

THE
DRESDEN CODEX

By WILLIAM GATES



The
Maya Society

THE DRESDEN CODEX

*Reproduced from tracings of the original
Colorings finished by hand*

By

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BALTIMORE

THE MAYA SOCIETY

AT

THE JOHNS HOPKINS UNIVERSITY

1932

EDITION OF SEVENTY-FIVE COPIES

COPY No. _____

THE DRESDEN CODEX

THE Dresden Codex was first found, in the hands of a private owner in Vienna, in 1739, by Johann Christian Götze, Director of the Royal Library at Dresden. It was given, as being a mere curiosity, "ununderstandable and hence valueless," by the owner to Götze, who in turn gave it to the Royal Library in 1744.

In 1810 five pages from it were published by von Humboldt in his "Atlas Pittoresque." In 1826 it was copied, traced, by the Italian Agostino Aglio, working for Lord Kingsborough, and was then published by the latter in the third volume of his "Mexican Antiquities." From the early date of Aglio's work, his painstaking care, and the fact that he traced the original, thus preserving lines obscured in the necessary reworking of the colors in a gelatine photographic reproduction such as the Förstemann issue, Aglio's uncolored work is still of value in occasional doubtful places. In the particular case of the red and black dot and bar numerals, Aglio used dotted outlines for the red; in at least one case (namely the important date on page 51), the retoucher in the later editions allowed a black dot to superimpose on the correct red one, causing much waste of writing and printer's ink over the "error"—which existed only in the Förstemann edition, but not in the original. The colors in the Kingsborough edition, however, are entirely useless, and wrong.

It was not until the time of Brasseur de Bourbourg, the real founder of Maya research, that "Maya" became distinguished, and the Dresden Codex known for what it is. The Paris Codex, photographed and issued in a very limited number of copies by Duruy, Minister of Public Instruction under Napoleon III, was still titled as "Manuscrit dit Mexicain," in 1864. In 1853, however, Brasseur had compared the Dresden and Paris Codices, and the Palenque inscriptions, in his "Revue archéologique," and our Maya study began.

In 1865 Brasseur discovered the Troano part of the Madrid, and it was given an elaborate publication as the "Codex Troano," by the Imperial government in 1869-70, part of the series of works on the Commission Scientifique du Mexique. In 1875 Léon de Rosny, inheriting his bent from his father, came into the field, and became the real founder of the Société Américaine de France. His contributions in print, both as to Oriental and American writings and languages, were both many and good.

In 1880 the second part of the Madrid Codex was discovered in Spain, bought by the government, named the "Cortés," and a few photographs made for private distribution by the Director of the Museum, Don Juan de Dios de la Rada y Delgado. From these de Rosny recognized that the Troano and Cortés were but parts of one codex, probably cut in two by a former owner to give half to a

friend, and fortunately done just where the continuity was clear. In 1883 de Rosny then issued an uncolored copy, photographic, in an edition of 85 copies only. I have never seen a copy offered in the market since I secured my own, by a private exchange for Egyptian works I no longer planned to use, some thirty years ago.

In 1893 de la Rada published a photochromolithographic edition of the Cortés, without attempting any pagination, but mounted in folded format like the original. This is the only edition of any Maya Codex to be thus issued save those I have published, and a recent edition of the Troano, so cheaply and crudely done as to be worse than worthless.

It is a fact generally unknown, and referred to nowhere in print, to my knowledge, that the Paris Codex was discovered and drawn with great care by Aglio, to become part of a tenth volume of Kingsborough's work. Lord Kingsborough having died of gaol fever, contracted while there for *debt for his paper bill*, in tragic reward for his contributions to our knowledge, this volume never appeared. Mr. Edward Ayer, with his indefatigable flair for discovery, came into possession of a few proofs for that volume, including a full set of proofs of the Paris Codex, on vellum; and there being one vellum proof in duplicate, of course gave that leaf to me.

In 1883, de Rosny published the Paris, hand-drawn by himself, in his "Archives paléographiques," later characterizing the reproduction as valueless owing to the newness of the subject, and his necessary ignorance of the glyphs at the time. In 1887 he then published a colored edition of 45 copies, and in 1888 the same in black, photographic, and with the same text commentary, in 100 copies. I have never seen any copy of the colored edition in the market save the one I have, and only one other than my own copy of the 1888 edition.

In 1909, I myself published the Paris Codex, in folded format like the original, redrawn in the same manner as the present edition of the Dresden, and colored after exhaustive comparison with the original. This edition was in 57 copies only, and included a reproduction of the 1864 Duruy photographs, as well as the glyph text separately printed in Maya type.

The Dresden had meanwhile been published by Dr. Ernst Förstemann, Director of the Library, in 1880 and again in 1892. This is by all odds the finest of all our facsimile issues, having been made by gelatine process in photochromolithography; its only defects are a few incidental to the hand retouching of the colors, involving one or two errors in the numerals, and some obscurities in the figures on the "Venus" pages. Each edition was, I understand, of about 60 copies. All editions of our Maya Codices except only the 1893 Cortés, were thus in very limited

editions, and practically all copies have gone into fast hands.

From the very start the question of the order of the pages in the codices has been a difficulty, and the different arrangements an actual obstacle to any real study of the texts as connected works. The pagination given in the Kingsborough was wholly wrong. In the Duruy 1864 Paris photographs (which were mounted on separate large cards), the pages were numbered in pairs, opened, and then the strip turned over and the next pair of numbers assigned to the other side, successively; totally disregarding the obvious continuity of the text and pictures. This was corrected in the two de Rosny editions, and his paging was followed in my own edition of 1909.

The Paris is but a fragment, ten pages to a side. But the much longer Madrid and Dresden had each been separated into two parts, from which further troubles arose. In addition, the paging in the Brasseur edition overlooked entirely the continuity of the tzolkin numbers, began with our page 56 on one side, numbering it page 1, and then went *backwards* to the left; next turned the strip over, again beginning at the right as 1*, and went to the left, again backwards. Thanks, however, to the fact that the Tro-Cortés had been cut apart between our present pages 77-78, we have been able not only to join the two definitely, but page both continuously. But as the studies and literature grew, much confusion was caused by the consequent changes. As to the Madrid it has been settled by disregarding the obviously wrong Brasseur paging, starting with page 1 of the Cortés as given in the de Rosny edition, going to page 21 and then continuing on with the Madrid, 22 to 56; then turning the codex over, beginning again at the left of the Cortés, and then through the Madrid to page 112. It is certain that at least one page existed for the Madrid before page 1, and perhaps others at the other end; but the paging as now settled is definite, and leads to no confusion.

The Dresden was also in two sections when found. The Kingsborough paging being negligible, Dr. Förstemann decided that we had two cognate but separate codices, which he called Dresden A and B. "A" he then numbered 1-24 on the recto, and 25-45 on the verso; "B" he numbered 46-60 and (on the verso) 61-74. His reasons were curious; 1°. that A is divided by transverse lines on nearly all the pages, while B is not; 2°. that on A some of the designs reach over from one page to another; 3°. that on A all pages except 24 have pictures, while nine of the pages in B have no pictures; 4°. that the red zero-sign only occurs on five of the forty-five pages in A, but occurs on sixteen of the twenty-nine pages of B.

Page 24, on the first part, is however, clearly now known as a calculation table, summarizing and carrying

into higher date levels the substance of pages 46-50, the six pages constituting a single chapter based on a correlation of the 584-day Venus year with a 365-day solar year. Pages 46-50 should have been 25-29; and so on to the end of that side, before reversing the strip. But so large a literature has grown up employing these Förstemann page-numbers as references, that it would be only a source of confusion to change them now. Fortunately, as will be seen in the present edition, only one subject chapter (the above Venus 24, 46-50) is broken into.

The pages, as pages, really amount to almost nothing in our study of either the Dresden or the Madrid. The scribe laid out his strip before him, folded it to convenient widths, fan- or screen-wise; next estimated the number of folds, the total space needed to develop the immediate subject or "chapter," dividing the strip then horizontally into two, three or four divisions as he found to fit his purpose, with occasional full-page column arrangements for his tables. Then he wrote across the upper division to the right, back and across the middle, and then back and across the lower. *He did not think in pages in doing this, but in continuous strips*, only outlining the folds with red lines as we sometimes print books within ornamental page outlines. The codices are really scrolls, marked off for folding instead of rolling.

Up to the publication of my Outline Dictionary of Maya Glyphs, in 1931, all references to glyph or text positions in the codices were by page, division, column and line, a method serving only for the barest location, and completely obscuring all continuity of the text. Something over thirty years ago, Mr. Charles P. Bowditch had had prepared a very elaborate and careful card index of all the then identifiable glyphs in the three codices; the references were by codex, page, division, column, line (including numerals in the position order). Spaces were added for the "No. of preceding glyph, of succeeding glyph, position of glyph"; also for separation of the compound glyph into its main element, prefix, postfix, superfix, suffix and infix; and remarks. This second phase of the matter was not developed, but at least the preparation for an analytical study was made. By Mr. Bowditch's courtesy I was permitted to copy the entire index on duplicate cards (in 1901 as I remember), and therewith started the actual analysis, and a definitely arranged classification.

The saving of all this labor of getting onto cards every (compound) glyph form, with a location reference, was of course an immense aid, for which I have never ceased to be grateful for all the painstaking care of Mr. Willoughby who did that work. As I finished the cards at Cambridge, by Bowditch's and Frederick Putnam's courtesy, Willoughby said: "It took me two years to do it, and you have copied it in eight days." But I imagine that at least

half of all my labor since has been spent in changing over these page, column, line references to the connected tzolkin text order the student will find given here and in the Outline Dictionary.

The mathematical element in all the Maya glyph texts, whether on stone or in the codices, is well known. But it has not been sufficiently recognized that it is used in two wholly different ways in the two cases. On the monuments we have dates, and unquestionably astronomical data, with accompanying text-glyphs; also without appendent pictures as in the codices. But in the codices, on the contrary, we have mathematics in the form of calculation tables involving planetary cycles, and leading to the definition of astronomical periods or dates; also (and in profusion) the system of texts, with pictures, arranged or "hung" on subdivided tzolkins. The reason for this latter is all unknown to us; not a single writer (that I recall) has made any serious study of the why of this tzolkin order; it wholly escaped Förstemann, whose three Commentaries have given him a prominence which is due entirely to the lack of any other writers on the subject. Those who have written have discussed the deities and their glyphs (Schellhas), the animal figures (Allen), the astronomical sections (Guthe, Willson, Teeple and others).

It is to make possible the study of the codices as connected *language texts* that I have formed my font of Maya type, published the *Outline Glyph Dictionary*, with its concordance tables of the glyphs, and now the codices, in the present form—the Dresden with the Madrid soon to follow. The concordance tables of the Outline Dictionary are in fact no other than the original Bowditch card-index, but wholly rearranged to show the textual order, by chapters, tzolkins and clauses (instead of mere page, column and line). That card index also did not reach the separation and classification of the glyph elements; and except myself, I doubt that anyone has used the Bowditch index cards since they were made.

From the first I have believed that the Maya was a genuine ideographic writing; that it was analyzable, and had the essential quality of language structure. I felt that the shortest way to its decipherment was first by getting the glyph-forms into metal types, just as we progressed in Egyptology from lithographed texts to printed ones. Next that these type-forms should be allowed to sort themselves according first to the obvious character of the text, as either astronomical or the higher mythological and ceremonial parts of the Dresden (shown and helped in study by the pictures that are entirely lacking to the stone monuments), or finally the similar lower planting and other occupational divination ceremonial of the Madrid, with its pictures. That gave a first broad group-

ing. The Dresden belongs to the higher science, the Madrid to the daily popular life.

The next step, and an absolutely necessary one to progress, was the following of the tzolkin text arrangement, as it was worked through by the writers. This latter also gave us for the first time a consistent and workable reference system for the glyphs, as repeated and changed from place to place. With the main elements given a systematic number plan, sufficient for them as the Chinese characters are by their stroke-count order; then the compounds classified and numbered not only for identification but so as to leave room for any or all new forms to come in from monuments or (we devoutly hope) new codices, we had a mechanical plan which was my first objective, simply to remove the impedimenta of research. I was not concerned with "interpreting" esoteric symbolisms, nor with exploiting opinions of what glyphs might mean, or looked like to me; only to arrange them in studyable order, for myself, but most of all for others.

The largest part of both the Dresden and the Madrid is made up of texts in the form of tzolkins, following one another in obvious continuity, and making up major subject chapters. A few passages follow the tzolkin glyph order, without being true tzolkins hung upon subdivisions of the 260 days; a few pages in each codex have had to retain their old system of division, column and line—as in the sections on the planet Venus, the Year ceremonies, and the Dragon numbers section. But in these latter the arrangement in the original is columnar, not in the double-column tzolkin style, four or six glyphs to a clause; the old arrangement thus fits these, while it only obscures the order of the text in the tzolkin passages.

The present edition has been divided into eight chapters to accord with the matter. The pages have been mounted on one side only, so that each chapter can be spread out under the reader's eye (as it was before the writer's), and without handling and turning the whole codex; a connected view follows, which itself begins to reveal the nature of the text.

The 75 distinct tzolkins or sections have been numbered consecutively, and the number inserted in small figures in the upper corners, at the beginning; the clauses, marked generally by accompanying pictures, are referred to by letters, and then the glyphs in each clause numbered, in the accepted (and proven) double-column order downwards. A check table for the whole reference system, with the pages on which each tzolkin or clause begins, ends or occurs, is given, and is the same as also printed in the Outline Glyph Dictionary. With all three codices thus placed before the student, in this form, and with the glyphs thus arranged, classified and indexed for use, the objective toward which I have worked has been reached.

I believe the codex to be complete, as it was first writ-

ten. With pages 24, 46-50 joined, we have before us a strip 8 inches high and about 12½ feet long; on the face we have 39 pages, with page 1 at the left, and 60 at the right. Reversing the strip, the back of page 60 is blank, perhaps to avoid rubbing of the finished page; reading to the right again, we first get pages 61 to 74, ending on the back of page 46 with the obvious final page of the great deluge. The other (separated) part then begins the four New Year pages; then three pages blank (backing pages 20, 19, 18); then our Second Itzamná chapter, pages 29 to 45, ending the strip. For a fuller discussion of these chapters, tzolkins and tables I must wait the finishing of my Dresden analysis, now largely worked out and written—to come out sometime next year I hope.

A word should be added as to the drawing of the plates. Aglio's drawings having been traced, as said above, were taken as the start. Some 30 years ago, in Cleveland, my friend Willard and I had double-diameter bromide enlargements made from an uncolored copy of the Kingsborough. In 1921, in Baltimore, I *traced* the figures from these enlargements, first with pencil, and then checking all by the Förstemann edition, before finishing; this to insure accuracy in the figures, postures, etc. These drawings were held back eleven years from publication until the Outline Glyph Dictionary could be finished, and the glyphs classified and indexed, for the actual study to begin. The present plates are thus made by photographing tracings made from tracings from the codex itself. The glyphs were drawn in by hand, by myself, with the following rule: where enough is left to make certain, the lines can be filled in; where anything whatever is in doubt, do not attempt to restore; minor variations of form to be preserved and not ignored. The work is not published to tell what I think is or should be there, but only what can be seen.

The colors, finally, have been chosen after careful study to come as closely as possible to what the original was when fresh. They have been printed from plates for the most part, but in numerous places finished up by hand coloring.

The difficulties of using the photographic facsimiles (colored or black), worn and rubbed as the originals are, are enormous. It is those difficulties, and the lack of classification and a concordance reference that has impeded the study, which the Maya Society has now been re-organized to promote. The aim of the present work has been therefore to provoke and aid that study, by making the material both accessible and usable.

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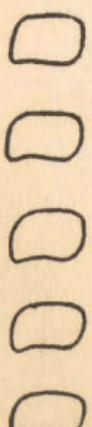
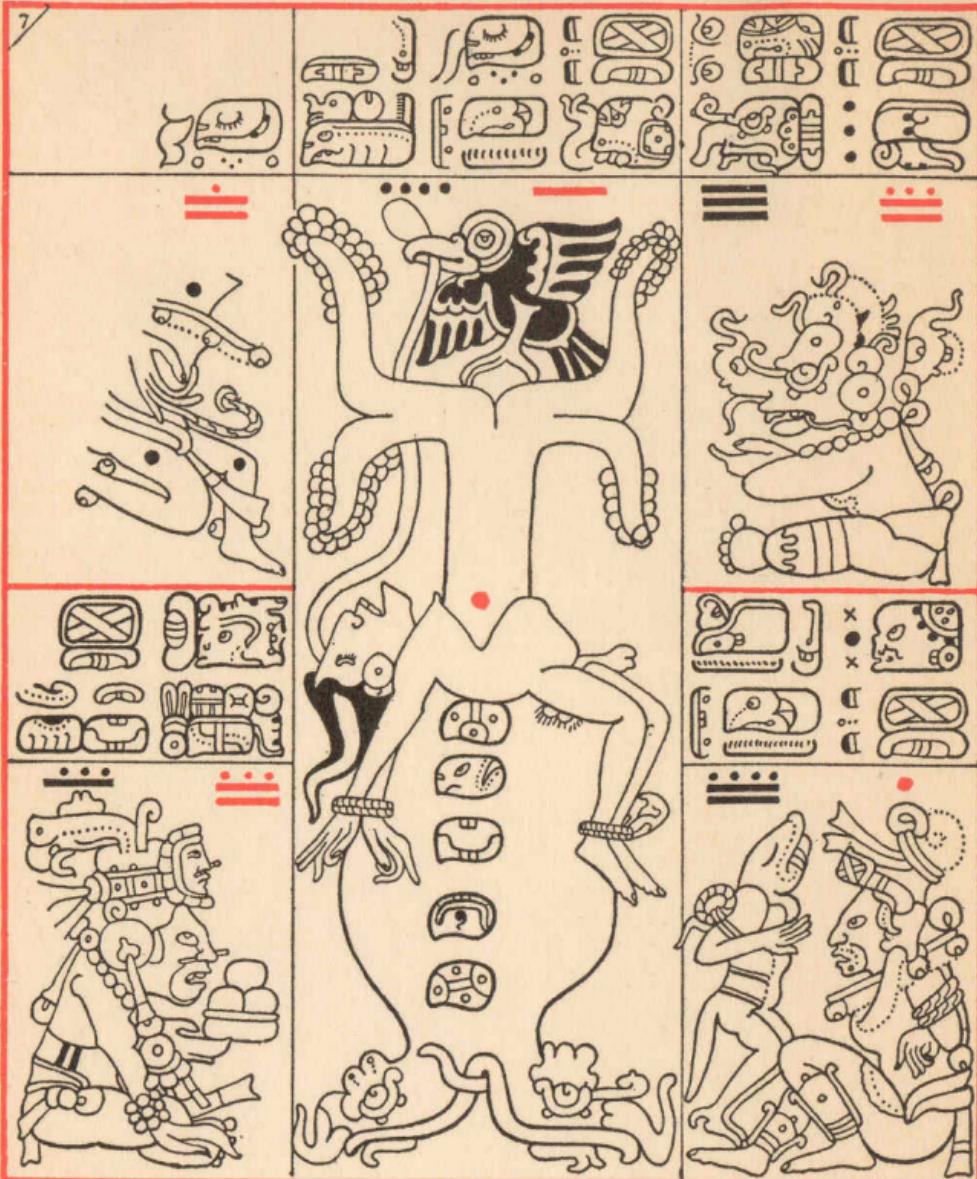
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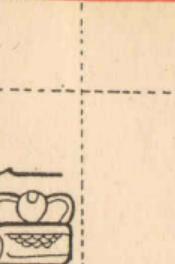
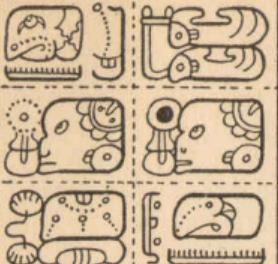
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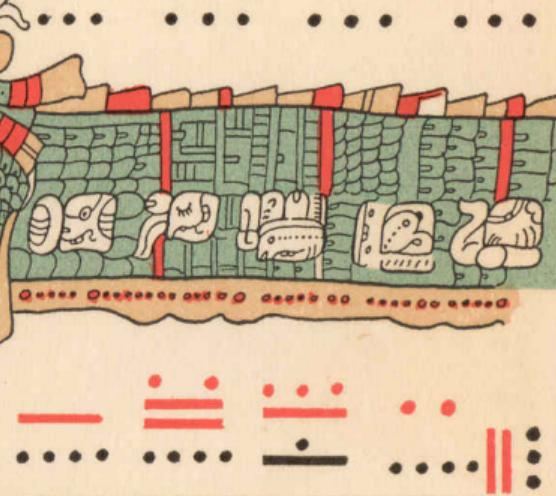
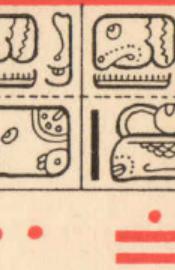
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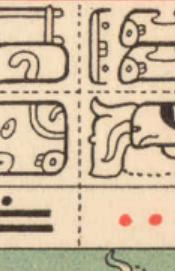
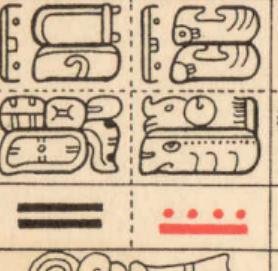
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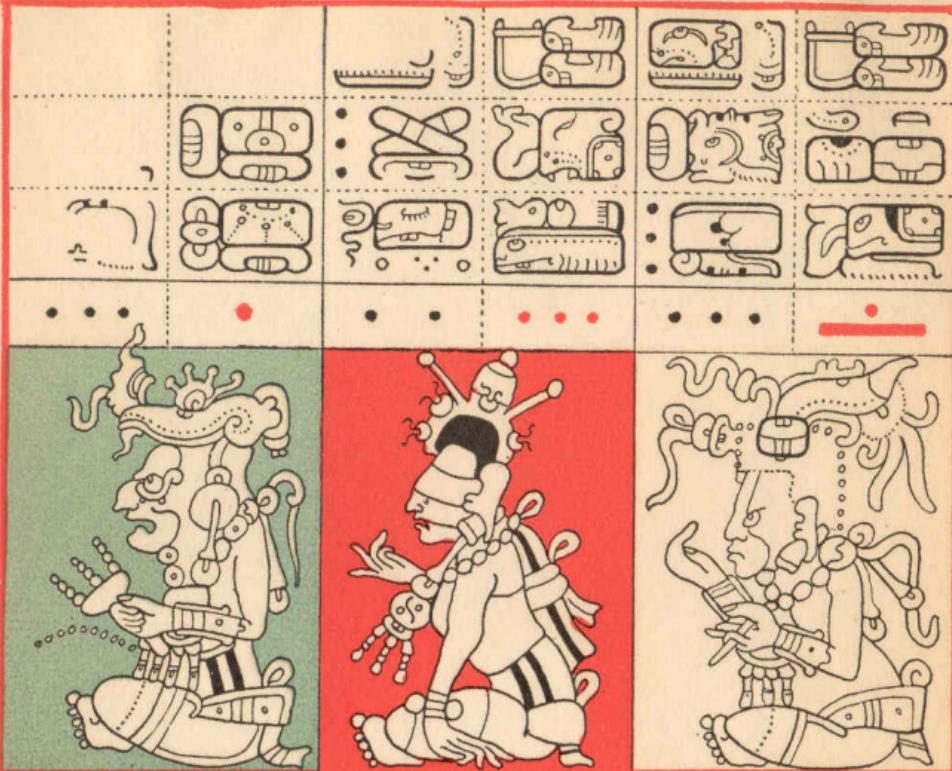




