily flowing up from the head all suggest a toad. The large dark patches may be death patches or an attempt to further reinforce the toad motif. We must not rule out a hybridization of forms.
Gl. 4. Woe to the maize seed.
- T10. A bacab is seated in a conch shell and water is all about him. He wears one frontal protruding water lily. A more stylized water lily is seen on the back of the conch shell. In the latter instance the conch shell with a water lily on it was regularly associated with the old God N.
- T11. A Chac wearing a complex head dress with a maize glyph and a frontal water lily sits cross legged in the rain. His mantle suggests the shell of a turtle (this is attested to in Gl. 1.).

Almanac 62 (pp. 41b–43b)

- T1. A Chac kneels before a tree and is in the act of cutting it down. The base of the swollen tree is the head of a Chac. The suggestion may be that of *Chac-ya*, the red sapote used in an incantation, (*Ritual of the Bacabs*) for obstruction of the breathing passages. *Calocarpum*

viride Pitt. has a red pulp and is still much esteemed among the Indians of Guatemala. *Chacte*, if intended, implicates *Caesalpinia platyloba* S. Wats., a tree used to make a dye as well as staffs.

Gl. 5. *Balché*(?)

T2. A Chac squats over a tree that emerges from between his legs.

Gl. 2. Abundance of maize.

T3.

Gl. Fresh chocolate (*Theobroma Cacao*)

T4. A Chac, planting drill in hand, sits astride a tapir-like animal head. His head dress is the retrorse water lilies.

Gl. 4. The maize god.

Gl. 5. Abundance of maize.

T5.

Gl. 4. Abundance of maize.

Gl. 5. Maize beetle grub.

Almanac 63 (pp. 44b–45b) Divinatory

T1.

Gl. 6. Maize seed.

T2.

Gl. 5. Copal (*Bursera simaruba* L.)

Gl. 6. Iguana and maize dish.

T3.

Gl. 5. Fish and maize.

Gl. 6. Food, but especially maize.

Almanac 65 (pp. 30c–33c)

T1. A Chac with an axe and a seed pouch is seated on the red, world directional tree.

Gl. 1. *Chacte*. This is the Brazil Redwood, *Brosimum paraense* Hub. Thought to have originated in tropical South America, this tree was introduced into Maya territory at some early date. It is also known as breadnut, for the seeds are eaten after being boiled.

- T2. A Chac is in a diving position on top of the yellow world directional tree of the south.
- Gl. 3. *Ti kante* (at the yellow tree). *Kante* is listed in the Motul Dictionary as a tree the roots of which yield a yellow dye. Roys (1931) states that in Peten this is the tree with yellow flowers; however in Yucatan it is a tree the roots of which yield a yellow dye. Although this tree goes unidentified, I would suggest that it is either *Chlorophora tinctoria* (L.) Gaud. of the Moraceae, the root bark of which produces a yellow dye still used under the name "fustic," or *Podocarpus oleifolius* D. Don. of the Podocarpaceae. Both have appropriate patterns of distribution and can be used as dyes.
- T7. God C is seated on top of an *Agave* with an axe in his hand. Thompson finds "identities of plant and deities pictured questionable." I would point out that in the *Ritual of the Bacabs* the *ci*, or *Agave*, is used to pierce the tongue (IV:32). In this same work, there is mention made of *balam-kuch-ci*, the jaguar-vulture-agave that is useful in treating trantula eruptions and seizures. The scene depicted in the Dresden Codex seems obviously shamanic. The association of *Agave americana* L. with the shaman is implicit in its association with the jaguar and vulture. To sit above an *Agave* is an impossible feat that could be accomplished only by a powerful shaman, as the leaves are like bayonets. The rattle in the hand of God C implies ceremonial importance. In a more mundane vein, it should be noted that the fiber of this plant was used extensively by the Maya.
- T8. A Chac is seated inside the trunk of a hollow tree. Water has accumulated and the Chac floats upon it.
- Gl. 3. *Kakche* is the ebony tree, *Diospyros ebenaster* Retz., also known as the black sapote. Although this is not one of the tree that is usually hollow

at maturity, the suggestion would seem to be that the spirit of a Chac dominates this directional tree.