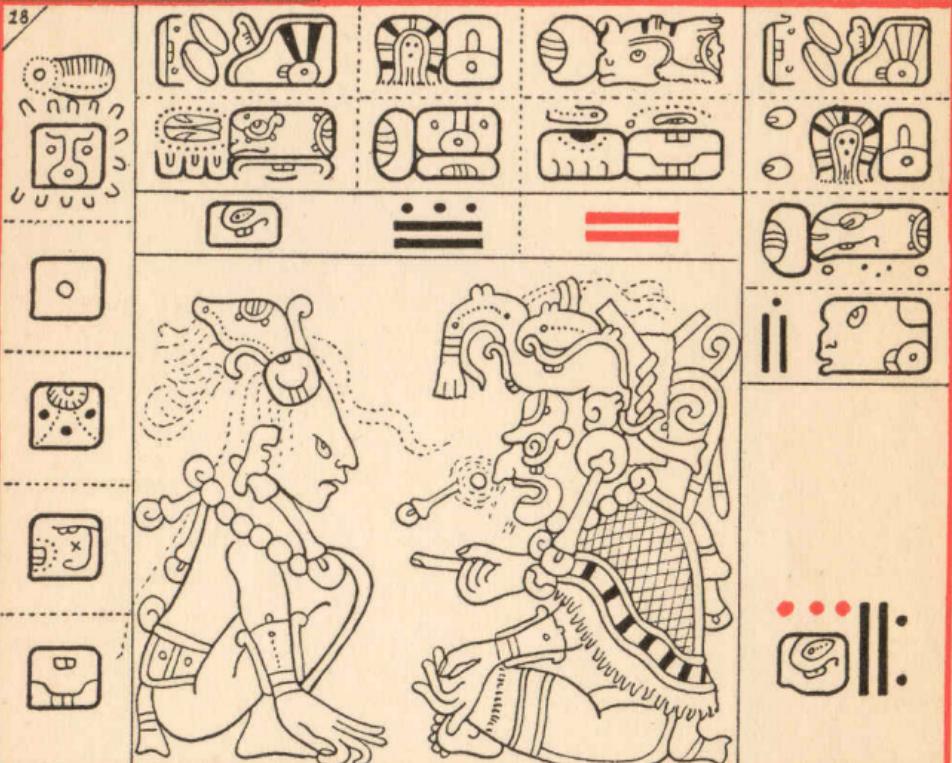




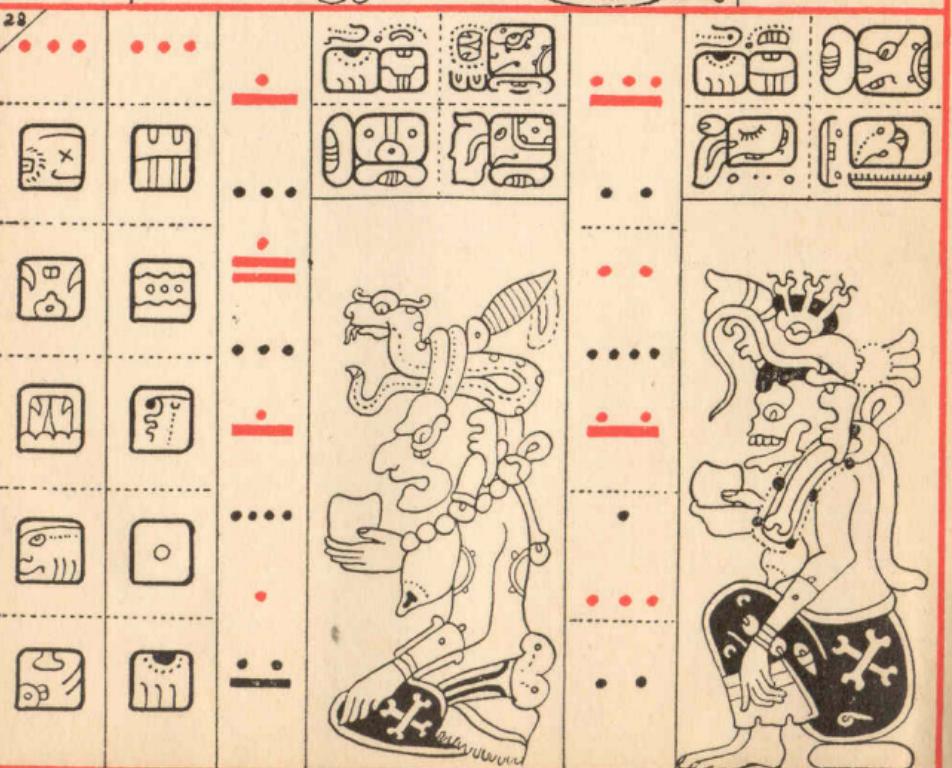


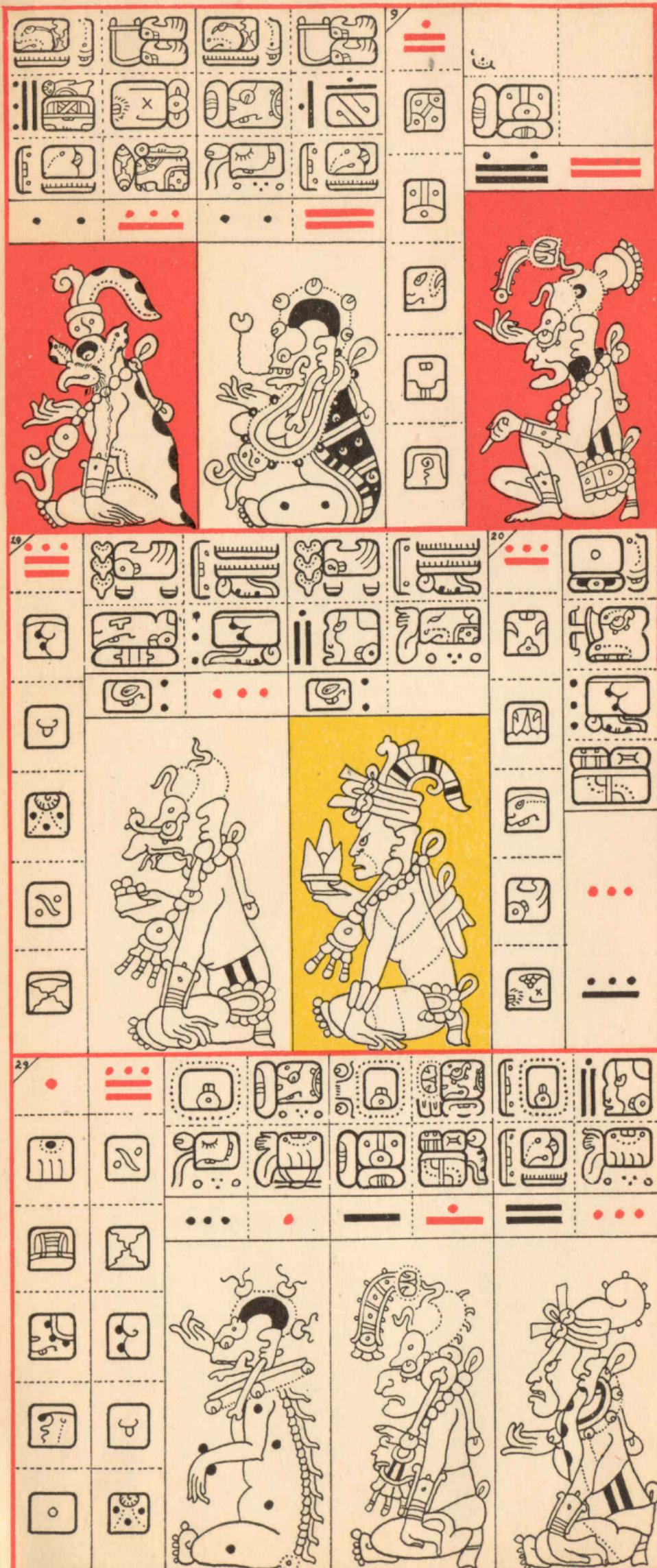


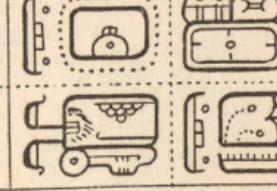
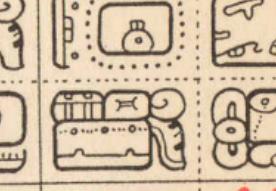
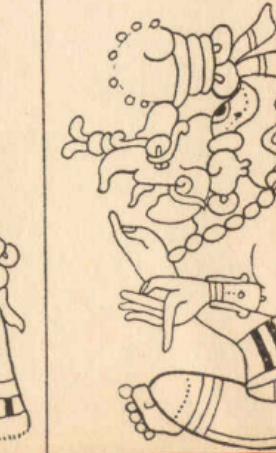
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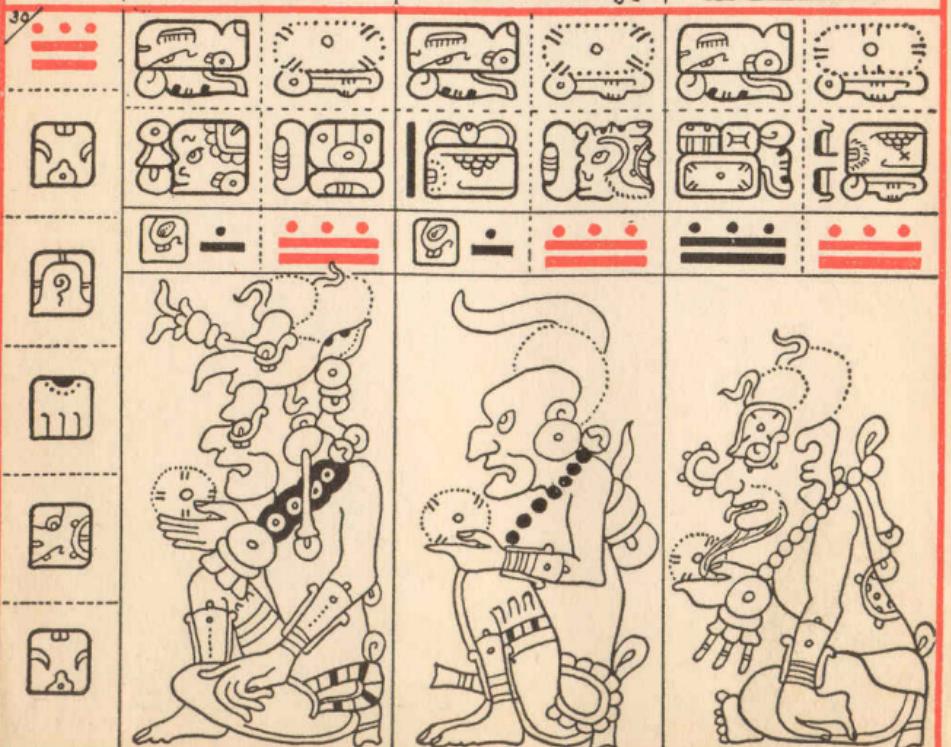
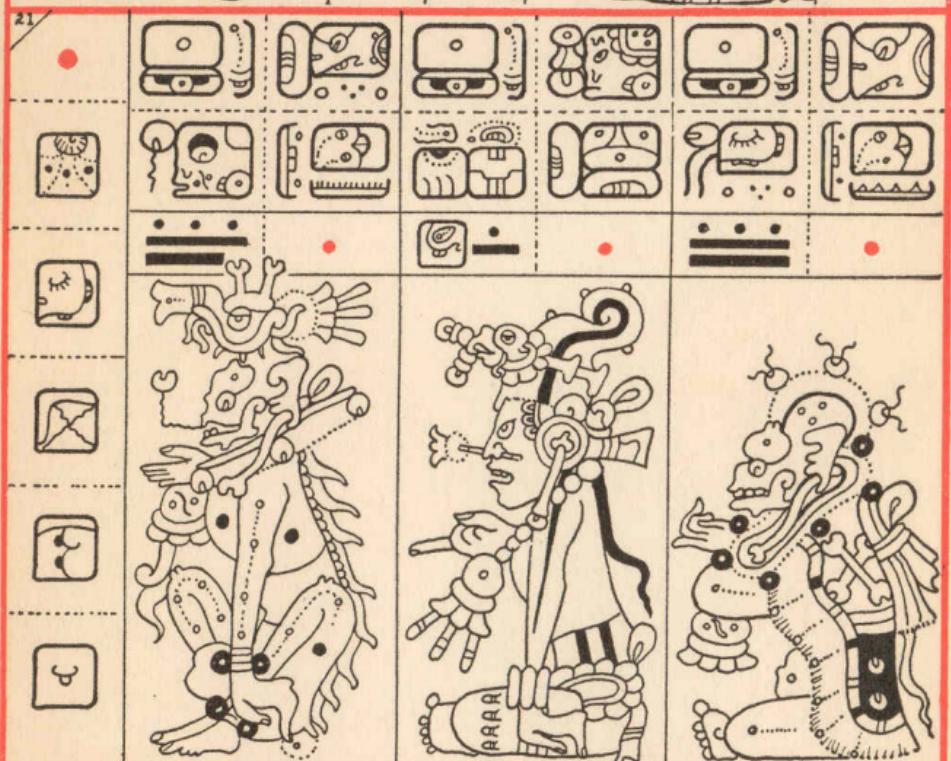
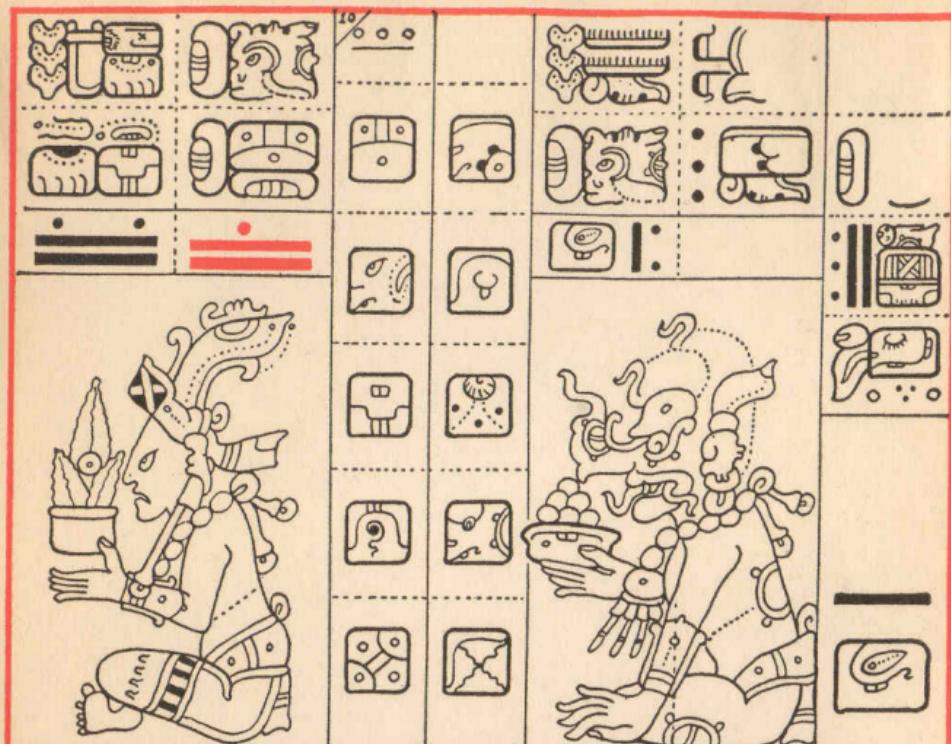


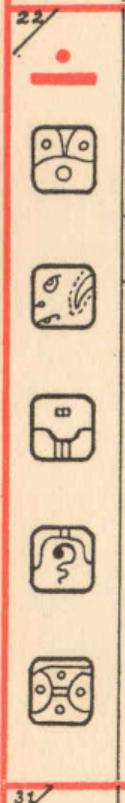
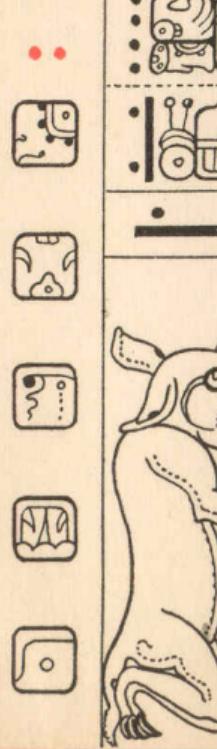
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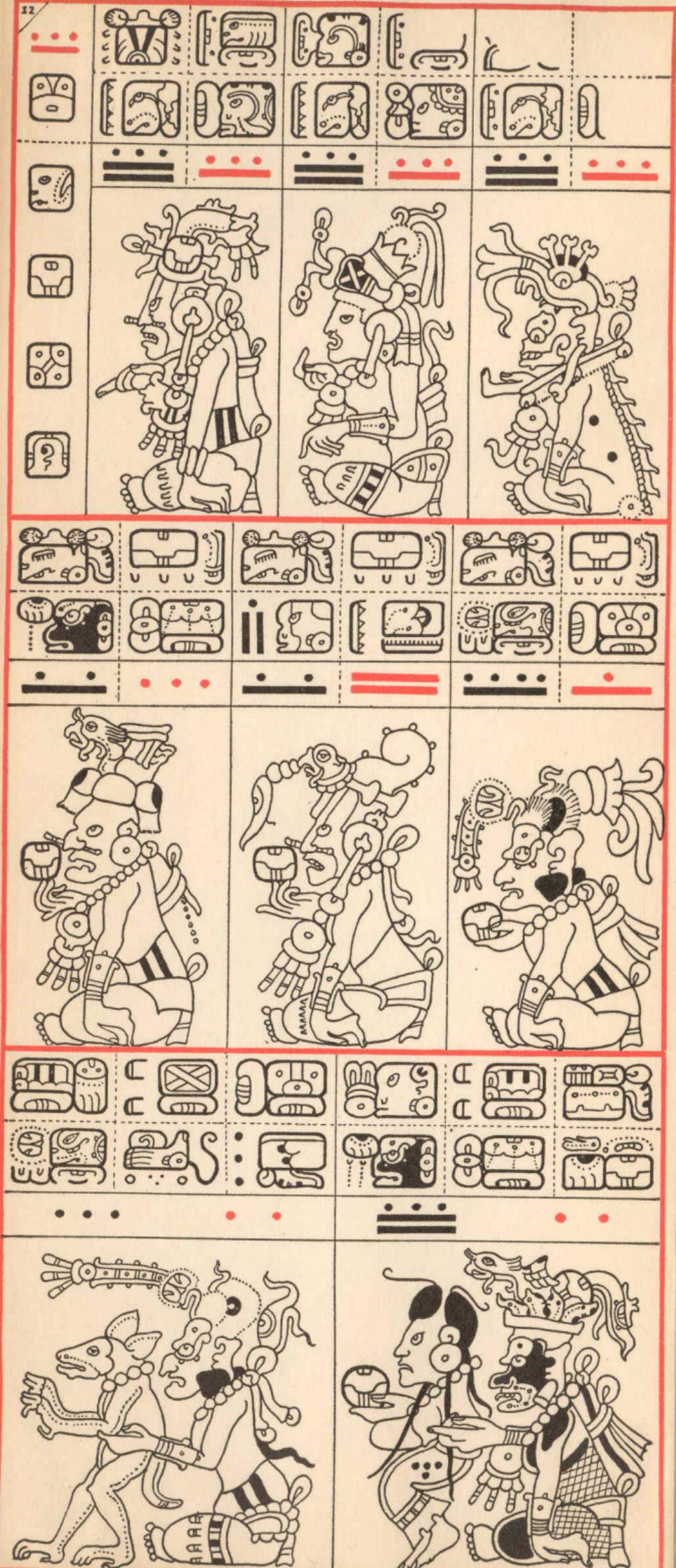




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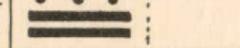
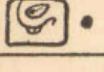
This page contains three rows of Mayan calendar inscriptions, labeled 15, 23, and 32 from top to bottom. Each row is organized into six columns, each containing a grid of symbols. The symbols are represented by black outlines on a white background. The first column of each row contains a grid of small square icons, while the subsequent five columns contain larger, more complex Mayan-style illustrations.

- Row 15:** This row has a header '15' at the top. It consists of a grid of small square icons in the first column, followed by five columns of larger Mayan-style illustrations. The illustrations feature various deities and symbolic motifs, such as a figure with a large headdress, a figure with a long nose, and a figure with multiple heads.
- Row 23:** This row has a header '23' at the top. It follows the same structure as Row 15, with a grid of small square icons in the first column and five columns of larger Mayan-style illustrations. These illustrations depict figures in dynamic poses, often with large heads and decorative elements.
- Row 32:** This row has a header '32' at the top. It follows the same structure, with a grid of small square icons in the first column and five columns of larger Mayan-style illustrations. The illustrations show figures in various poses, some holding objects like rattle-like instruments.

33

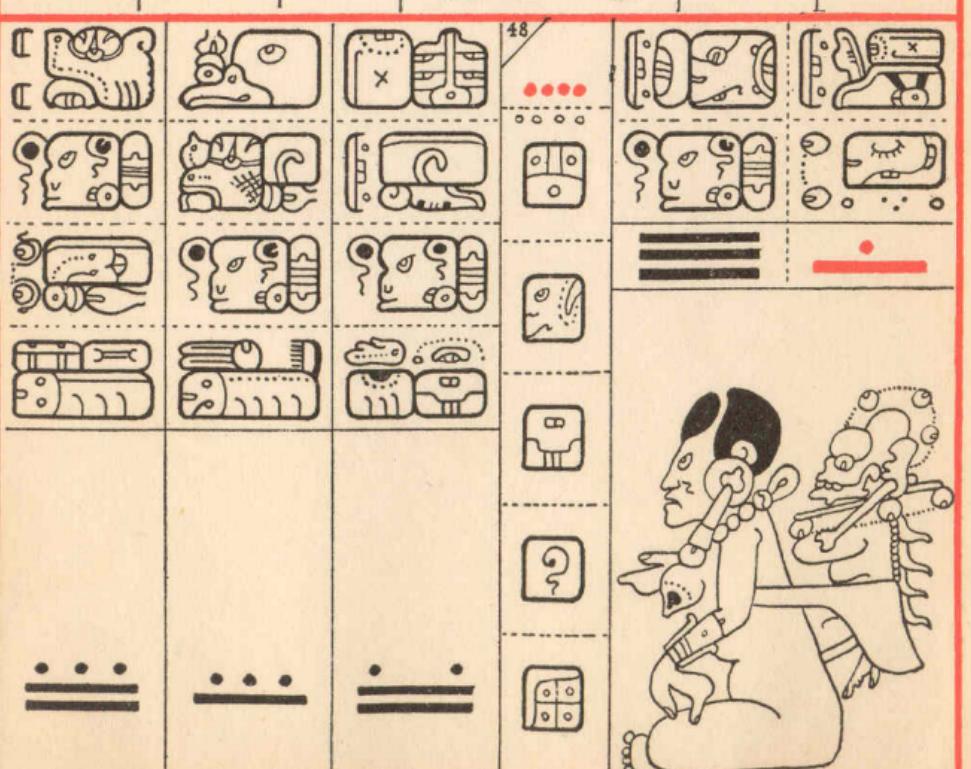
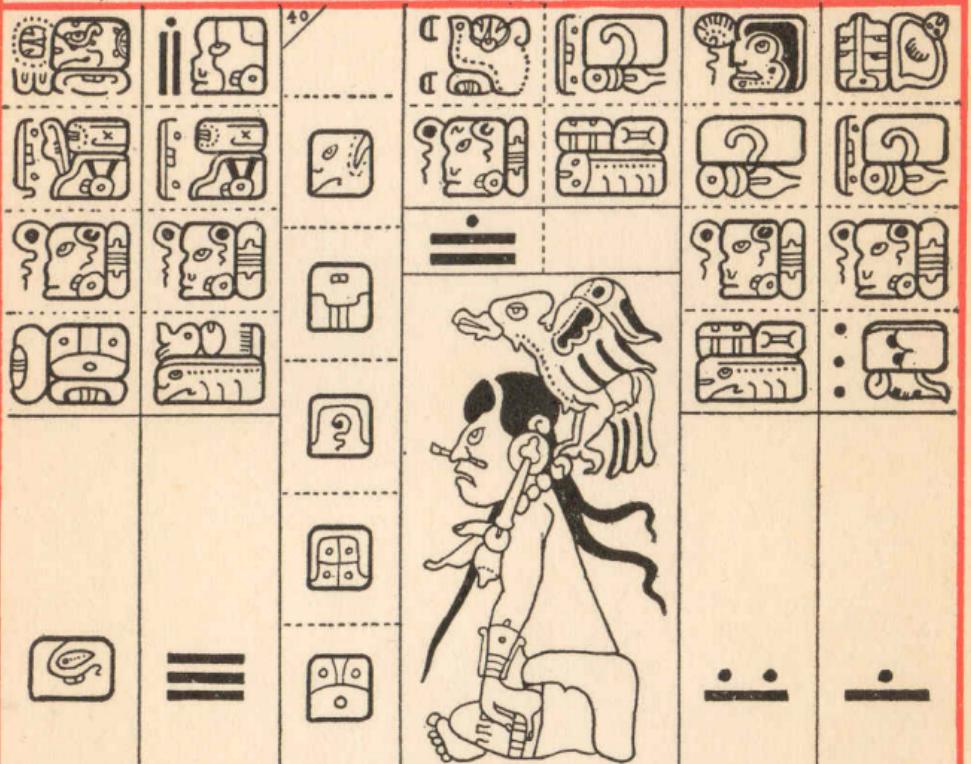
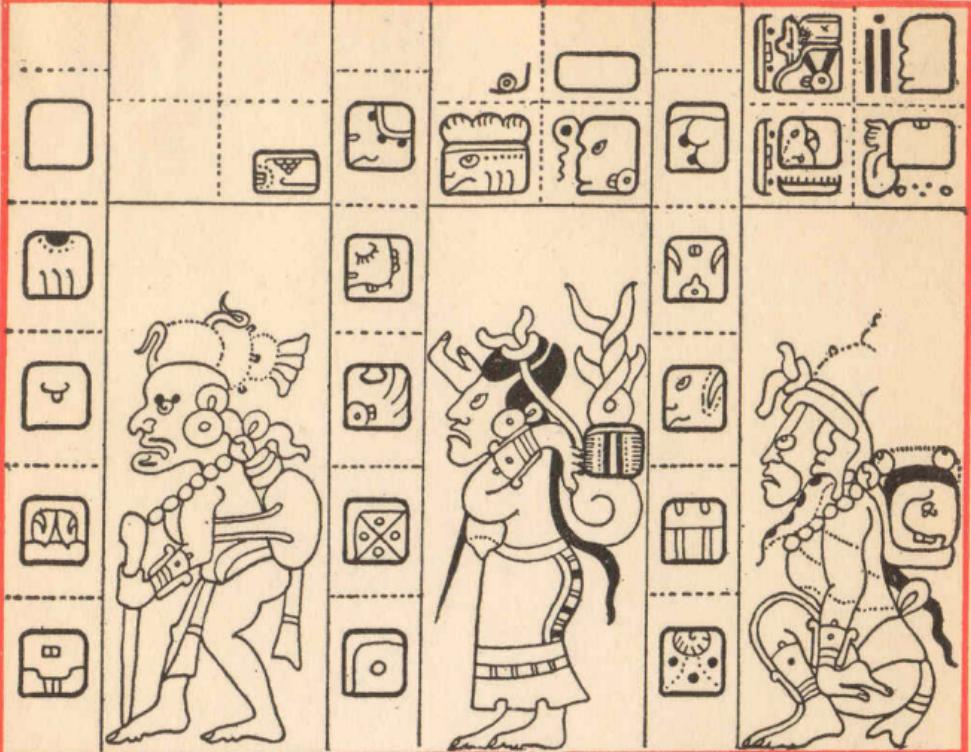


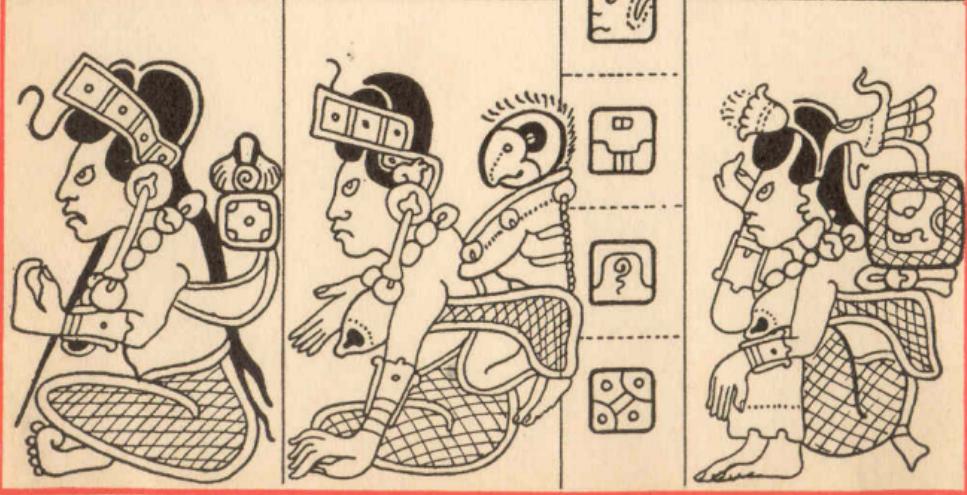
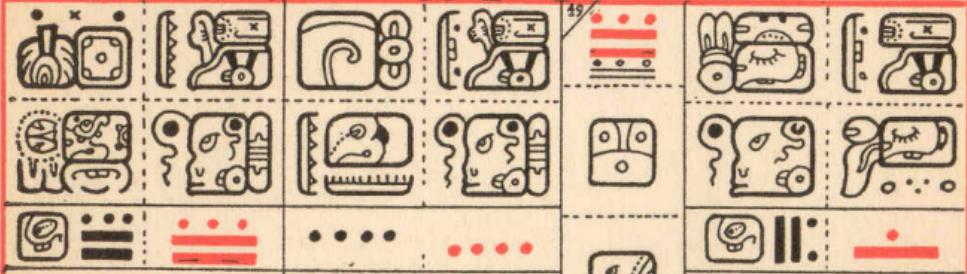
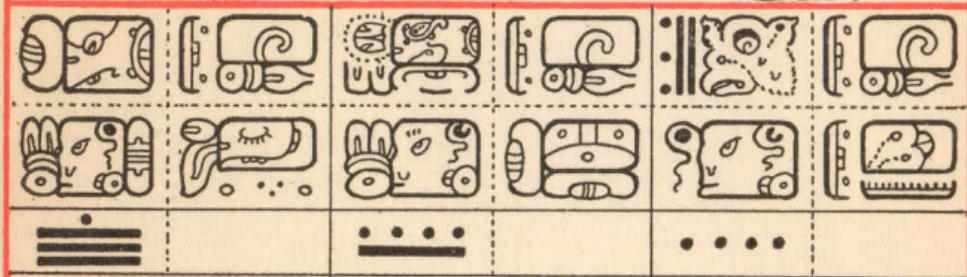
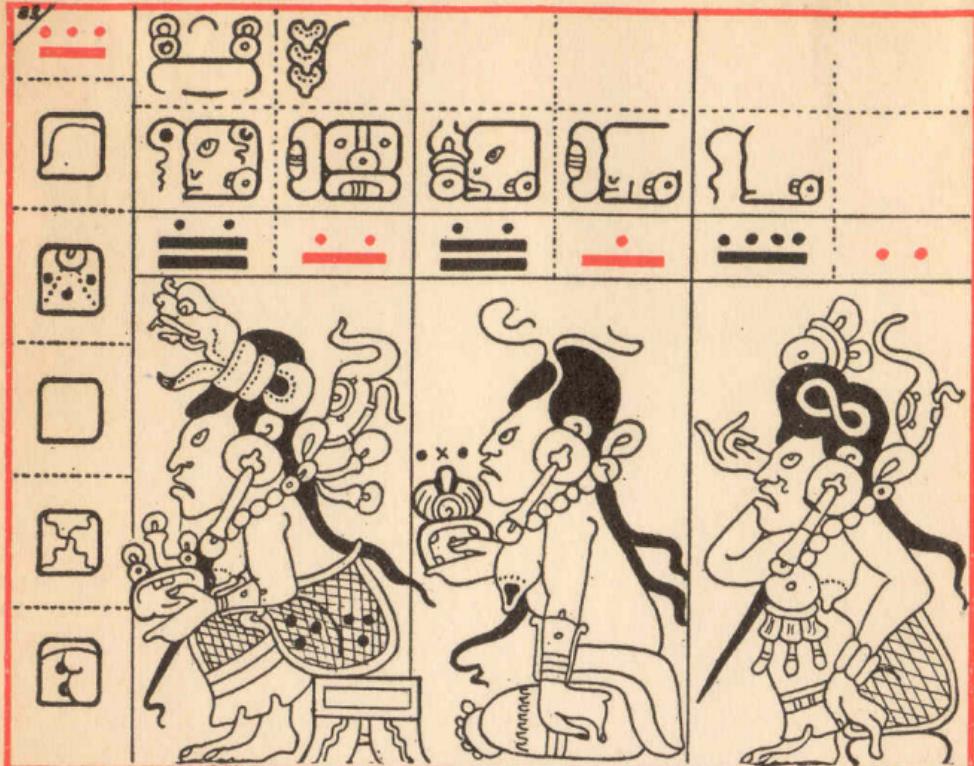
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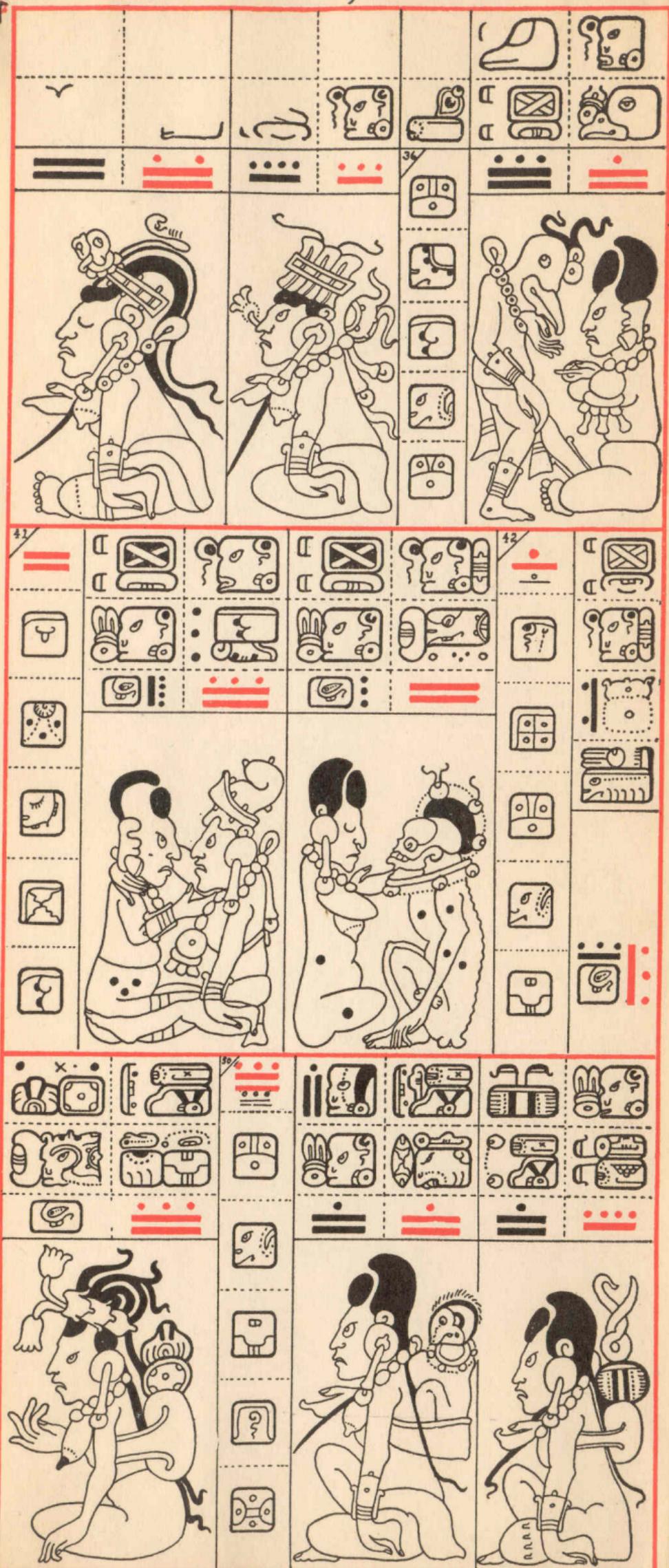


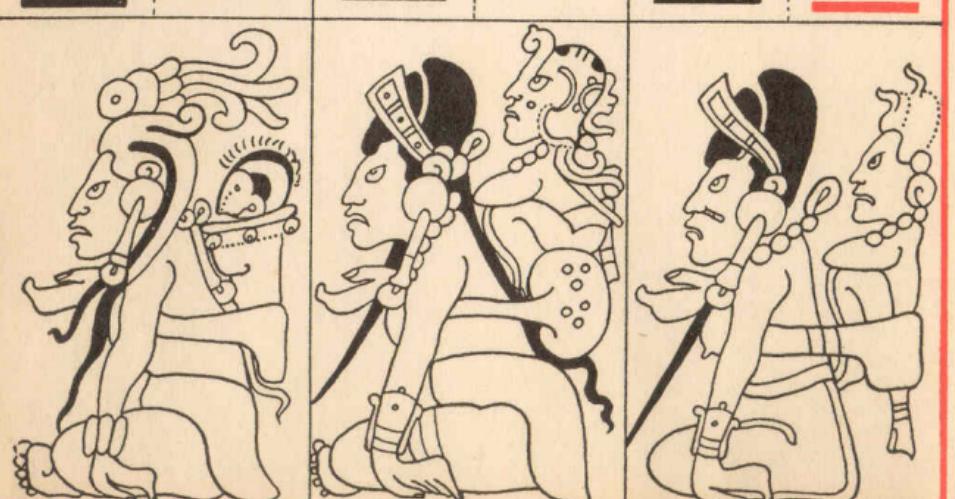
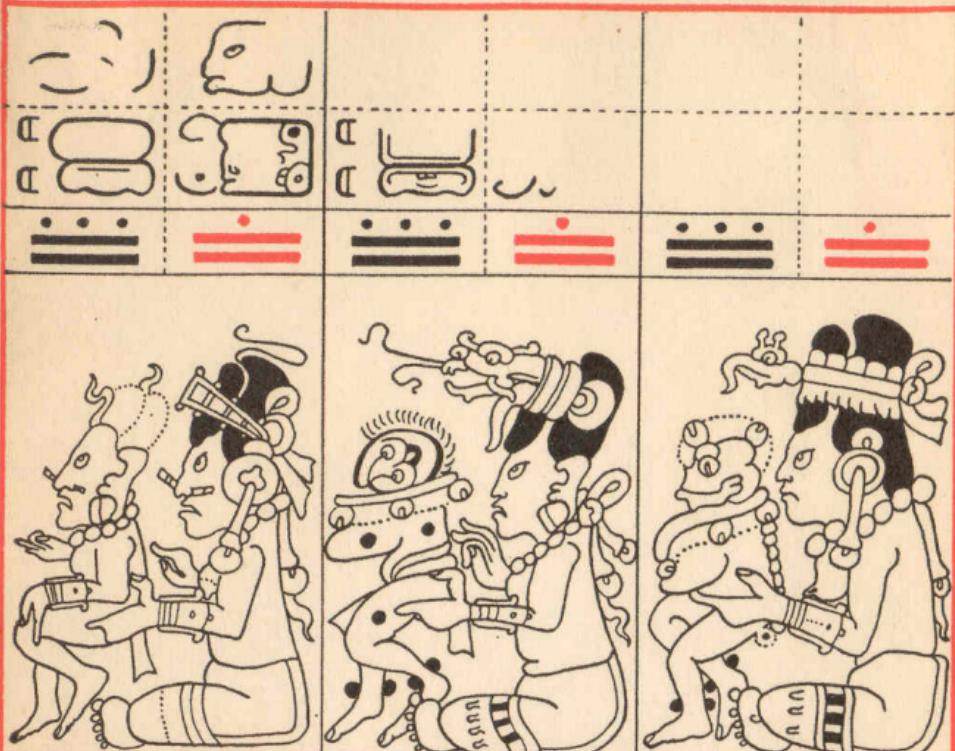
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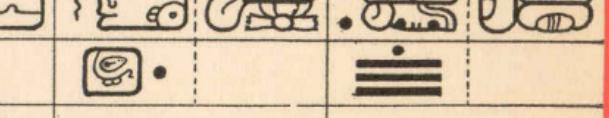
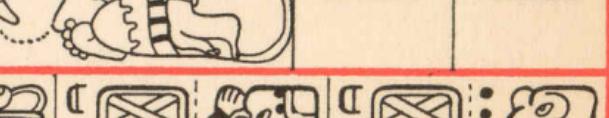
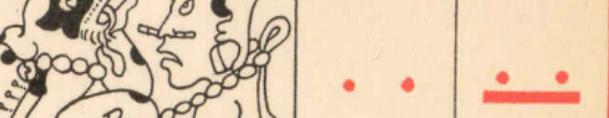
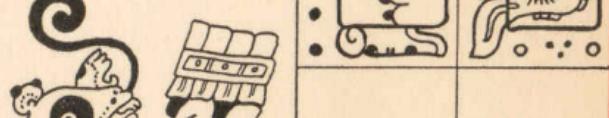
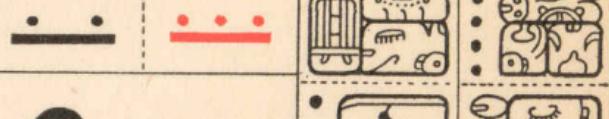