- T9. A Chac wearing the head dress of retrorse water lilies is astride a tree with an axe in his hand. Neither the picture nor the corresponding glyphs identify the tree. Thompson notes the absence of white in the four directional trees. I would point out that this is the only figure that wears the white water lily head dress in this tetrology. This completes the four necessary colors in this almanac.

Almanac 66 (pp. 33c-39c)

- T1. A Chac with double retrorse water lilies in his head dress sits under a sort of temple on a dias. He holds a vessel over which there is a maize glyph.
- T2. A Chac sits on a sky glyph around which a water lily plant seems to climb. This is called by Thompson a "dubious element."
- T7. A Chac sits on a sky glyph and studies a maize glyph in his hand.
- T10. A Chac in a pool wears water lilies in his head dress and pours water from a jar which will be magically replenished.
- T14.
- Gl. 3. *ti tanam men* is translated as "on the fleecy clouds." In a stricter sense, *tanam* is cotton, *Gossypium mexicanum* Tod. of the Malvaceae.
- T16. A Chac is seated in a temple with the *cauac*, grape element, conspicuous. Either *Vitis discolor* Dalz. or *V. sicyoides* L. may be indicated. In both the stems make good cordage or may be used in basketry. The leaves produce a lather useful in washing, and a decoction of the stem is used to cure rheumatism.
- Gl. 4. indicates a mat woven possibly from cordage of *Vitis* (see above).

- T20. A Chac with retrorse water lilies in his head dress sits holding a maize glyph. He is positioned above a pond of water.

Almanac 67 (pp. 40c–41c)

- T1. A Chac with a single retrorse water lily in his head dress paddles a canoe.
- T2. A Chac with a vessel of burning copal (*Bursera simaruba*) sits on the earth sign. Above the vessel is the *ich* sign for burning copal.
- T3. Gl. 4. Maize offering. Thompson believes that the nodules around the sign may represent copal.
- T4. Gl. 4. A turkey head emerges from the maize sign.
- T5. Gl. 4. Red maize.

Almanac 68 (pp. 42c–45c) Divinatory

- T1. A Chac with red body and a water lily in the back of his head dress is in the process of defeating the maize god.
Gl. 4. Maize god.
Gl. 5. Maize god.
Gl. 6. Woe to the maize god.
- T2. A Chac paddles a canoe and behind him is a dish of maize with an iguana over it.
Gl. 5. Fresh maize seed.
Gl. 6. Abundance of maize.
- T3. Two Chacs, each with water lily head dresses are involved in a game or battle in which cords are whipped about and become entwined.
Gl. 5. Maize god.
Gl. 6. Abundance of maize.
- T4. A Chac disguised as God B is astride a deer that is dying of thirst, an augury of great drought. The Chac has two retrorse water lilies in his head dress. In his hand are two feathery objects. Thompson suggests that

they might be torches. They are not red as is usual with most fire depictions.

Almanac 69 (pp. 65a–69a) Divinatory

- T1. A Chac stands with a raised axe and shield as though prepared for combat. In his head dress are the two retrorse water lilies.
Gl. 6. Maize god.
- T2. A Chac, with the retrorse water lily head dress, walks carrying a sort of cornucopia of seed (cacao beans?) from which there is suspended a long-pedicellate water lily in bud, showing the three-parted calyx, still another representation of this flower. Since glyph 5 suggests dark water, it lends support to the identification inso-much as water lilies must grow in still water. Streams, rivers or seas will not support their growth.
- T3. A Chac wearing the head dress of God K, including water lilies, stands grasping a fish.
Gl. 5. Abundance of maize.
Gl. 6. Time of the maize god.
- T4. A Chac with a water lily head dress is dressed for combat.
- T6.
Gl. 6. Woe to the maize god.
- T7.
Gl. 4. Cotton thread.
- T8. A Chac walks with spear and seed bag.
- T9. A Chac holds a sac containing what has been suggested by Thompson as God K about to be born. Accompanying glyphs indicate cotton and black together which Thompson takes to be clouds. Certainly the opening of the fruit of *Gossypium* suggests birth and the fibers might suggest the placenta in which is found the seed.
Gl. 6. Maize god.
- T10. Two Chacs, each with one white water lily in his head dress, sit back to back. One is in the rain.
Gl. 5. Good tidings for maize.

- T11. A sky beast is seen dropping from a celestial band above the maize god who holds in his hand a compound "abundance of maize."
 Gl. 3. Maize god.
 Gl. 6. Abundance of maize.
- T12. God C is seated in the rain holding a maize sign.
 Gl. 5. *Balché*
 Gl. 6. The maize god.
- T13. A Chac with an axe is seated on the spiny ceiba tree and it seems to make up the lower half of his body (tree of life). His hand holds the left blue side. The right side is red.

Almanac 70 (pp. 65b–69b)

- T1. A Chac paddles a canoe below which is an eel. The Chac wears the stylized water lily head dress.
 Gl. 5. Much new maize.
- T2. A Chac spear thrower with water lilies in his head dress walks through the clouds.
- T3. A Chac with a staff and back pack walks a non-material road.
- T4. A Chac wearing water lilies in his head dress sits in a celestial chair.
- T5. A Chac with a water lily head dress is seated on a monstrous head.
- T6. A Chac with water lilies on his head dress sits over an oblong enclosure of crossed bones, possibly the underworld.
 Gl. 5. Maize.
- T7. A Chac with a seed pouch sits on what Thompson calls a *yaxche* tree. He wears the water lily head dress.
 Gl. 2. *Yaxche*, the giant ceiba tree.
- T8.
 Gl. 4. White maize and water, the maize drink, *zaca* or *atole*.
 Gl. 5. Decomposed maize, or turtle and maize.

- T9. A Chac holds a water lily with a long pedicel above a lake in which there is fish and a conch.
 Gl. 4. Abundance of maize.
 Gl. 5. New maize.
- T10. A Chac with a single retrorse water lily in his head dress drums on a turtle carapace.
 Gl. 5. New maize.
 Gl. 6. There is no eating of new maize.
- T11. A Chac holds the moon goddess in a posture of coition. He wears the two retrorse water lilies in his head dress.
- T12. A Chac with the traditional two water lilies in his head dress is seated on two fire symbols and holds a seed pouch.
 Gl. 5. Lime maize (i.e., maize seed treated with lime to remove the hull).
- T13. A Chac with the two water lilies in his head dress holds a large bird and appears to be seated in clouds.
 Gl. 5. New maize.

Almanac 71 (pp. 53a–58a and 51b–58b)

Although these are not arranged as the other *t'ols*, as the eight to ten glyphs above each picture are in a category that is different from the pairs of signs in each column, they will be numbered as are the other almanacs.

- T1. A death god is seated on a chair of bones with his hand raised in a prophetic gesture. From his frontal brow is a water lily with emanations that resemble smoke or quetzal feathers. It would seem to concern a lunar eclipse.
- T2. The jaguar-sun god is depicted by a portrait of his face in a series of bands. These seem to be rooted at the base and from them four floral or vegetative motifs protrude. These are probably directional motifs. Since the glyphs suggest rain and unmitigated grief, the water interpretation of the bands seems to me better than Thompson's suggestion that they are planetary bands.
- T3. This depiction of the head of the sun god with jaguar whiskers seems akin to the previous one. He is set in a

similar cartouche of two areas of water, one light and the other dark from the four corners mammiform water lily buds protrude as directional flowers. A celestial band is above. The text seems to have confounded Thompson and others. I would not presume to explain the context of these, but I believe that my explanation of the water lilies as directional flowers and the water cartouche may assist others in expanding upon this.

T4.

Gl. 4. The lands of maize (woe to).

T5.

A vegetal form supports two areas, one dark the other white. These are crossed with diagonally placed flower-tipped rods. The internal structure of the dark area suggests rivers. The same image is metamorphosed in five different *t'ols*. The suggestion of eclipse is evident as is misfortune. Thompson concludes that it is a puzzling text.

T6.

The goddess Ixtab manifested as the moon goddess is seen hanging from a halter. Thompson suggests that this goddess has her eyes closed in death. Another possibility is the representation of a trance state in which Ixtab (moon goddess alter ego) leads victims to a paradise that is the Maya equivalent of Tlalocan. This is reinforced by Gl. 1.

Gl. 1. *Balché*

T7.

From a celestial band hang two "sacs," on black the other white (cf. 55a, 56a, 57a, 56b, 57b, and 52b). These "sacs" are seen in various stages of metamorphosis. I have already suggested a connection with water, moving and still. In the center is the *kin* sign and two bones cross the black half. Both areas terminate in root-like or rivulet-like bases. The frequency of animal heads among the glyphs, all with protrusions of sorts, and the central *kin* sign associated with ritual divination suggest a magical context. A prophecy of evil is implicit. The frontal protrusions on the animal glyphs are reminiscent of the Chac-water lily association.