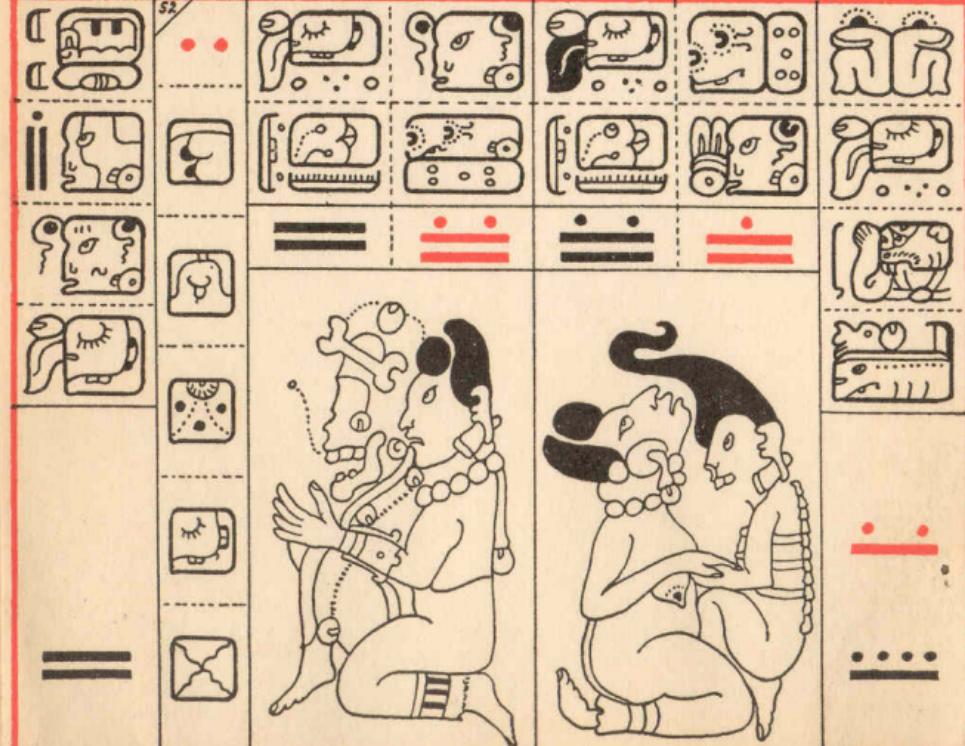
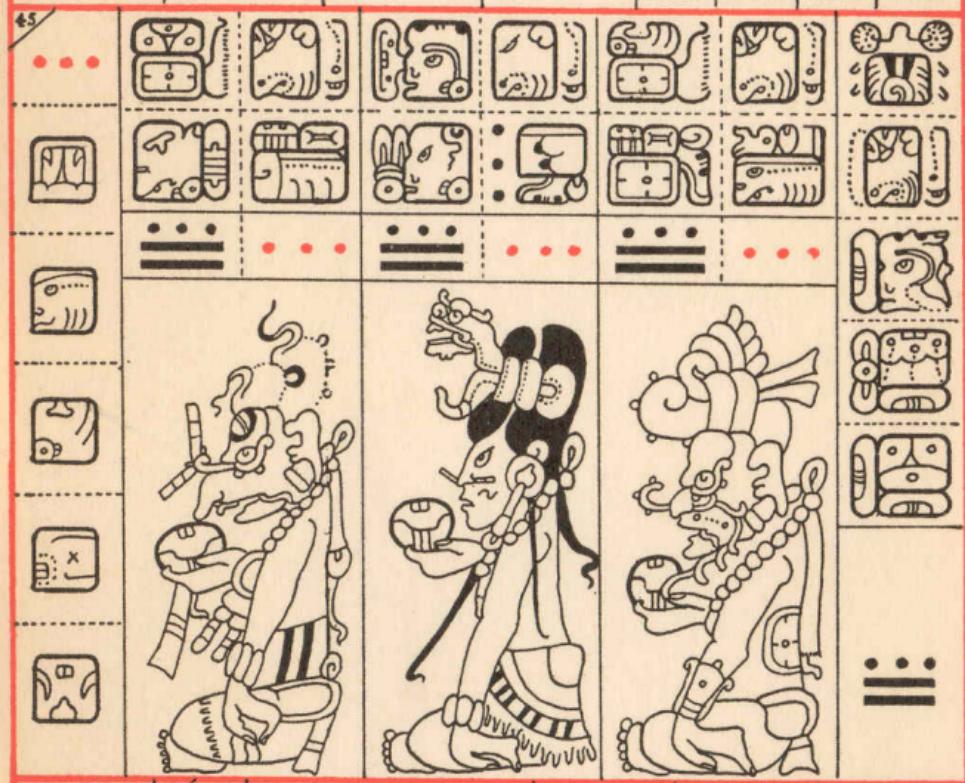
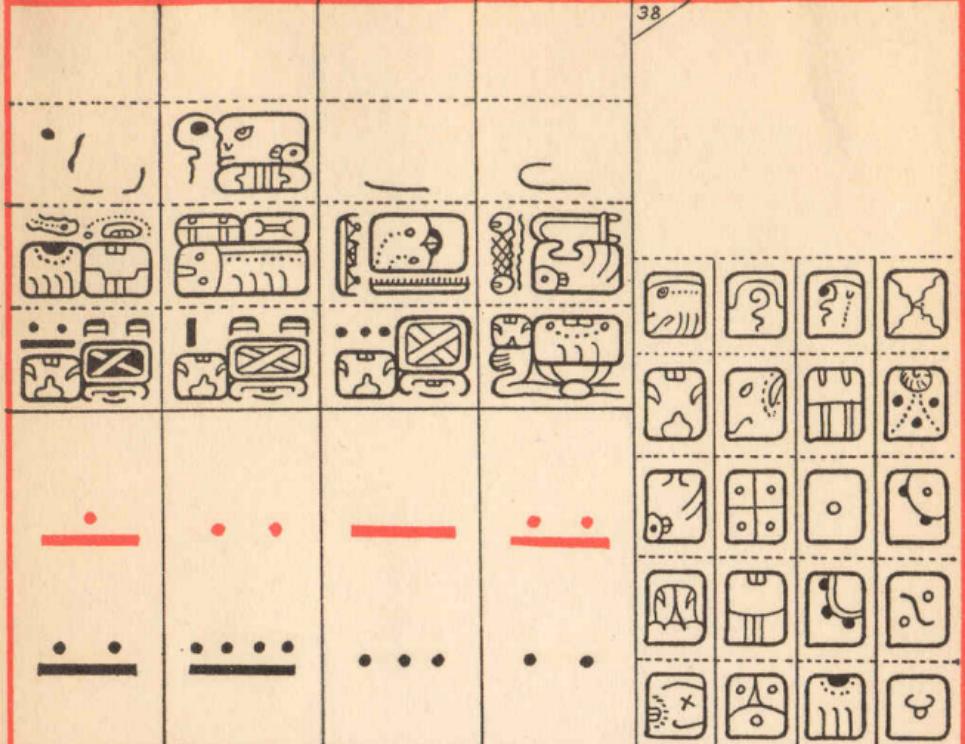












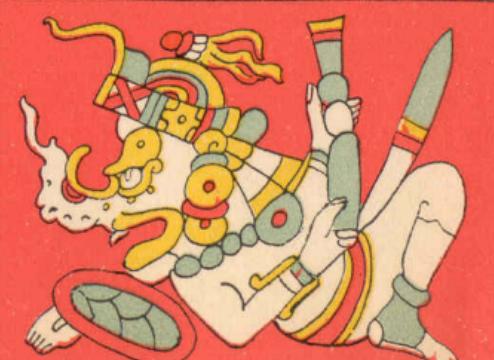
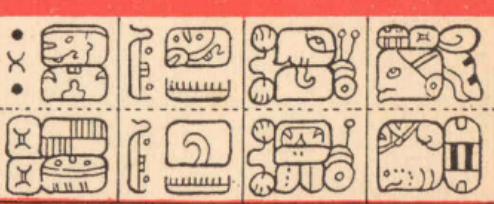
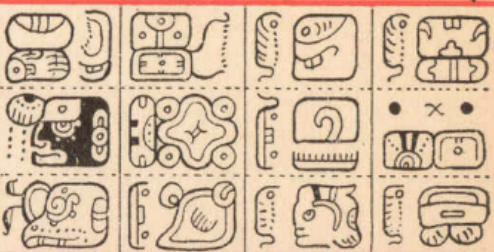
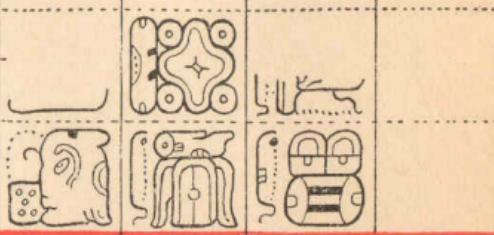
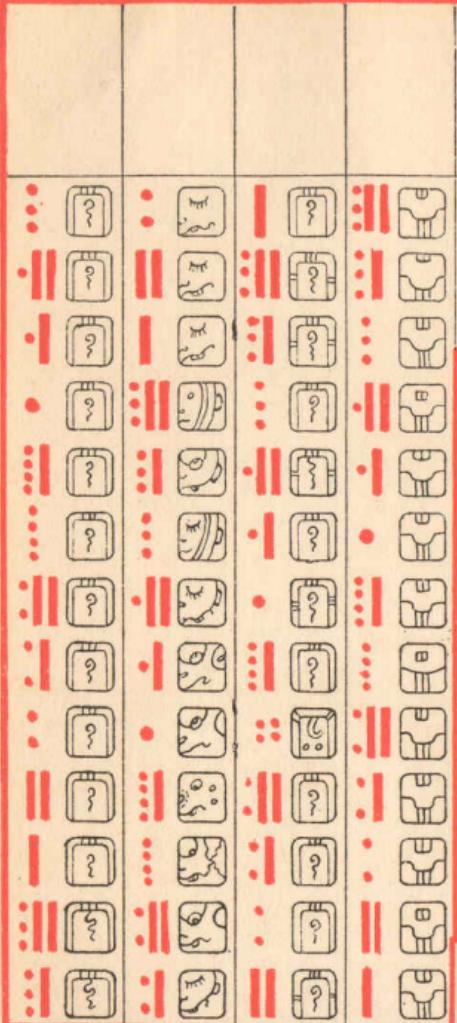
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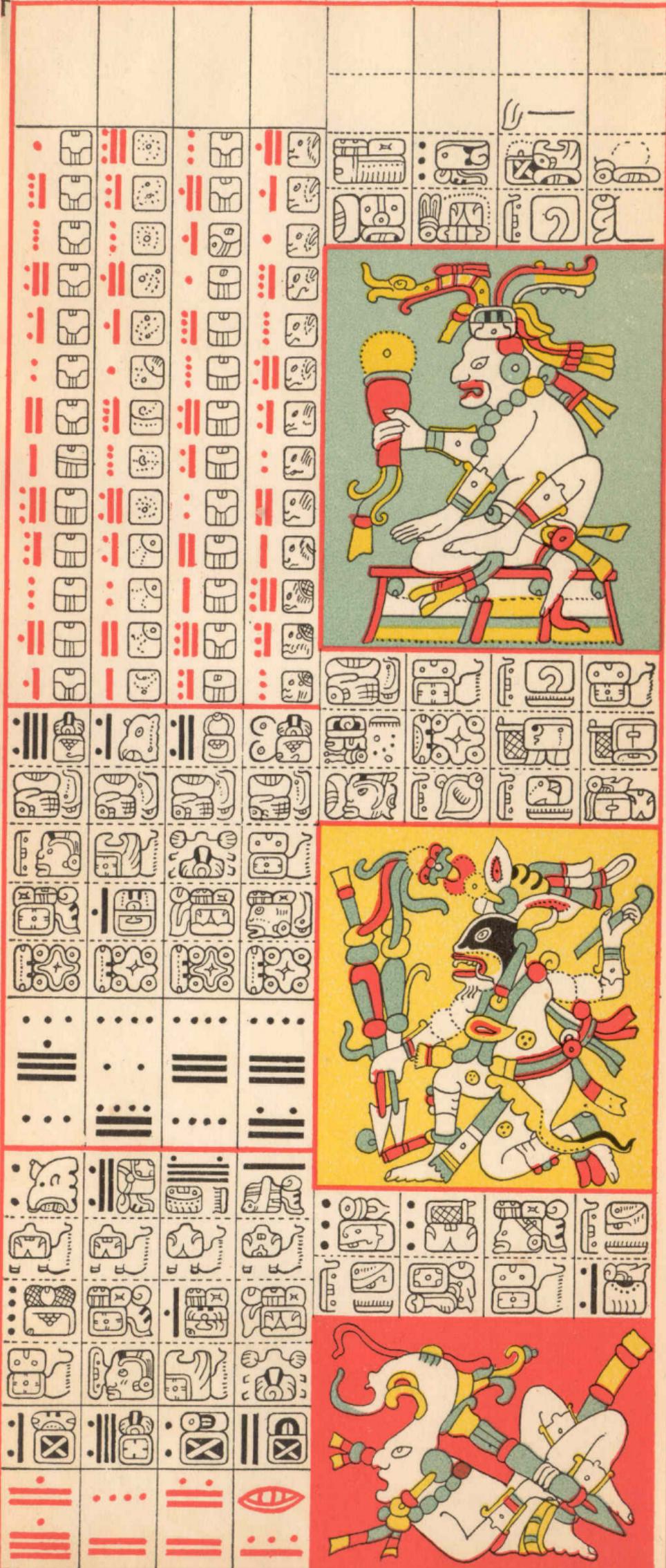
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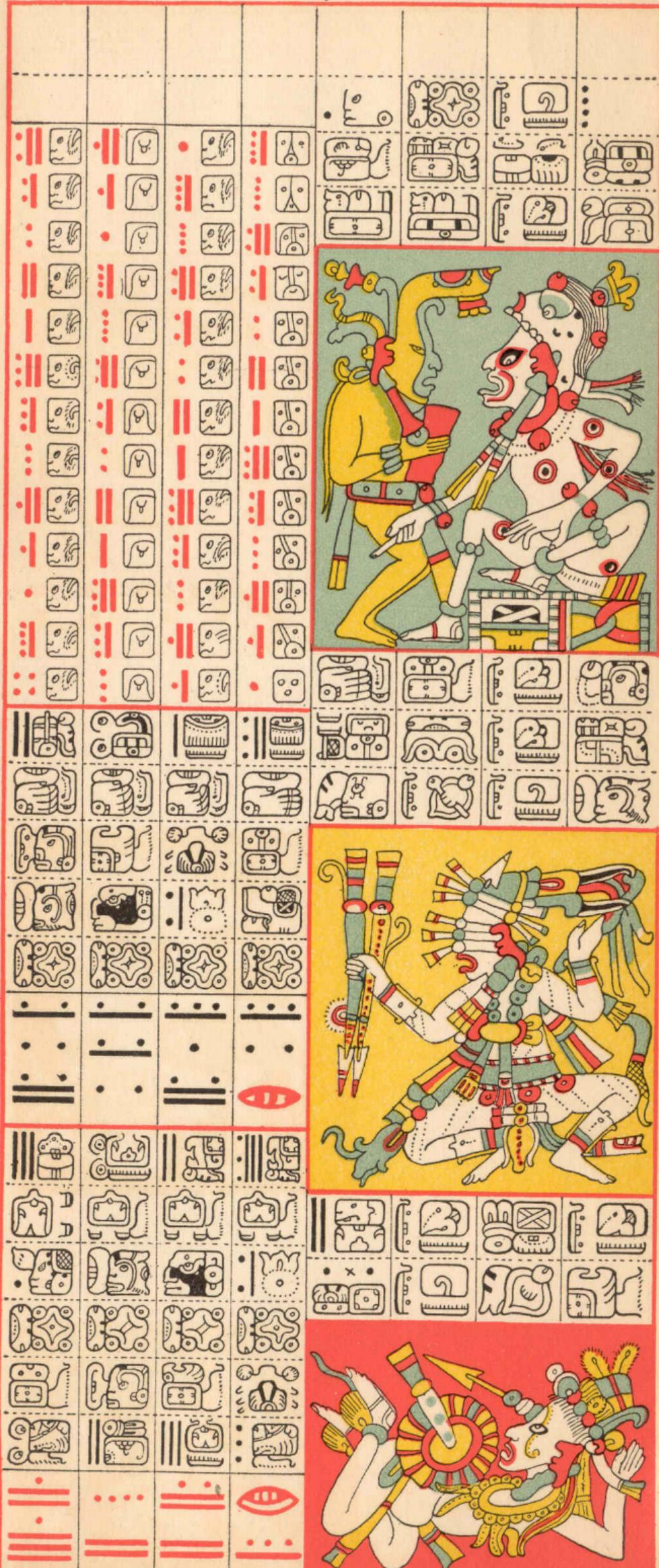
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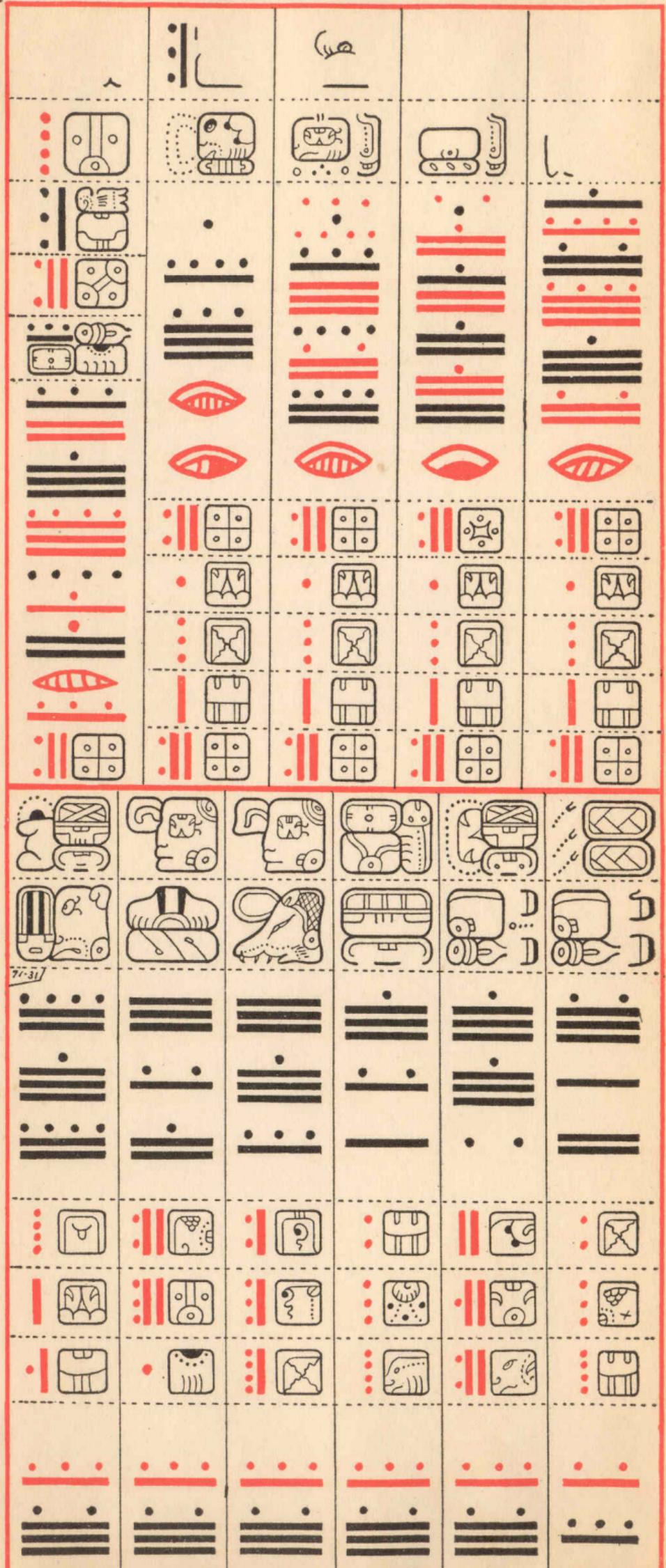
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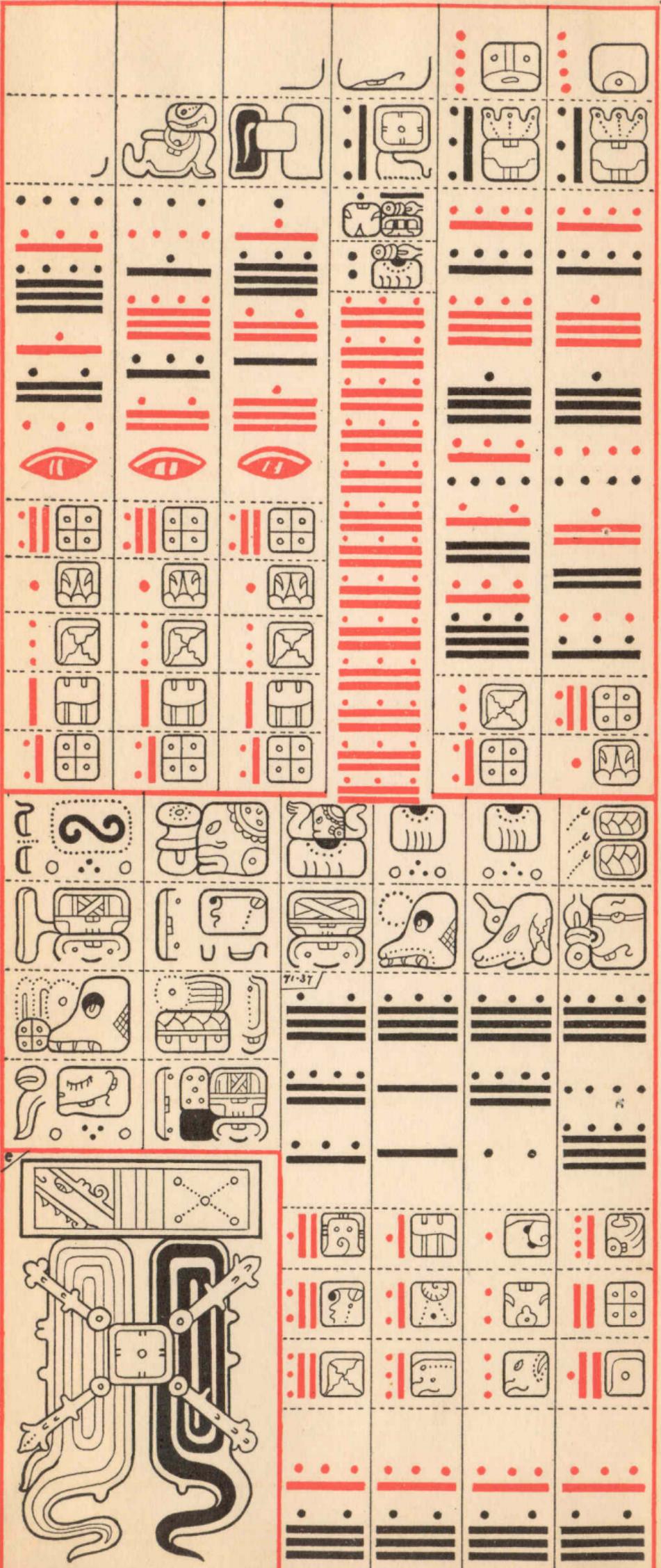
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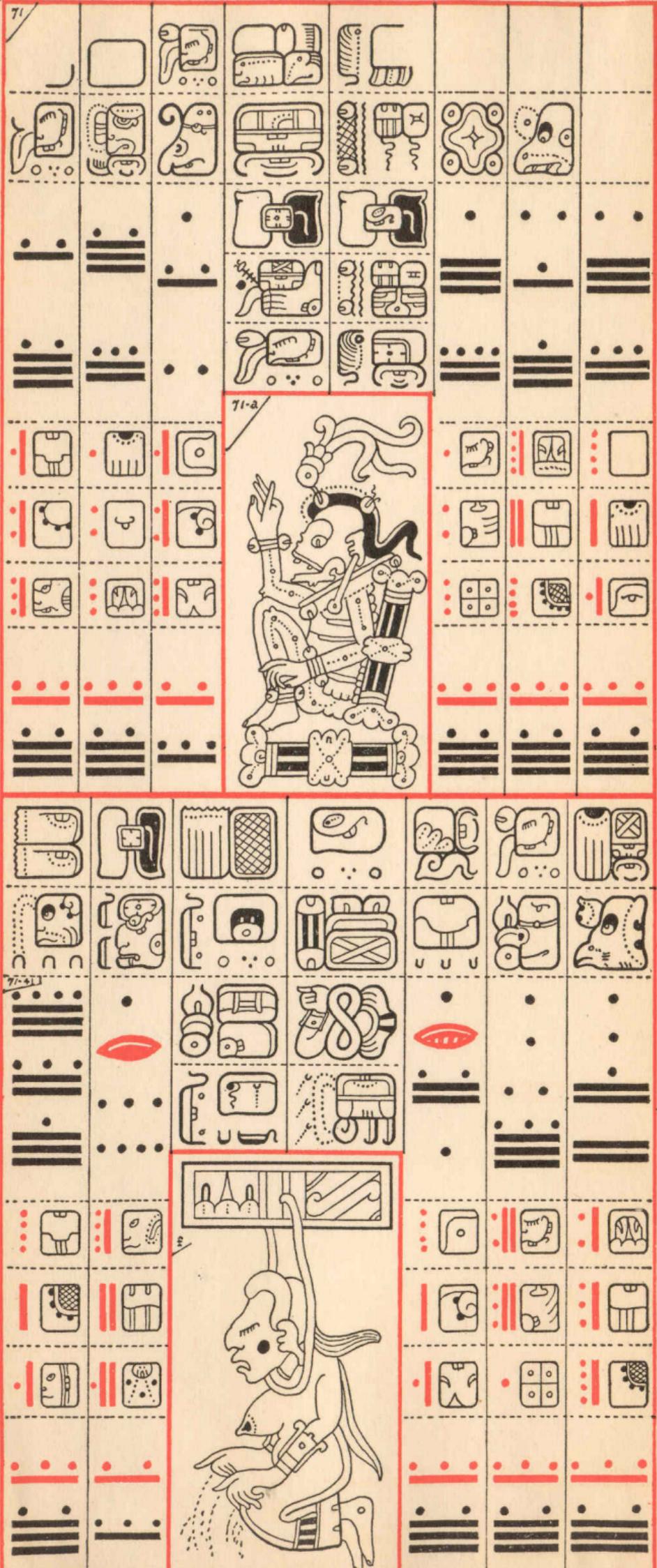