T8.

See commentary T7.

T9. See commentary T7.

T10. A humanoid figure in the form of a frog-toad is seen in a diving position. His head is replaced by a Venus sign above which is the double knotted water lily. The knife-like protrusion emanating from the rear is suggested by Thompson to be a knife. It may be a symbol of the toad shaman metamorphosis.

I would like to point out that while I have concentrated my attention upon those plant attributes of this almanac (71), I am not unaware that the overall theme of this Venus and lunar presentation is that of eclipse, hence the light and dark sacs, so that shaman priests could carry out their divination.

At this point, I must adhere to the system followed by Thompson discarding Almanacs 72 and 73 of Gates (1932) and adding 76 and 77.

Almanac 74 (pp. 71f-73c) Agricultural Divination

T10.

Gl. 4. Maize seed

Almanac 75 (73b *left* to 71 and 73c *left* to 71c—column F)

T2.

Gl. 2. Woe to the maize seed.

T3.

Gl. 3. Maize seed.

T7.

Gl. 3. Abundance of maize.

T10.

Gl. 3. Abundance of maize.

T11.

Gl. 3. Woe to the maize god.

T13.

Gl. 3. Maize seed.

T16.

Gl. 3. Abundance of maize.

Almanac 75 (pp. 73b right leftward to 71F)

- T2.
Gl. 2. Woe to the maize seed.
- T3.
Gl. 3. Maize seed.
- T7.
Gl. 3. Abundance of maize.
- T10.
Gl. 3. Abundance of maize.
- T11.
Gl. 3. Woe to the maize god.
- T13.
Gl. 3. Maize seed.
- T16.
Gl. 3. Abundance of maize.
- T21.
Gl. 2. Maize seed.
- T22.
Gl. 2. Woe to the maize seed.
- T24.
Gl. 2. *Zaca*, the maize drink; probably fermented into a beer.
Gl. 3. The maize god.
- T25.
Gl. 1. *Koch*. According to Roys (1933) *koch* or *ix-koch* is now applied to the castor bean (*Ricinus communis* L.) which was introduced from Africa. The original *kaxil-ix-koch* is uncertain, but was used in divinatory cures for asthma.

Almanac 76 is page 74 and depicts a torrential rain pouring from the mouth of a celestial alligator with humanoid forearms terminating in the cloven hoofs of the sacred deer. The old goddess Xkita pours more water from a vessel. According to Thompson (1930), she was ancestor of sun and moon. Black God L is also depicted.

- Gl. 15. Maize seed.

SUMMARY

While many of the plant entries figured in the Dresden Codex relate to food, most especially maize, it is noteworthy that the narcotic *Nymphaea ampla* of that region is prominent in its appearance in this Codex in ritual context. Its narcotic properties have been discussed by Emboden (1981, 1982) in the context of ritual use. I would assert that the diving Chac motif that is so frequent among the figures in the Dresden Codex as well as in Mayan ceramic representations is emblematic of that figure that goes into the aquatic underworld where *Nymphaea* grows. The Chac is sometimes metamorphosed into a toad, a toad-dog hybrid form, a jaguar or the toad-frog (God X). The jaguar has been called the "water lily jaguar" by Coe (1973), as it is often associated with the water lily; and the frog and toad are both metamorphic creatures associated with shamanic transformations. The further implication of such narcotics as *Ipomoea violacea*, *Turbina corymbosa*, *Salvia divinorum* and *Psilocybe* species lend credence to the assertion that this is a catalogue of divinatory plants as well as a calendrical document. Even *Nicotiana undulata* must be included in a catalogue of narcotics used in a ritual context given the known potency of this tobacco. Furst (1976) presents an excellent exposition of this thesis.

In summation, we may now view this Codex from another standpoint: that of presenting the magico-divinatory aspects of the life of the people who produced this extraordinary document as revealed by the prominent position of plants having narcotic properties figuring into the imagery of the Codex. Much remains to be deciphered with respect to this formidable document. Perhaps some of the assertions presented here will be an adjunct to further research on one of the most precious pre-Cortesian codices, and indeed, one of the most important documents of the early Americas.

ILLUSTRATIONS

The frequency with which plant motifs are figured in the Dresden Codex necessitates the reader's consultation of a published edition. The figures selected are but a fraction of those

noted. The images have been redrawn over magnificants of the originals using alcohol based ink. Every effort has been made to avoid modification of any imagery.

PLATE 10

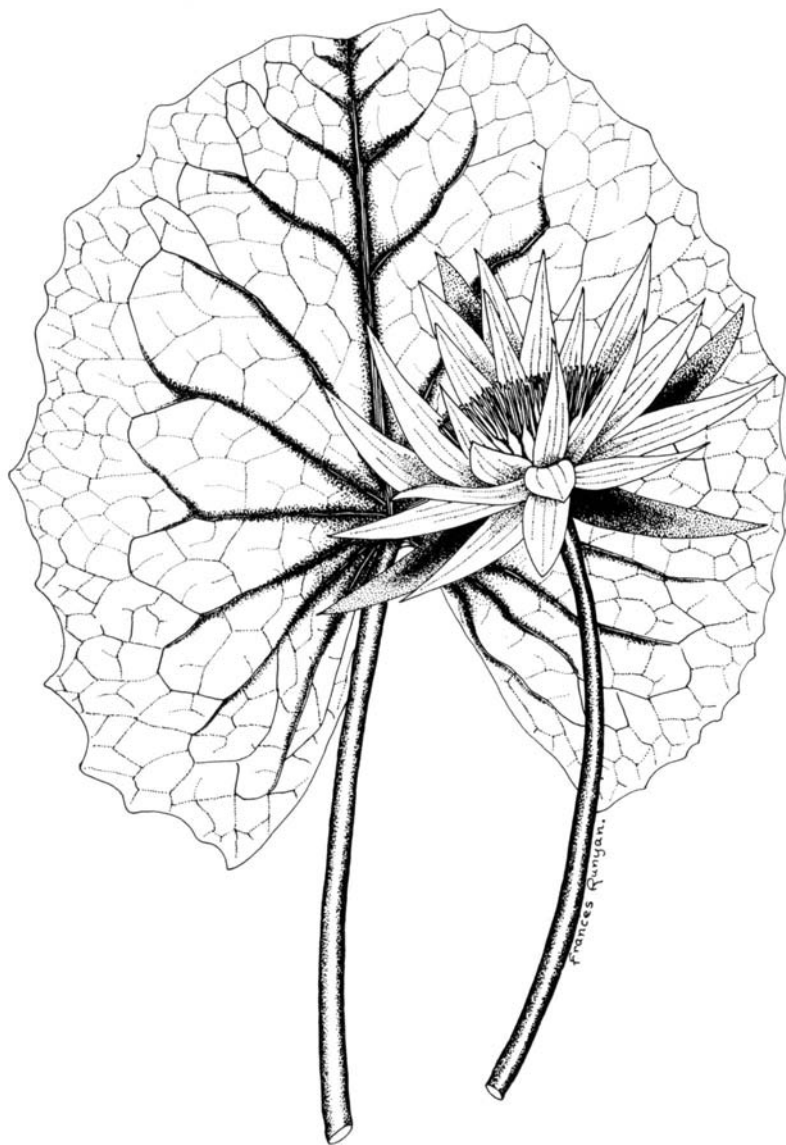


Plate 10. *Nymphaea ampla* DC., The white water lily of the Maya. Drawn by Frances Runyan.