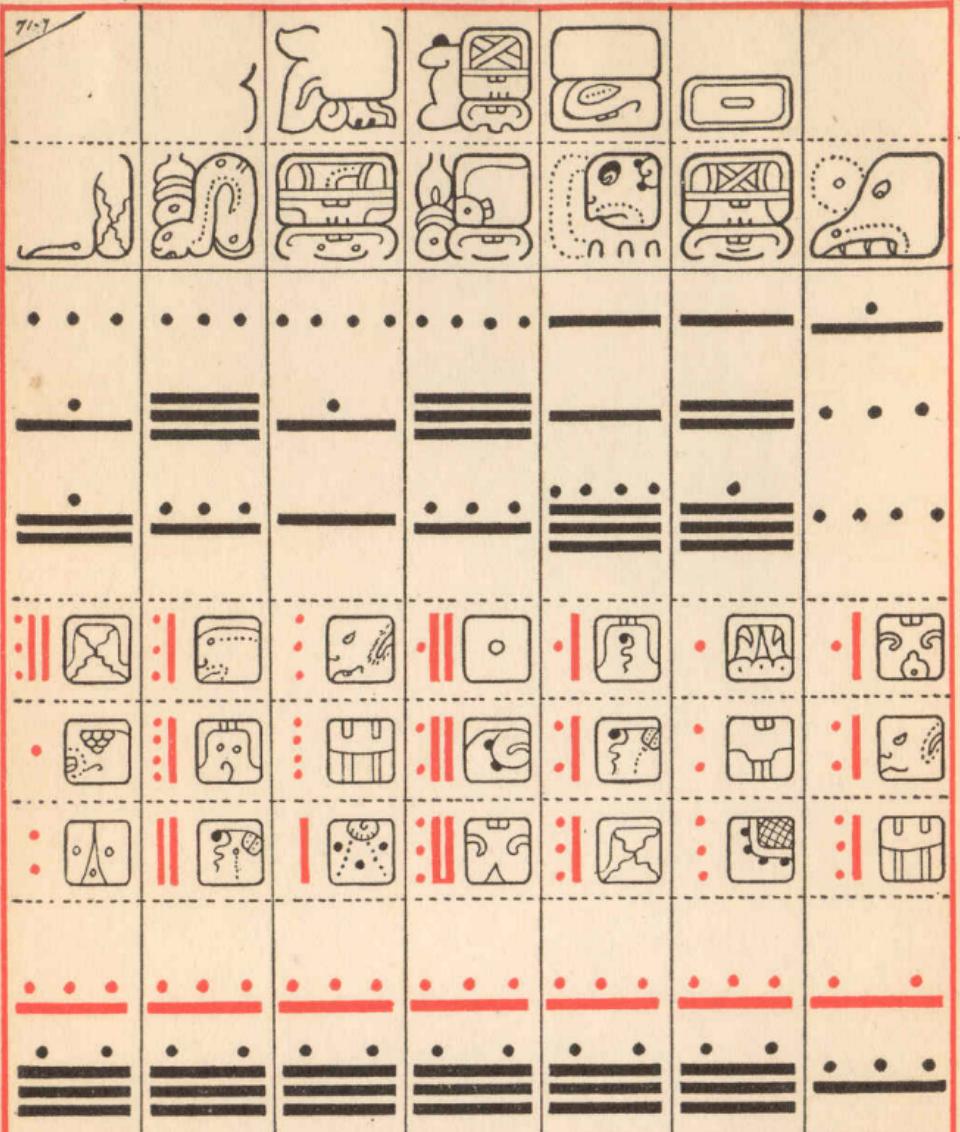




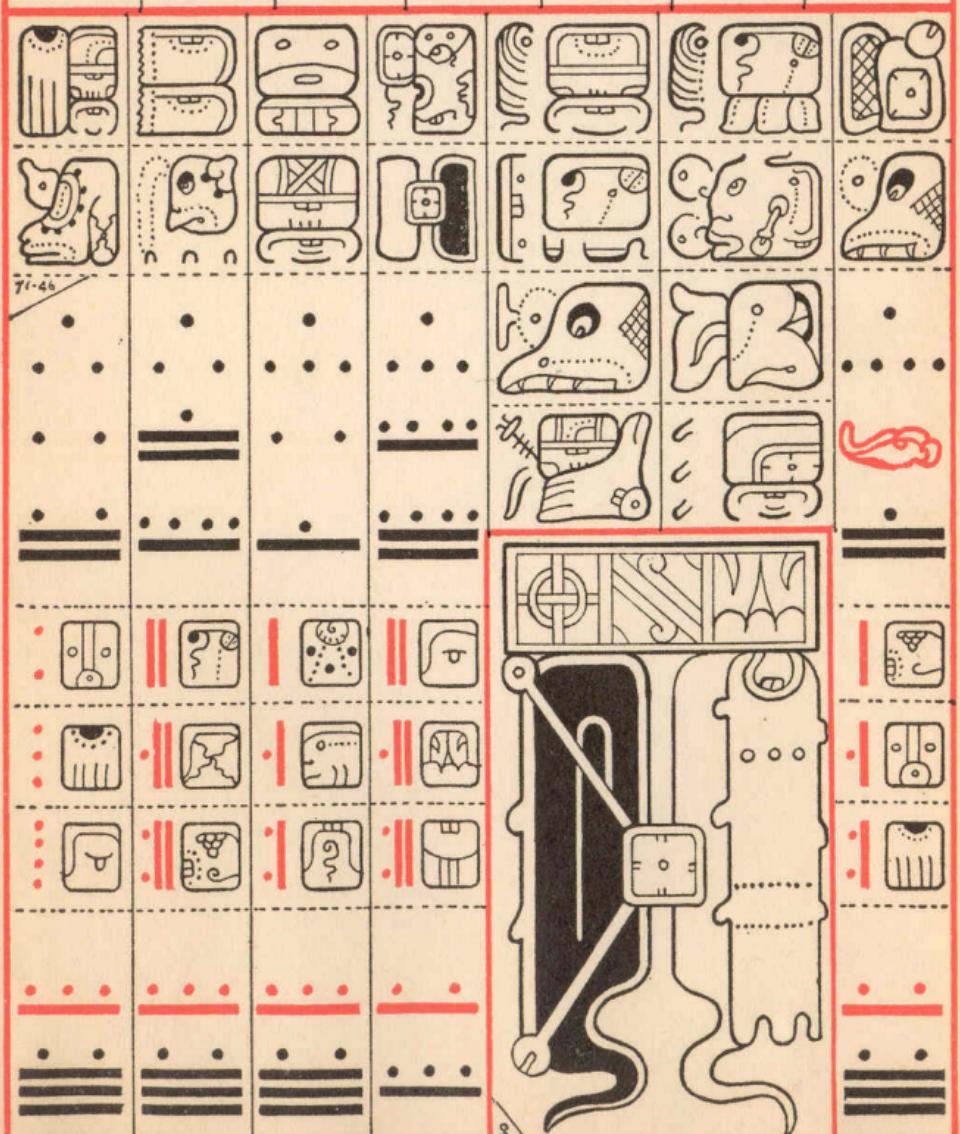


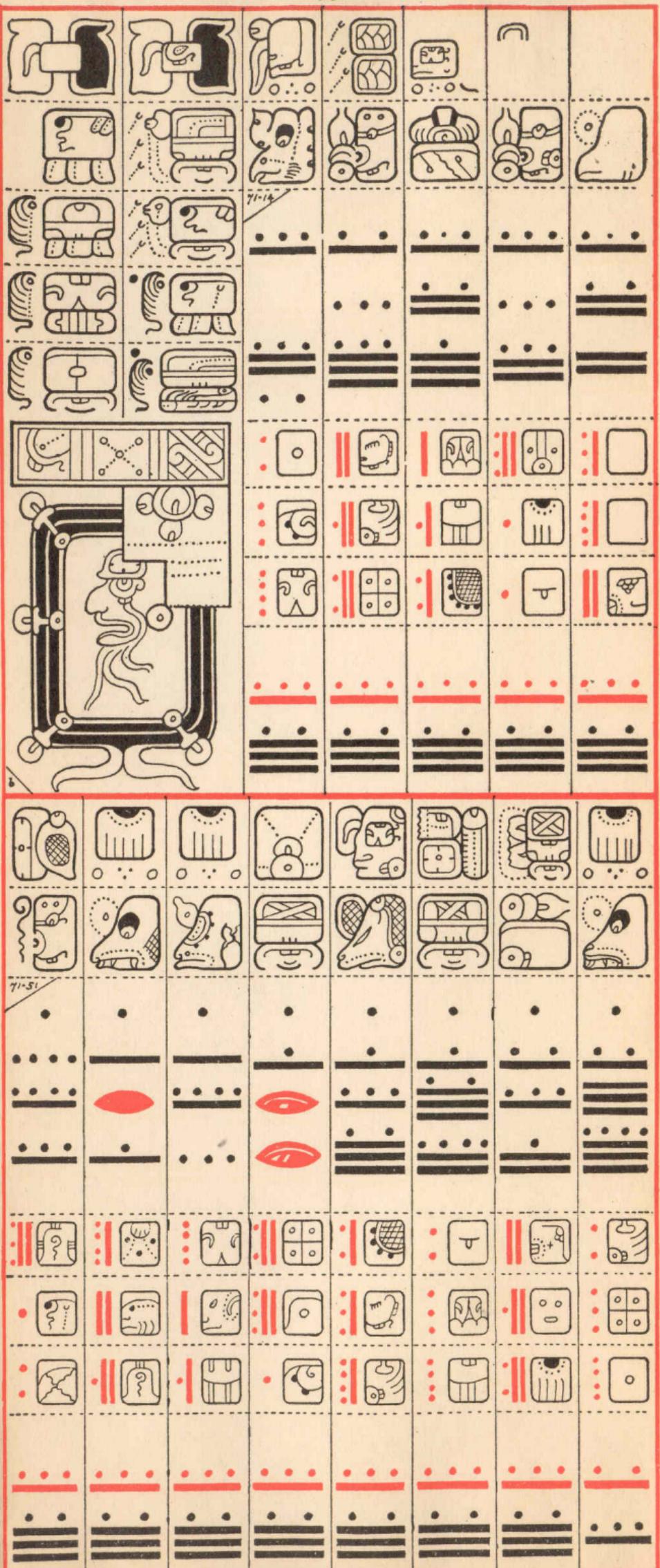


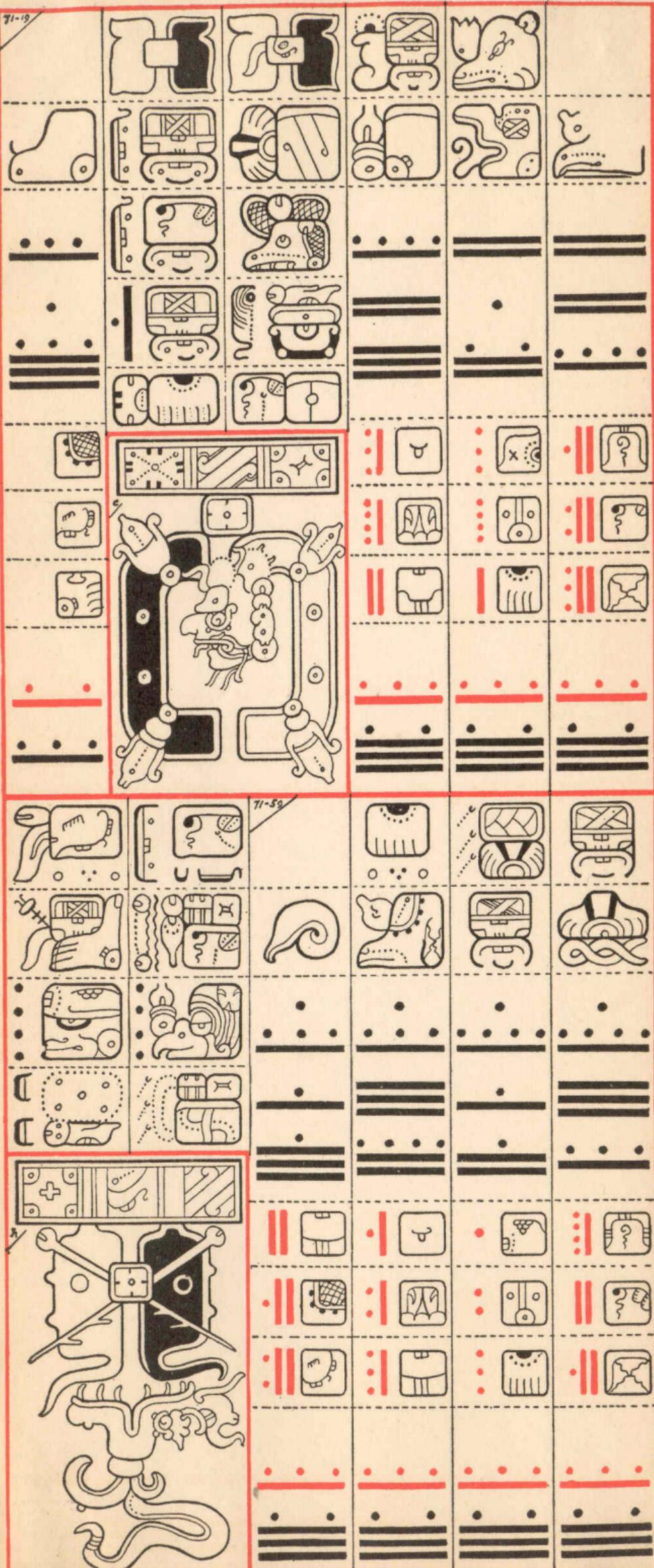
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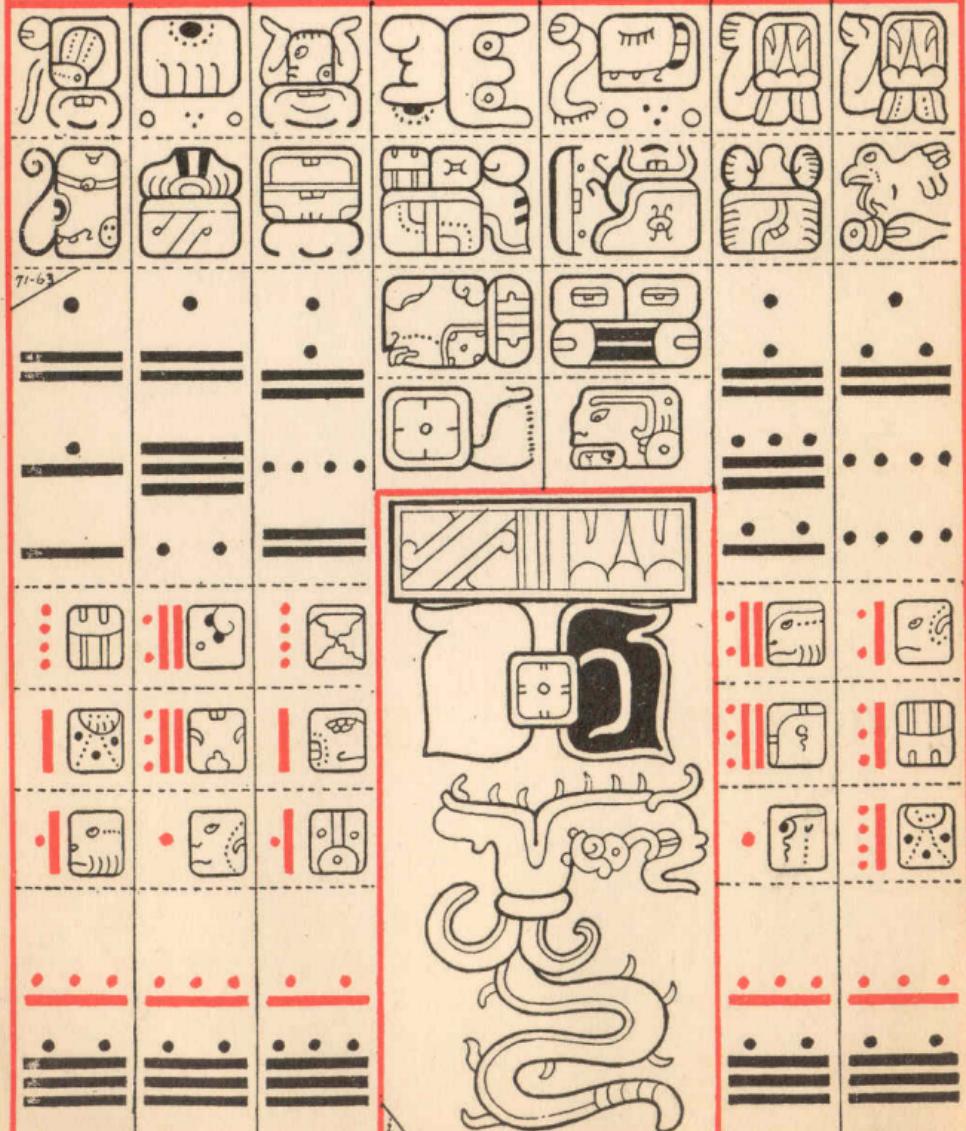
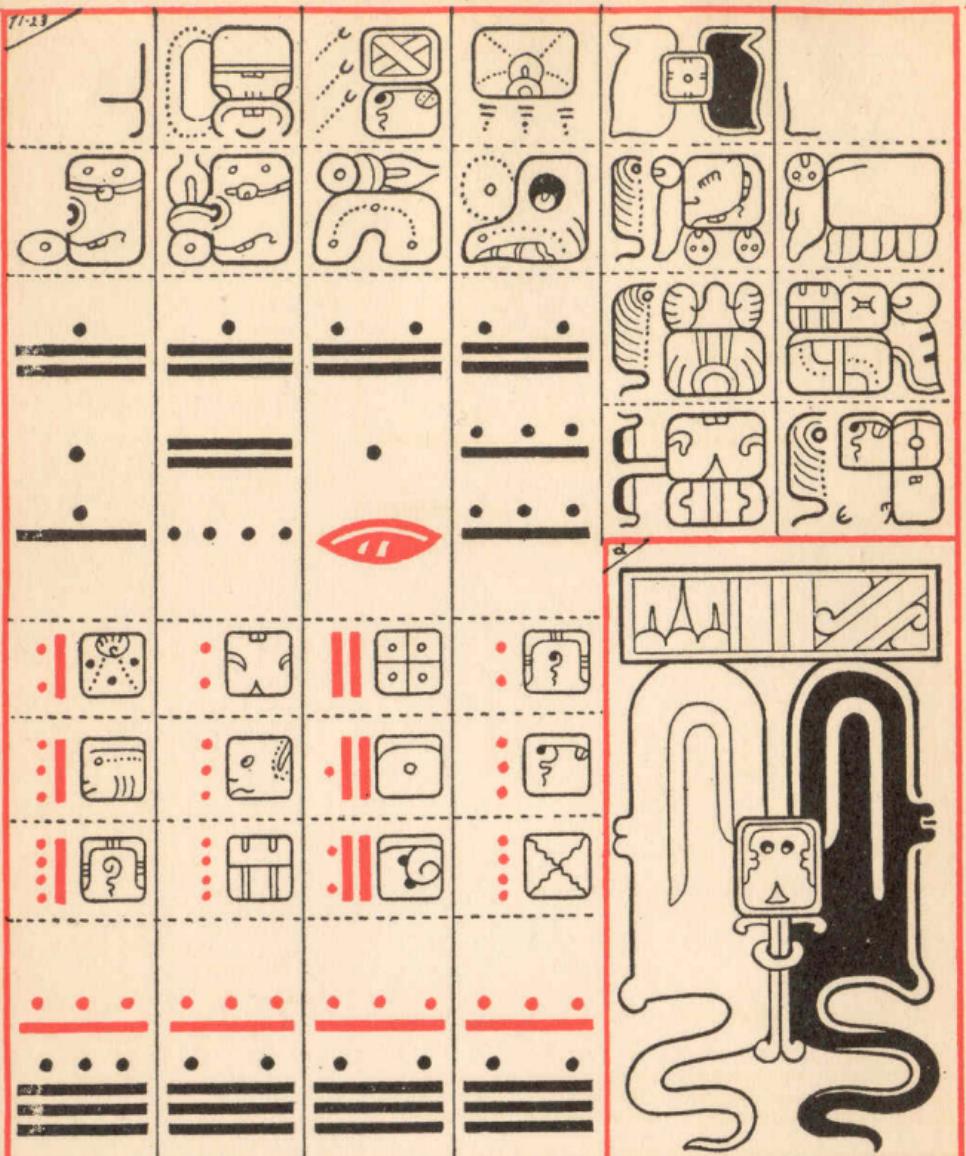