PLATE 11

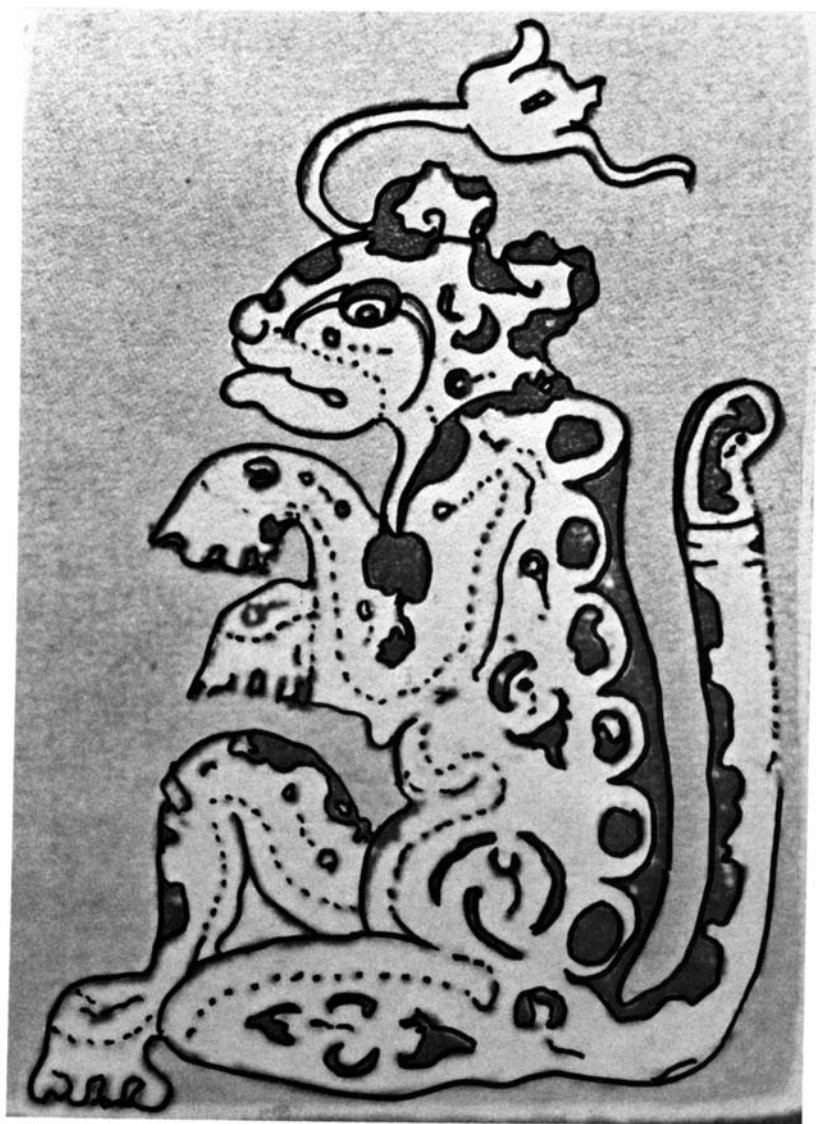


Plate 11. Chapter I, Series 1, 8. The Water Lily Jaguar wearing the retrorse blossom on his head.

PLATE 12



Plate 12. Chapter II, Series 1, 19. The Moon Goddess, with two protruding and three retrorse water lilies in her head dress.

PLATE 13



Plate 13. Chapter IV (The Planet Venus) 48. A complex head dress utilizes pods of *Theobroma* as well as *Nymphaea* with inserted quetzal plumes. The original is in color (unusual for this codex).