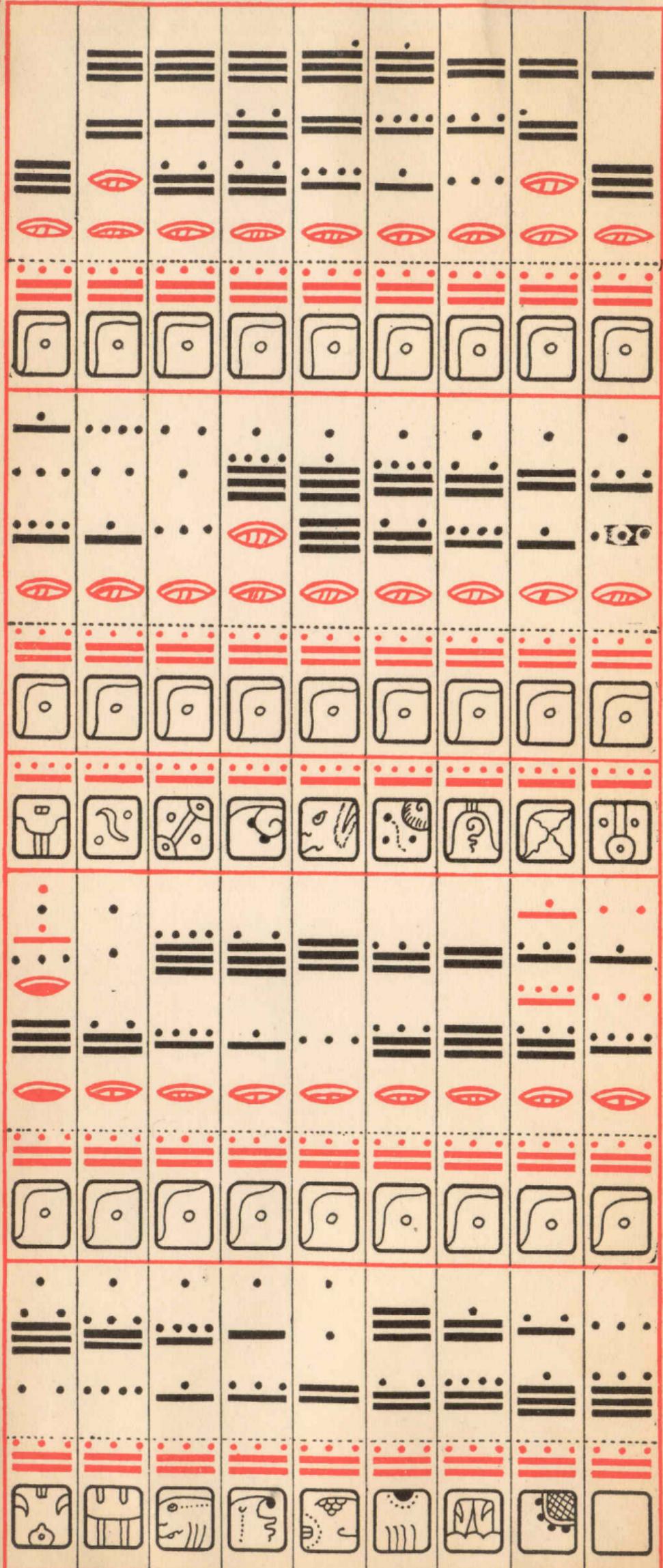
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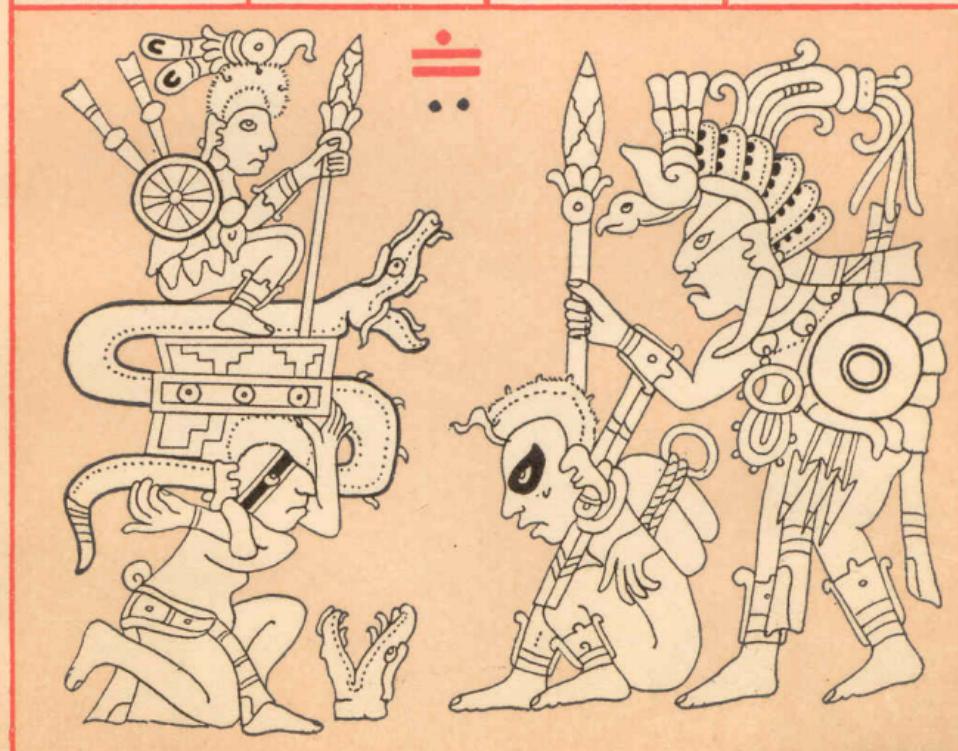
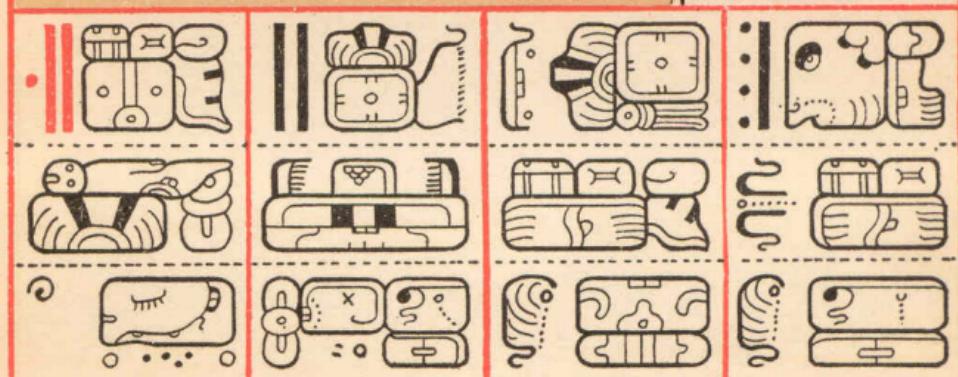
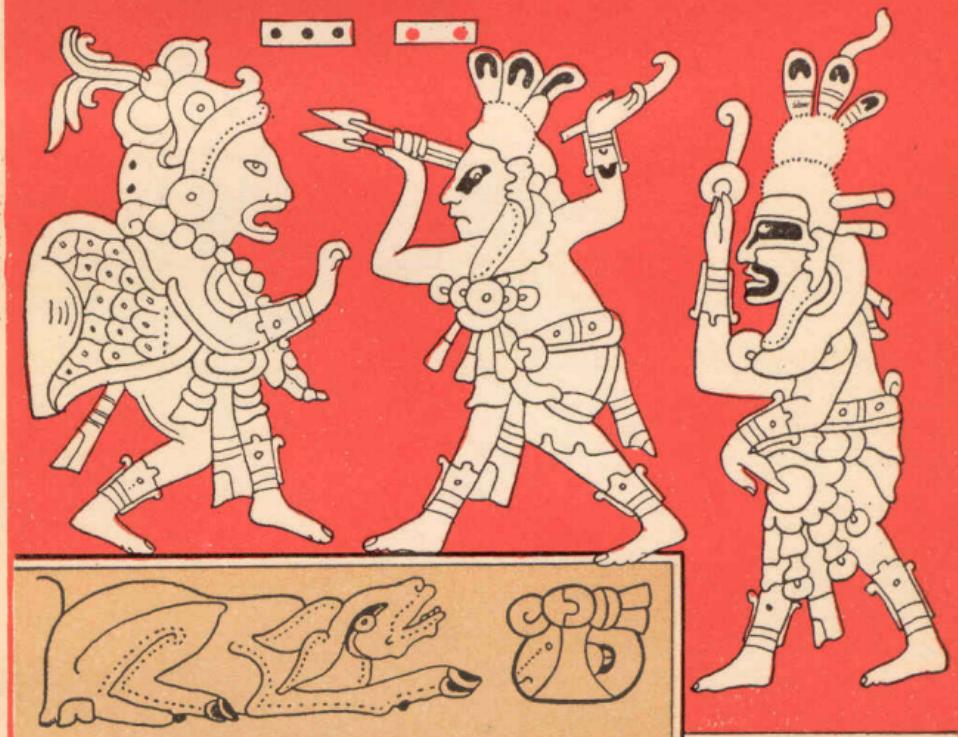
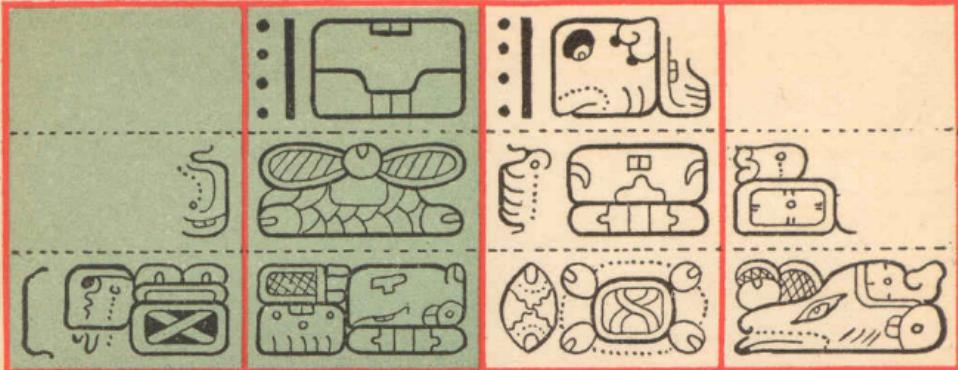


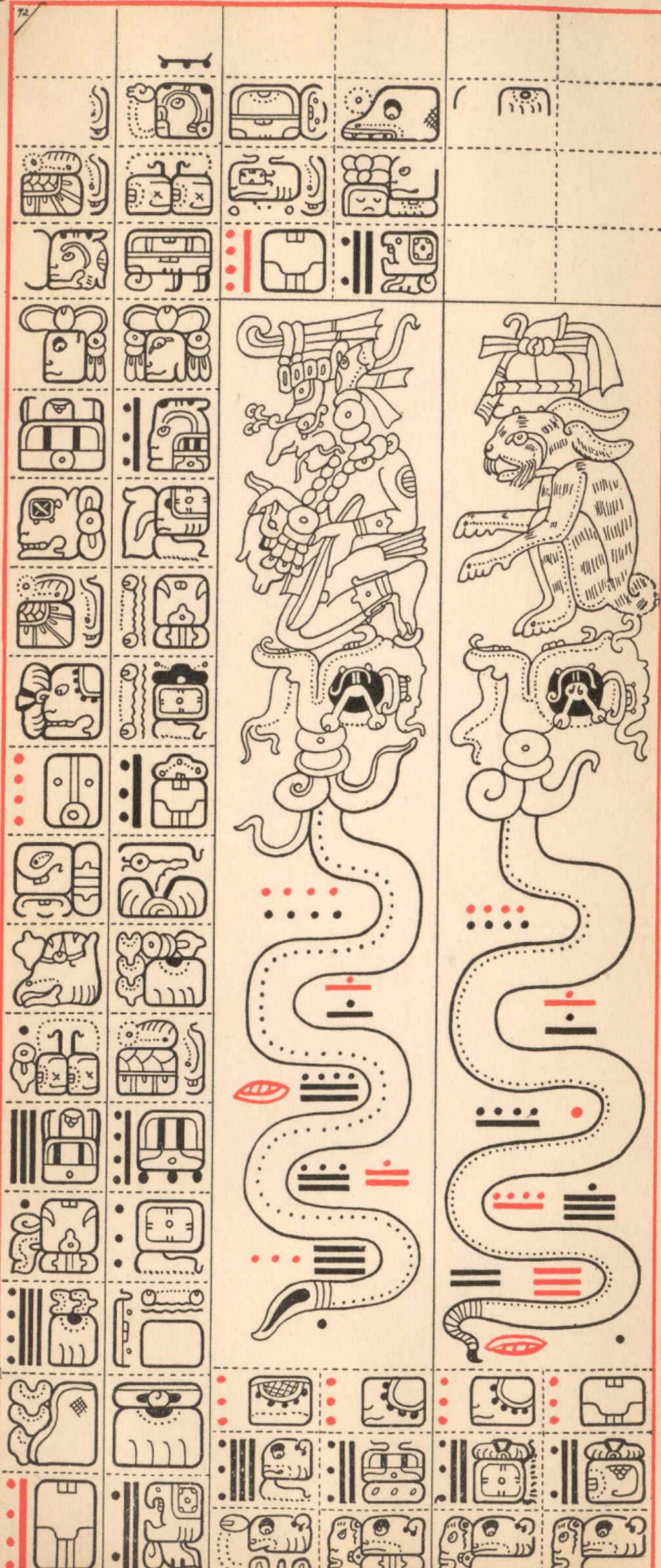


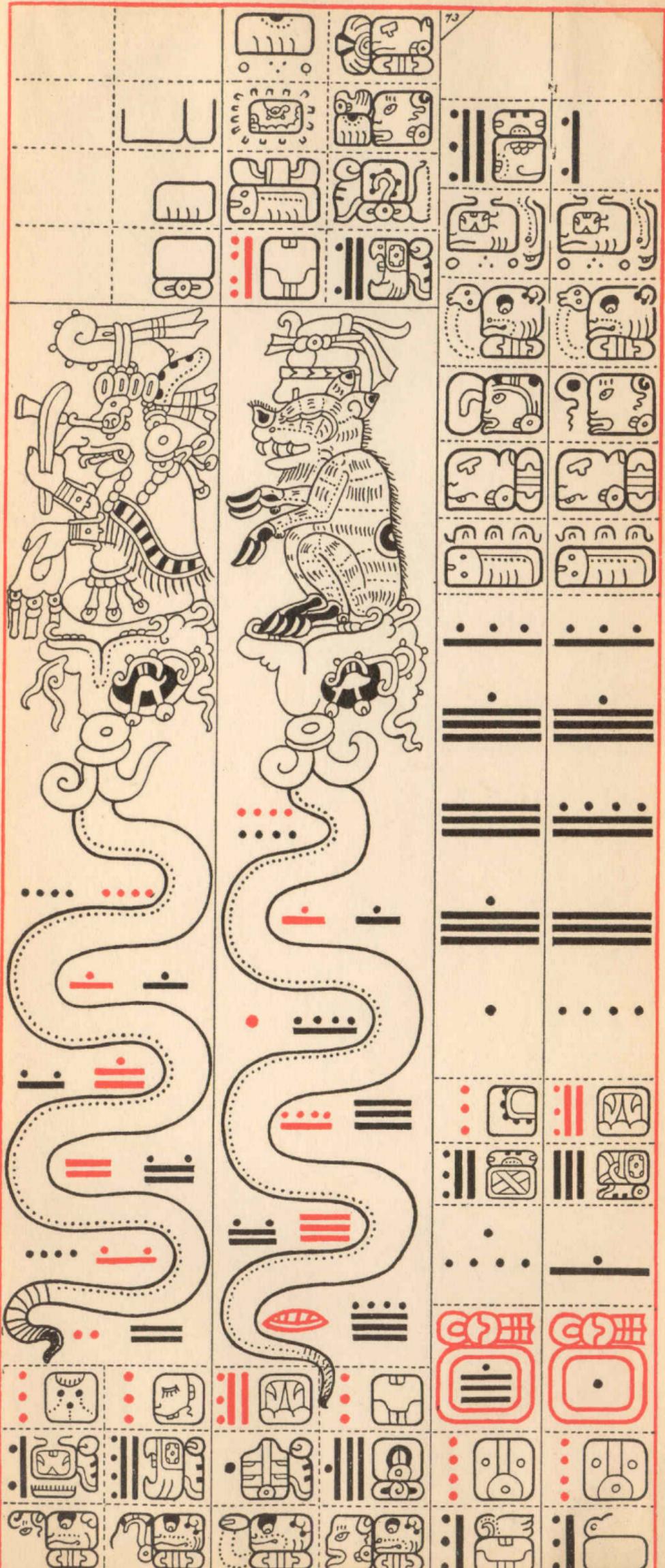


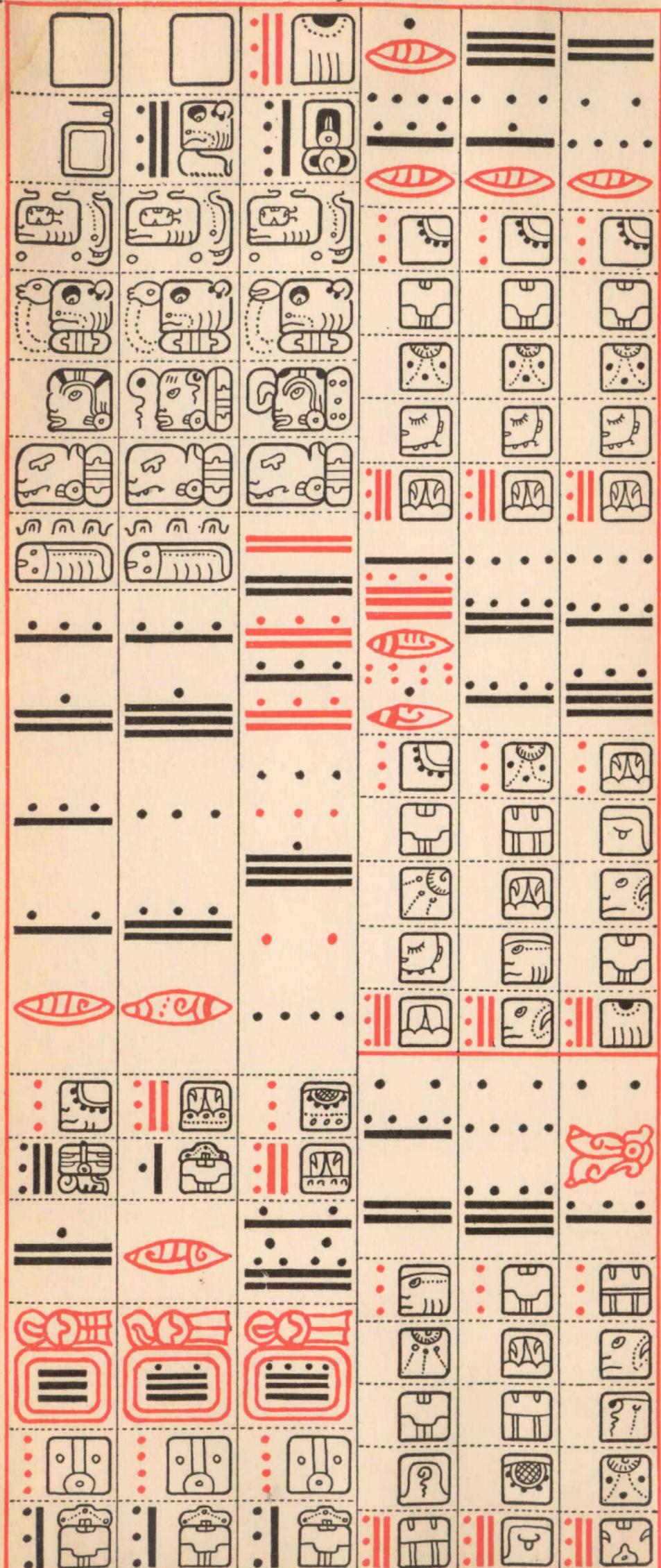


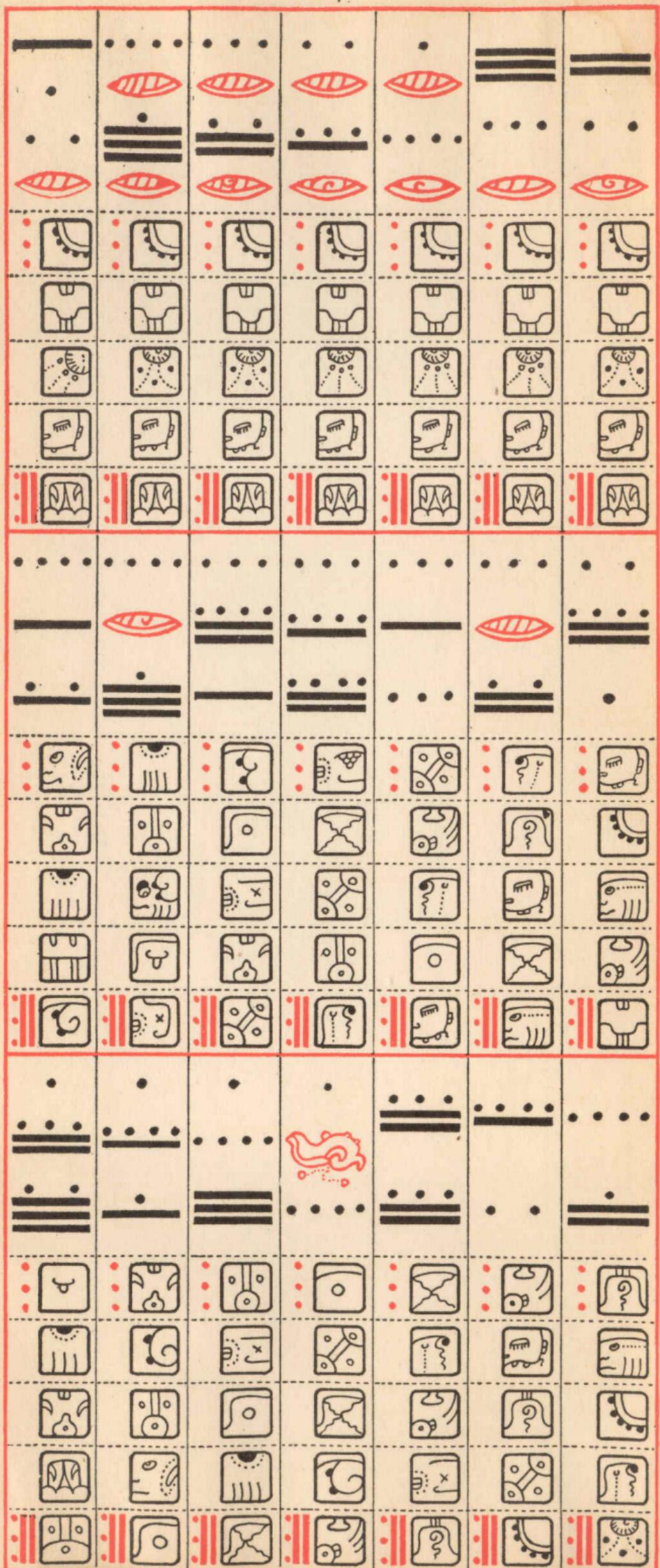


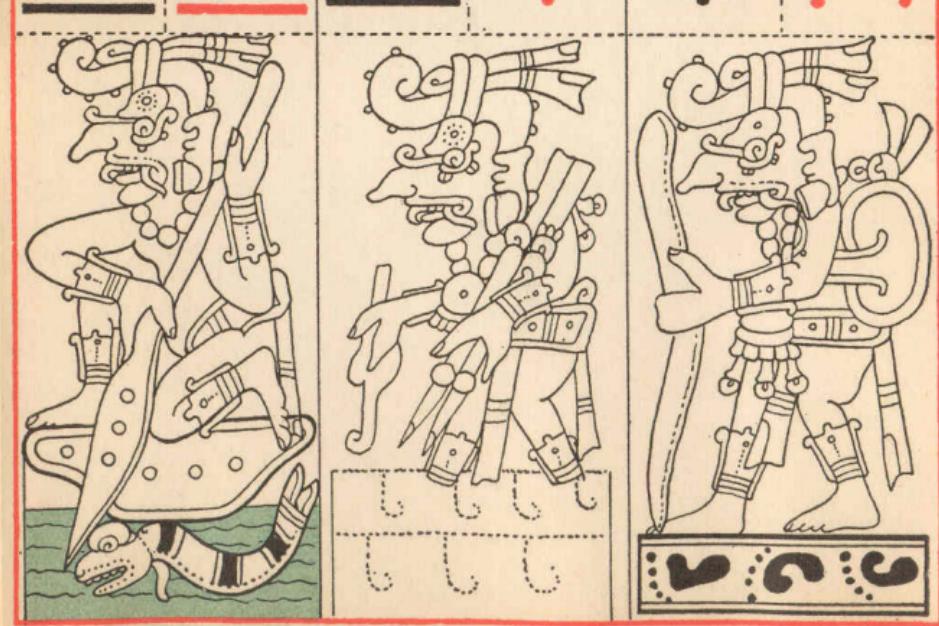
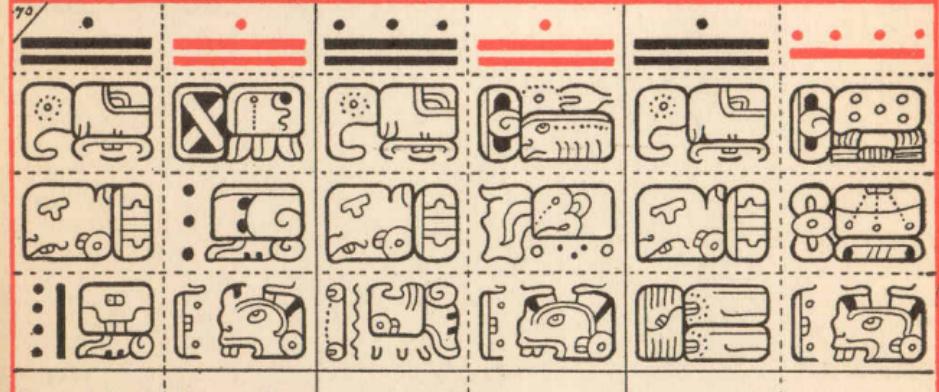
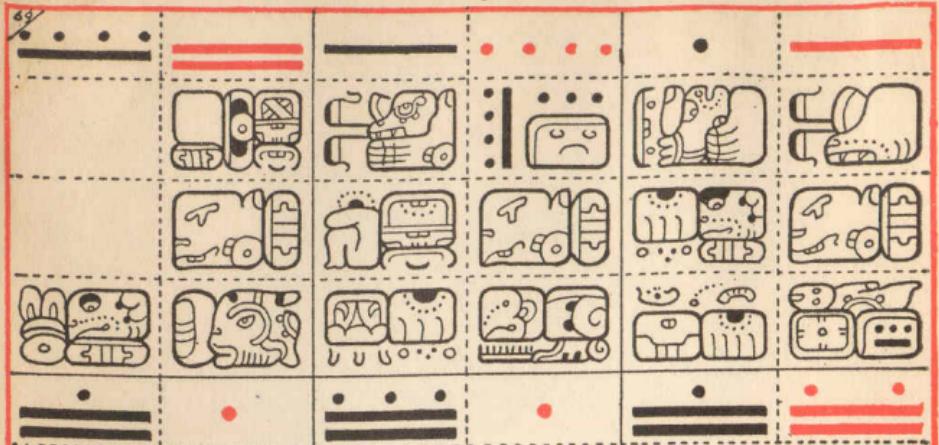


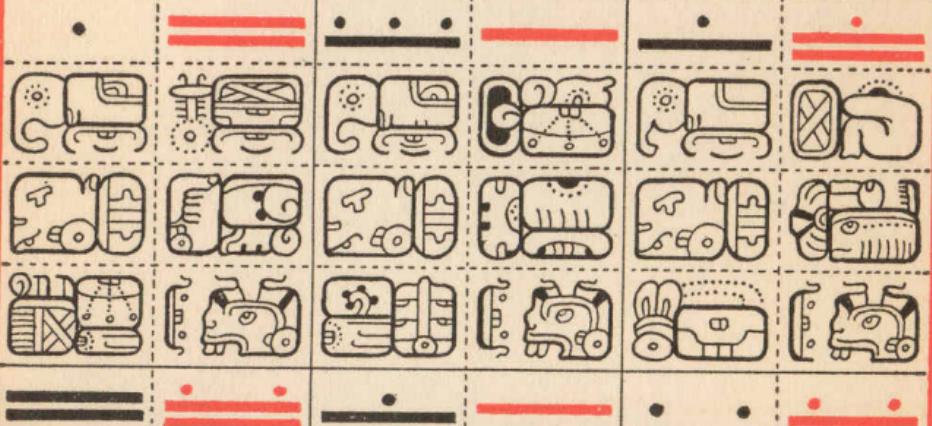
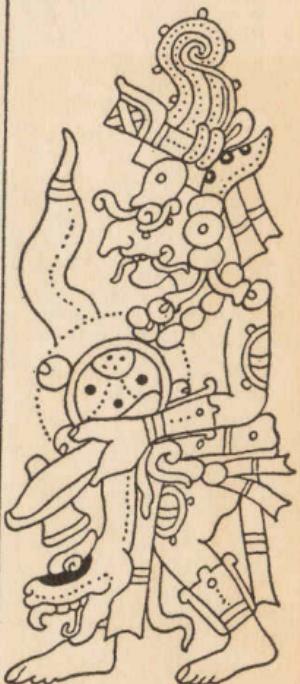
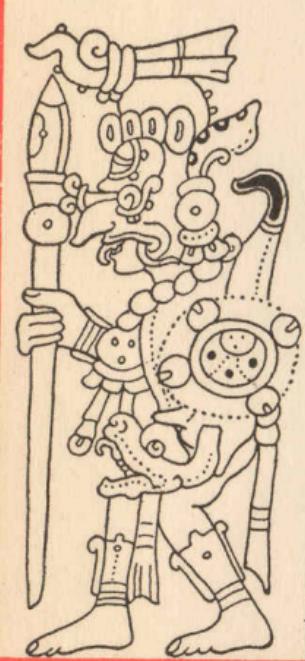
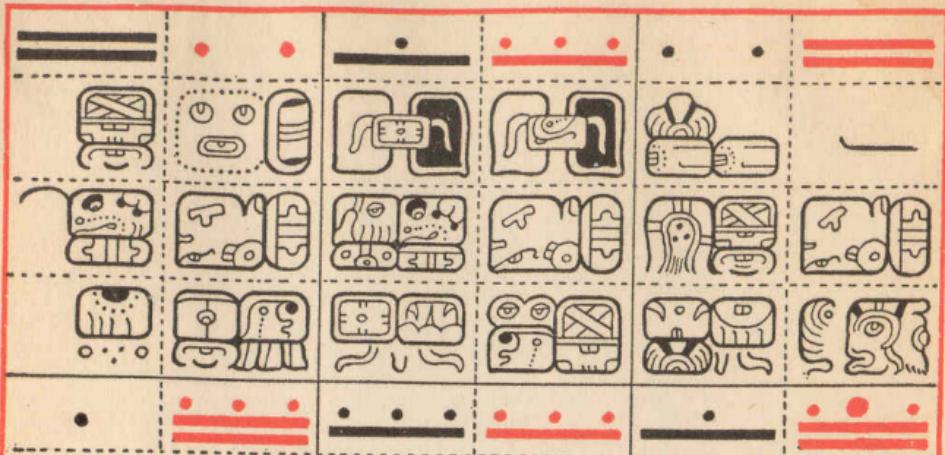


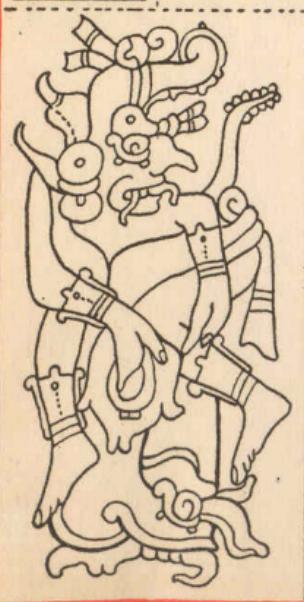
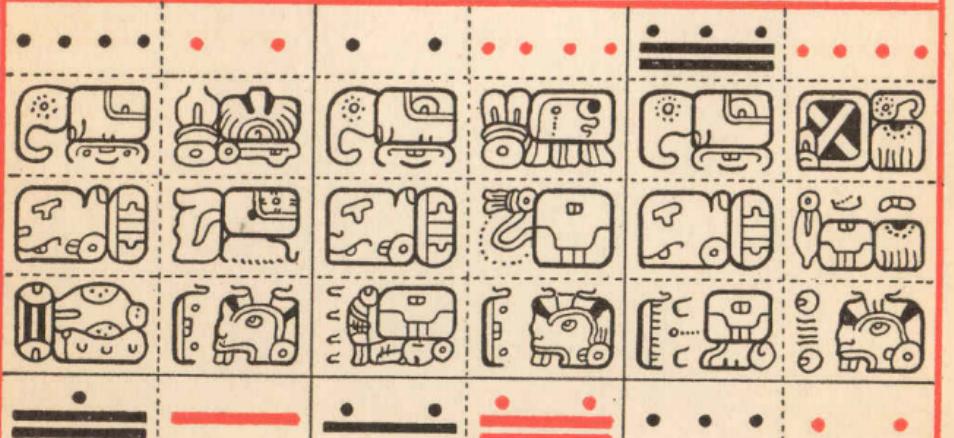
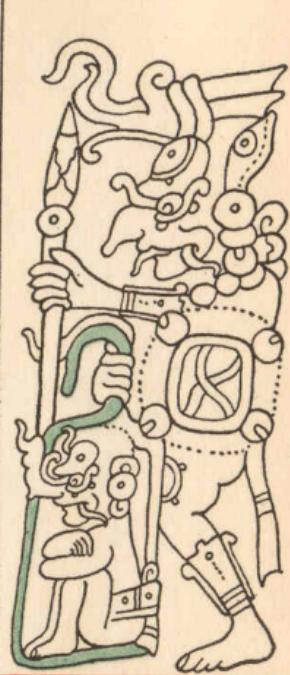
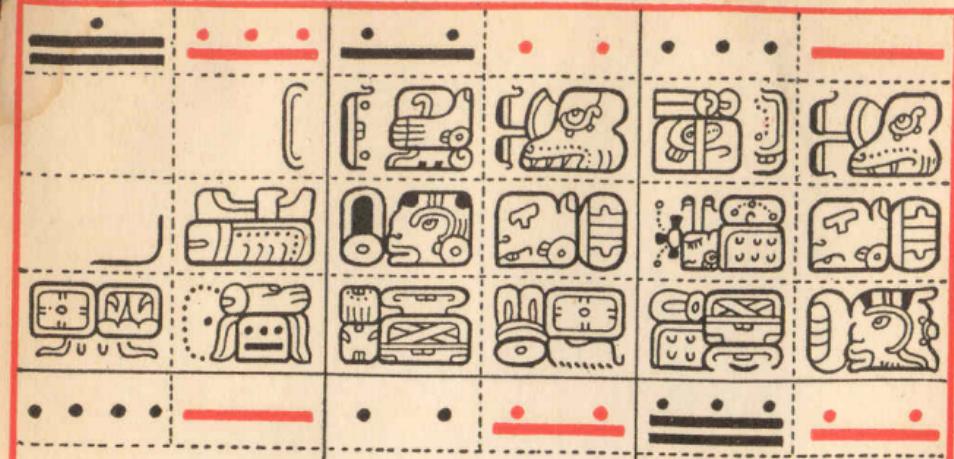


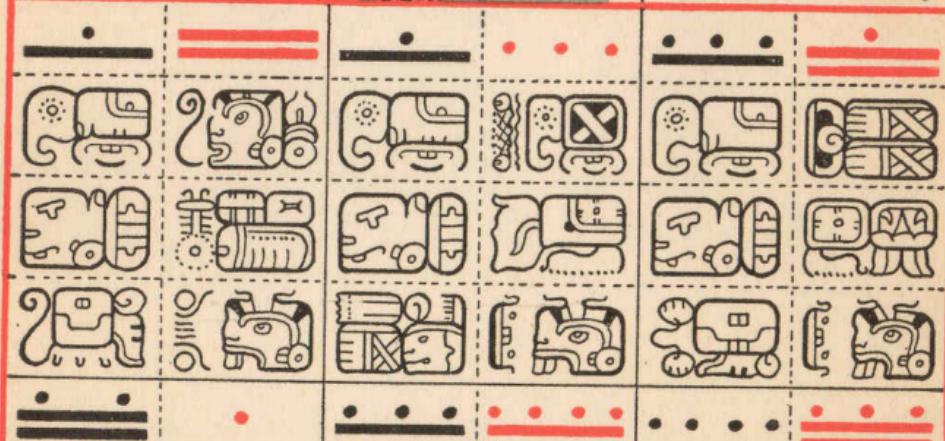
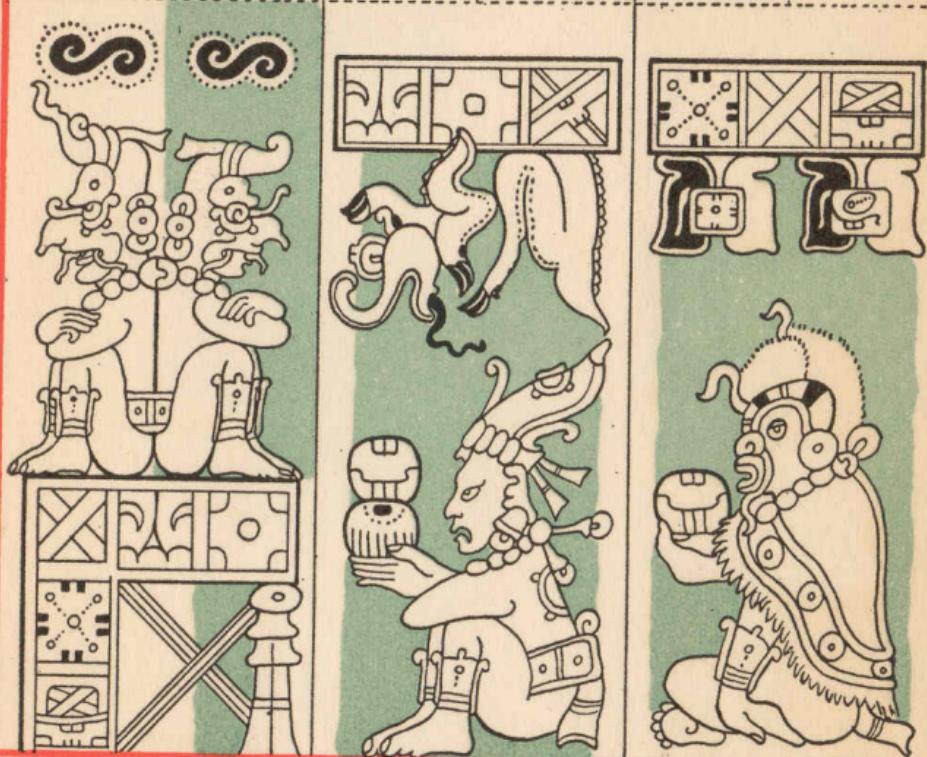
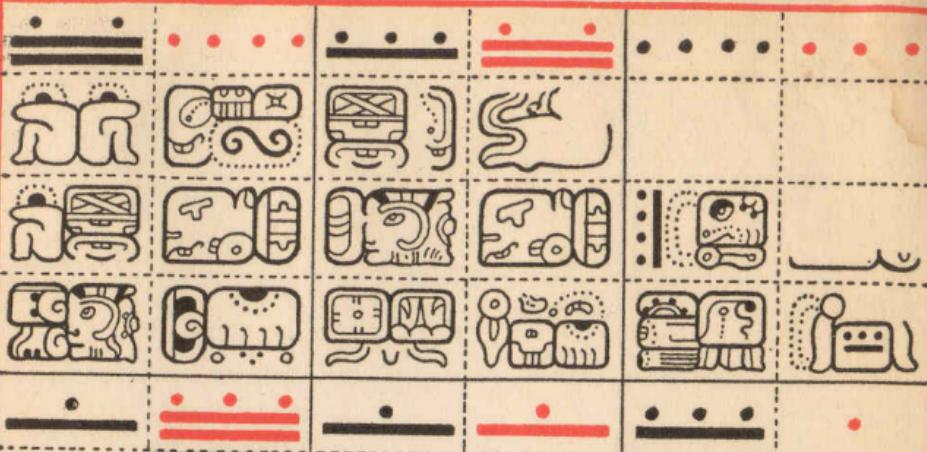