PLATE 14

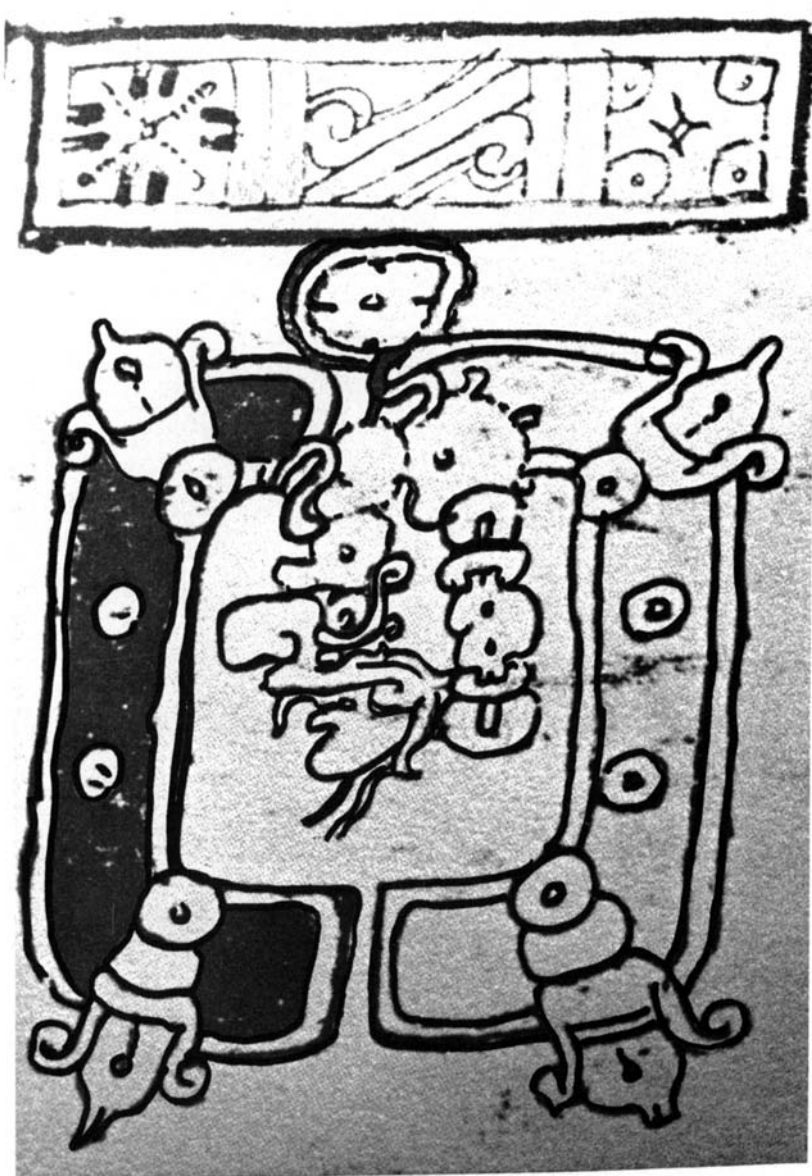


Plate 14. Chapter V (Lunar Tables) 56. The four cardinal points are indicated by the water lily buds. These are connected to a water lily leaf. A leaf, or pad, motif is seen above as well.

PLATE 15

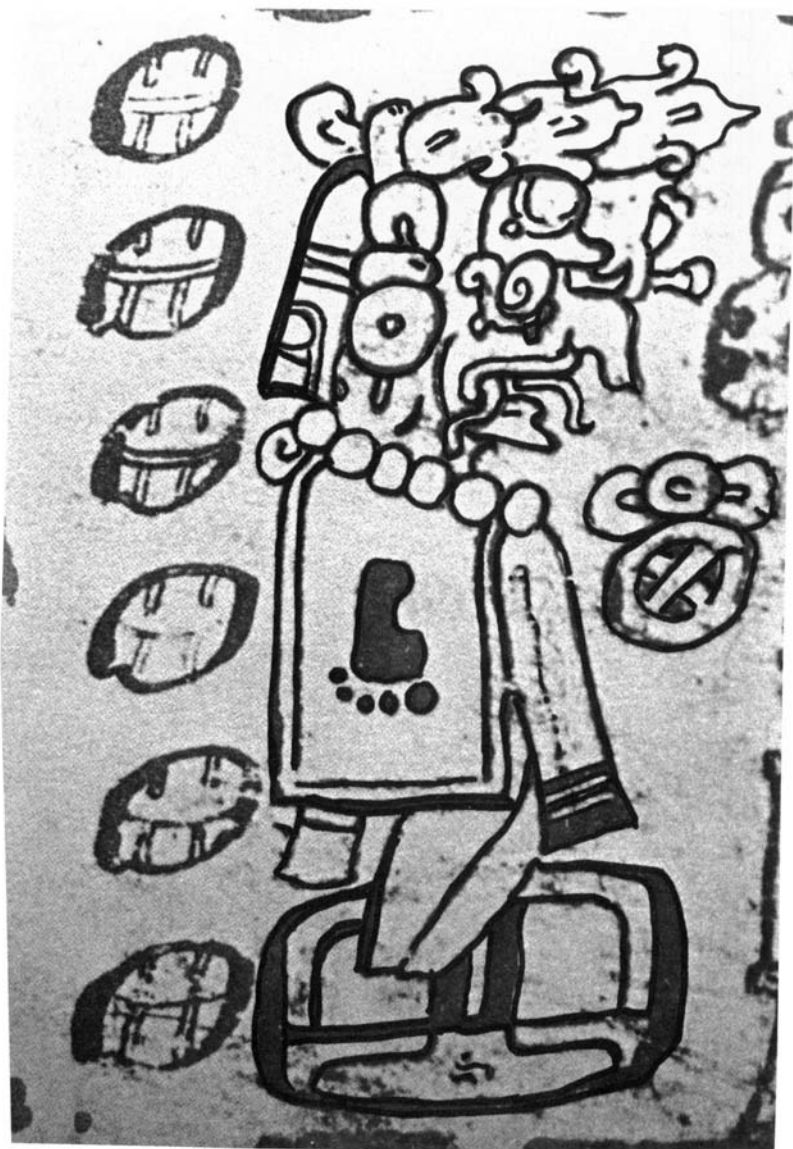


Plate 15. Chapter X (New Year Ceremonies) 25. The masked diety has three water lily buds inserted into each other in his head dress. The context is the ritual offering of *balché* and comestibles.

PLATE 16

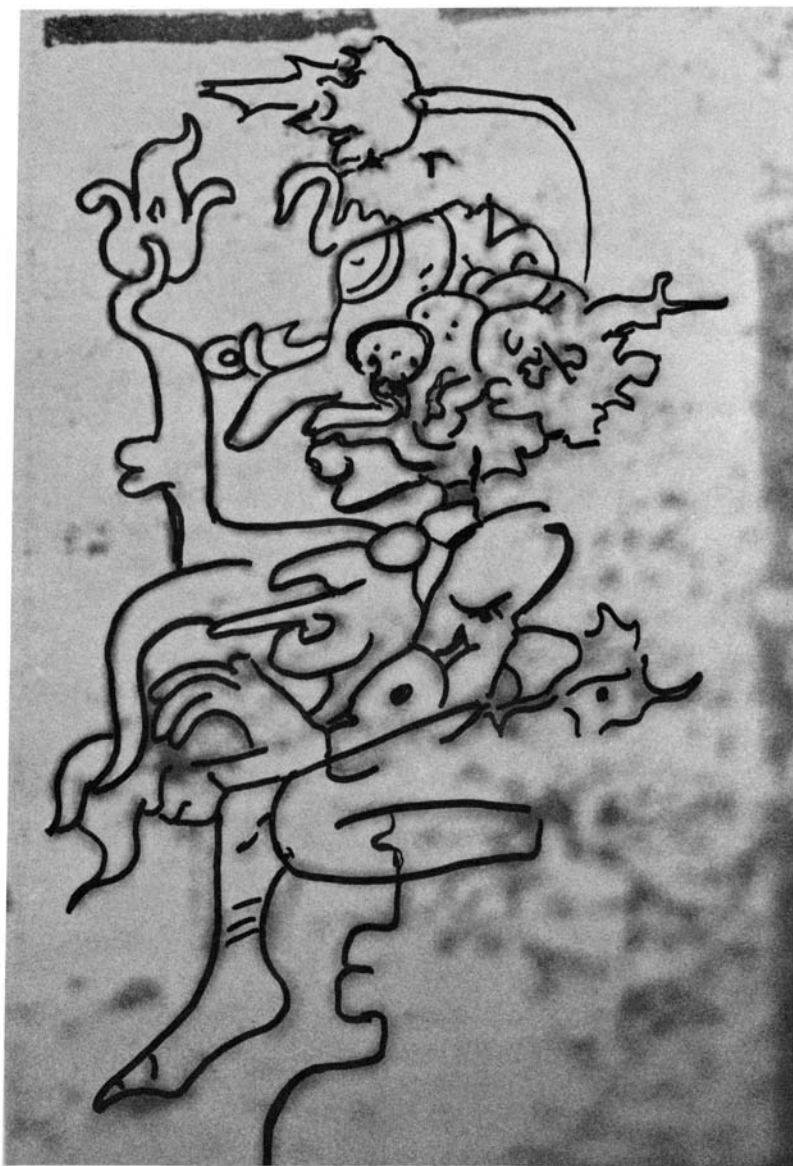


Plate 16. Chapter 10 (Farmer's Almanacs) 29. A masked diety is seated on a vegetal mound. Before him are two water lilies and a water lily protrudes over his brow.

PLATE 17



Plate 17. Chapter XI (Farmer's Almanacs) 33. A chac is seated over water within a sacred well or lake. Above the masked figure are leaves that suggest the narcotic *Turbina corymbosa*, the seeds of which provoke hallucinations.

PLATE 18



Plate 18. Chapter XII (Farmer's Almanac) 40. A diving jaguar, bearing a torch and wearing a water lily head dress, enters the realm of the underworld.

NOTE: To be inserted after page 132 in binding.

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