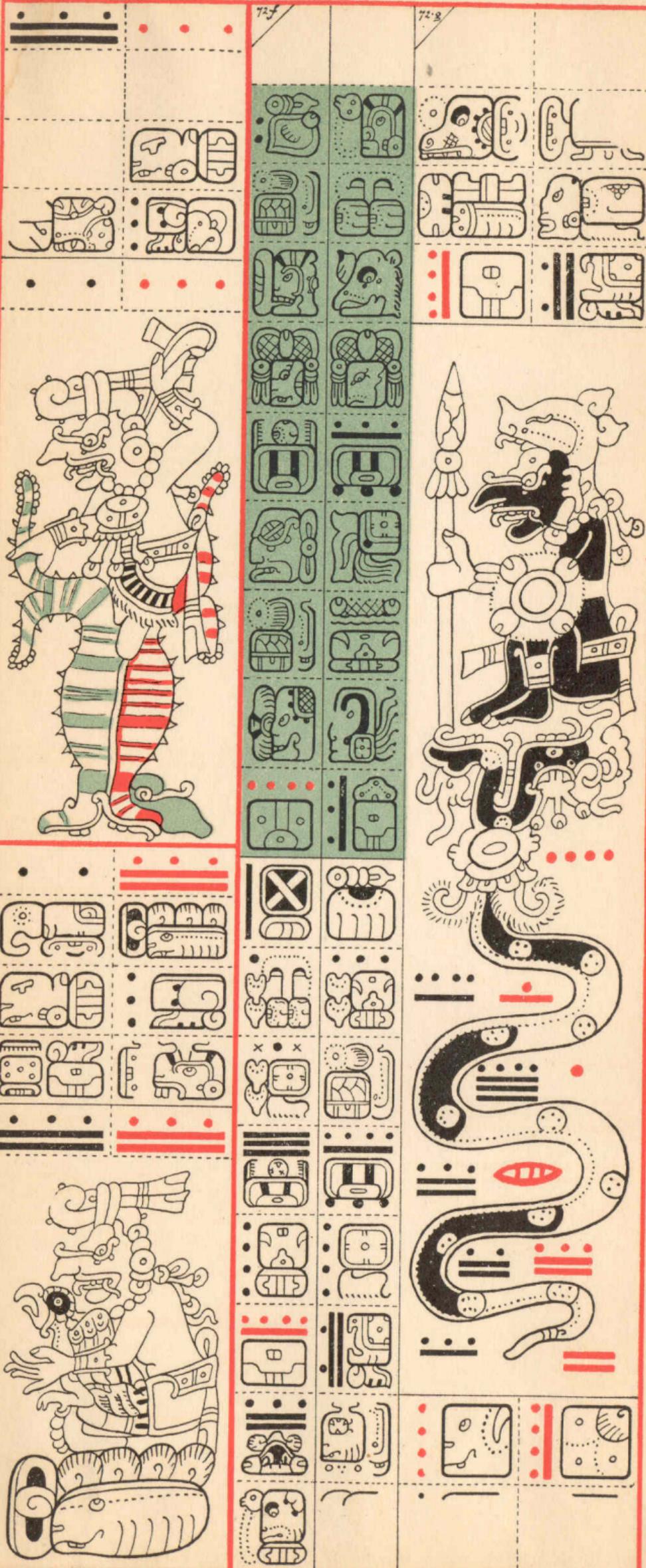


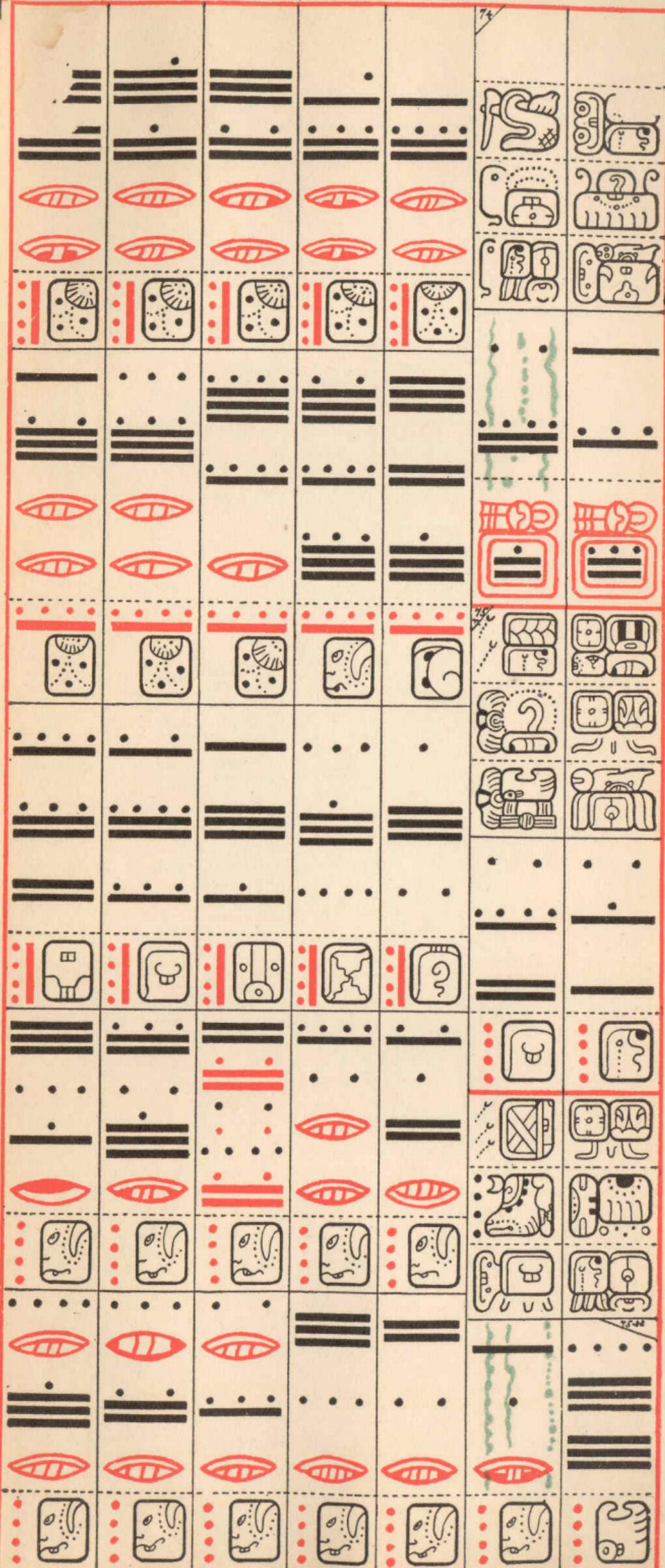




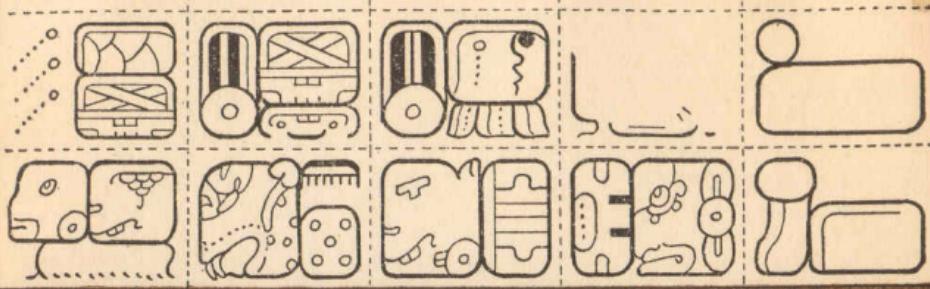
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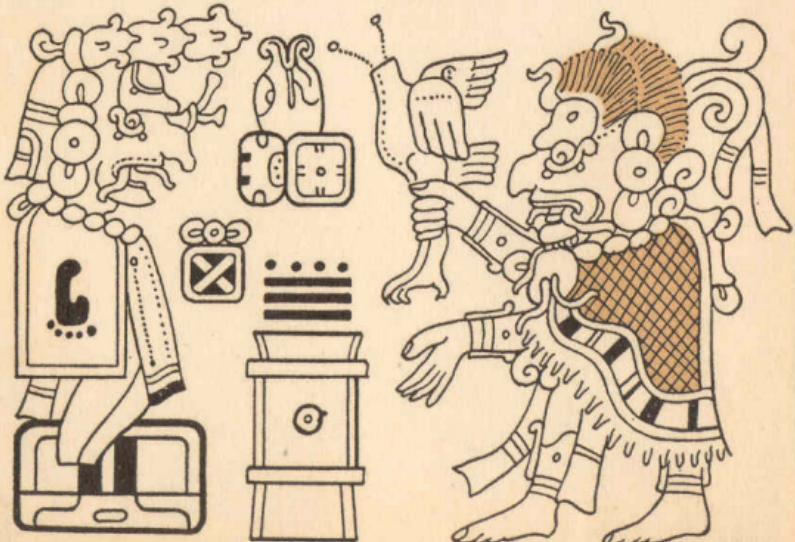
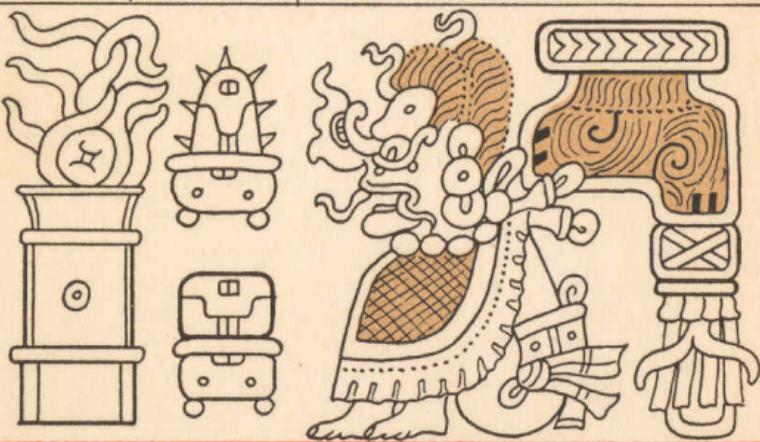
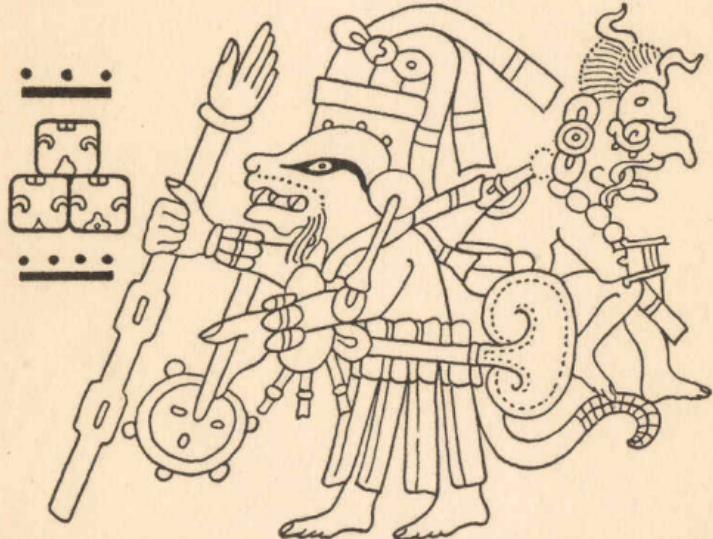
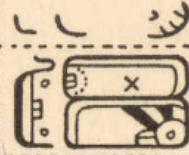
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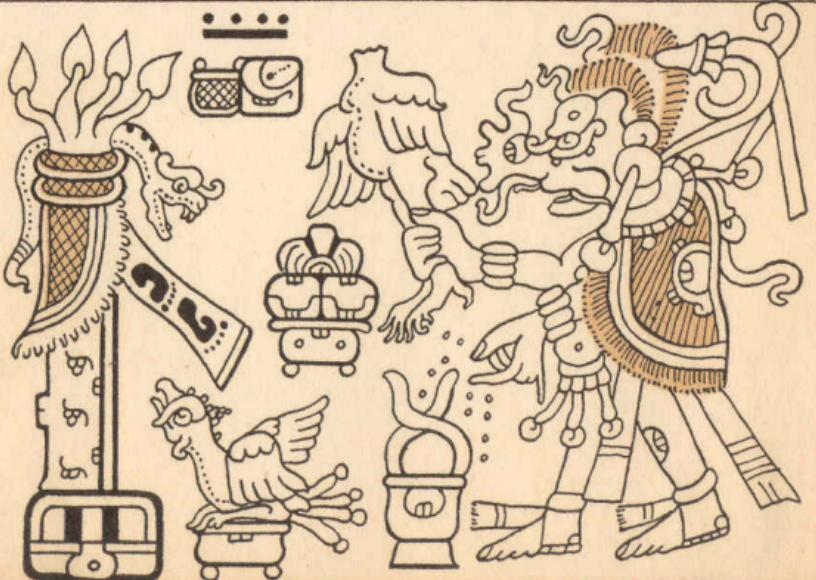
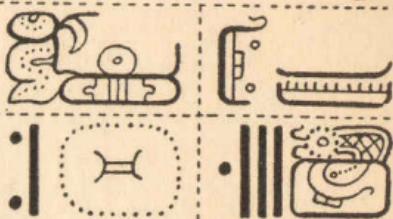
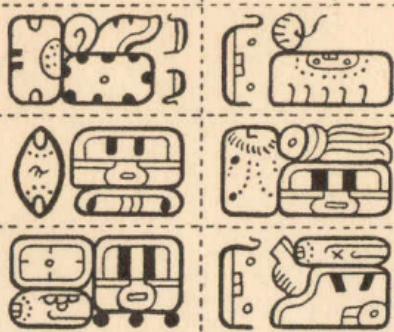


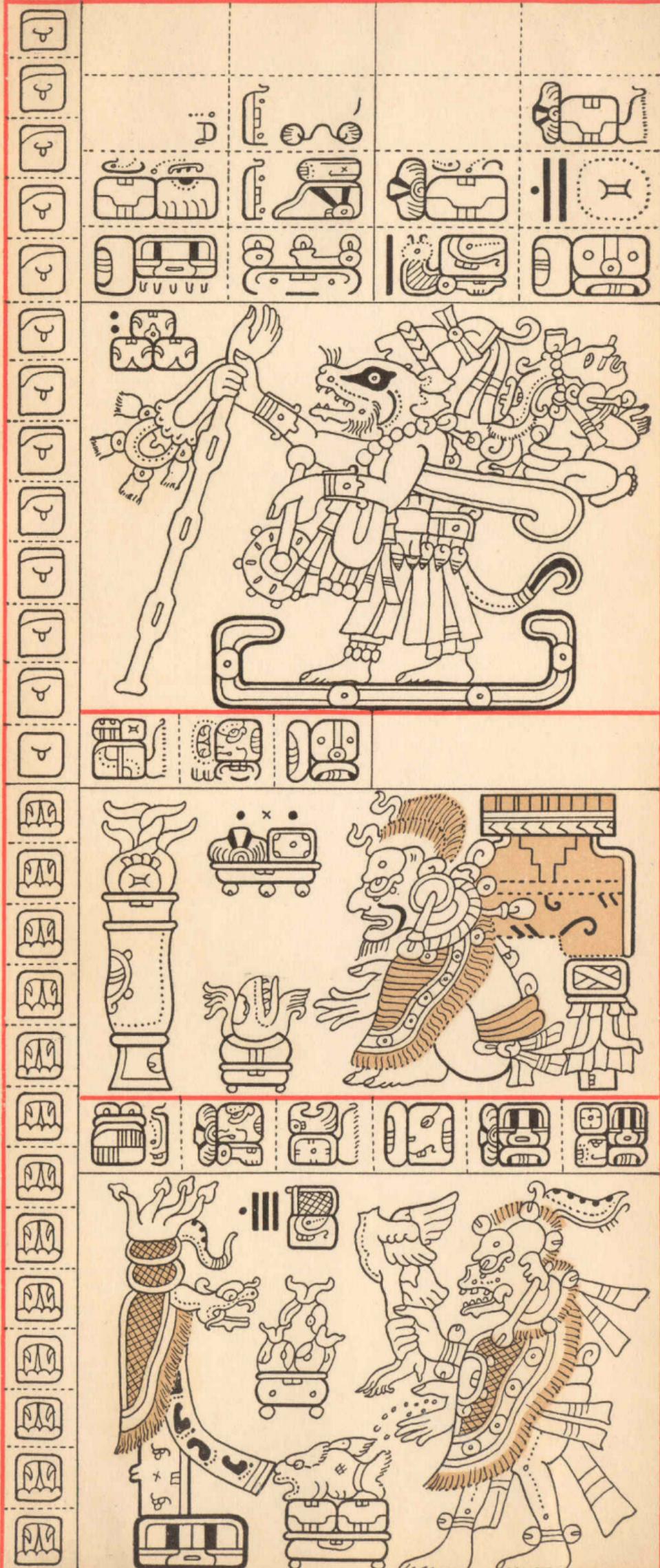


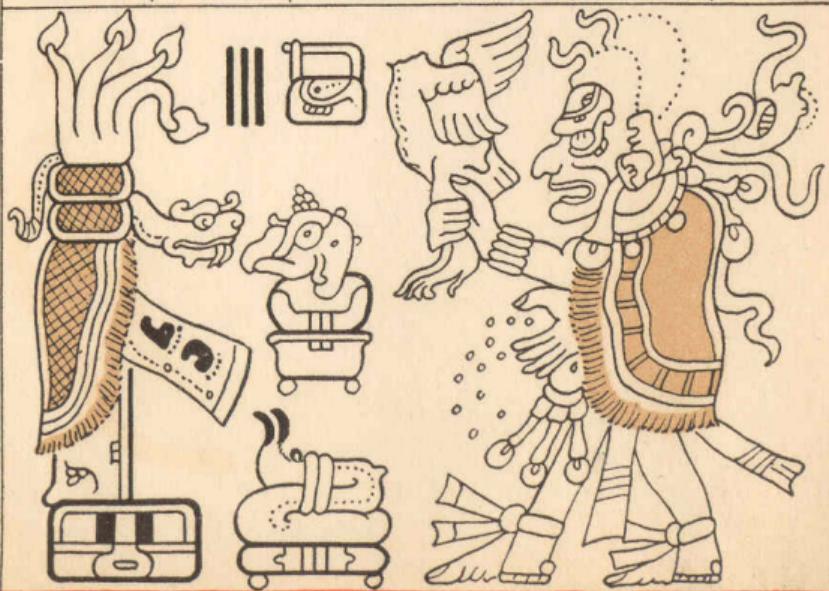
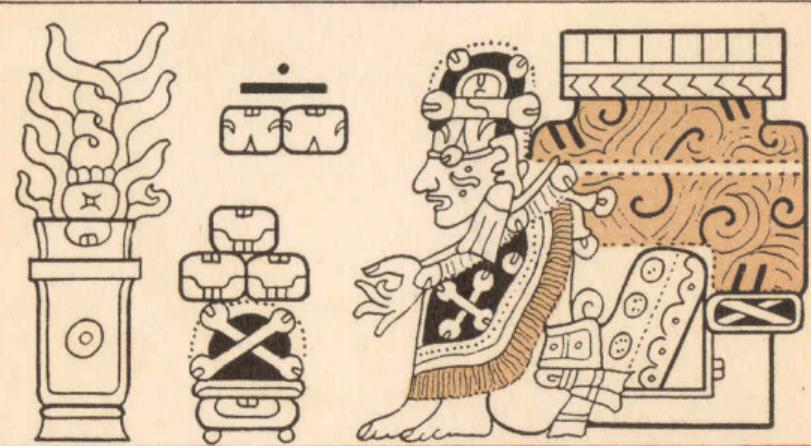
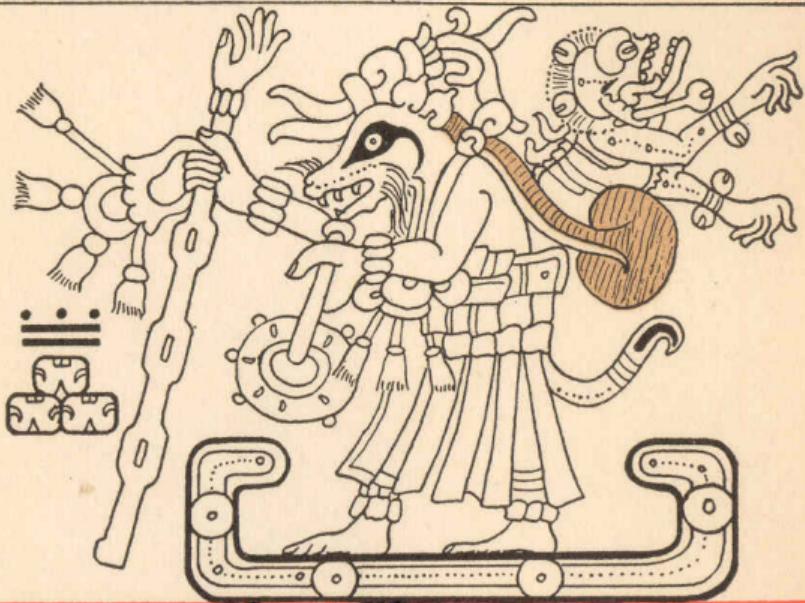
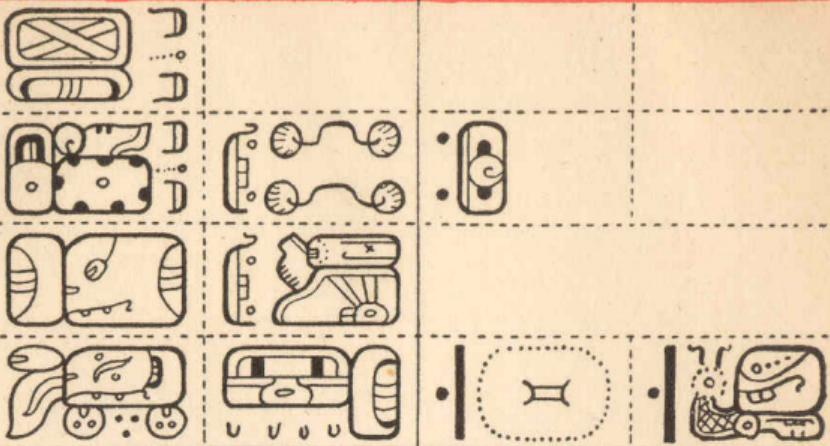
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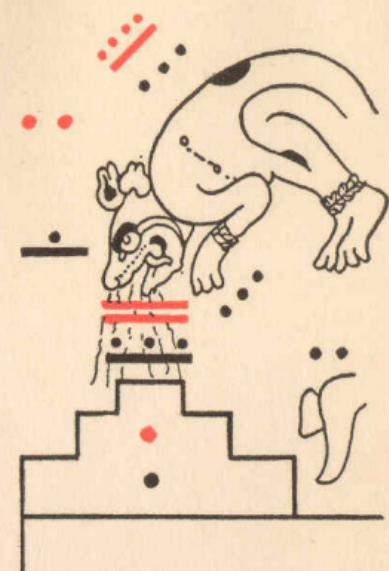
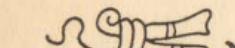
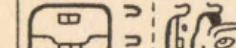
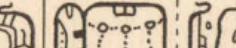
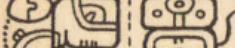
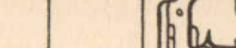
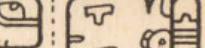
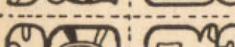
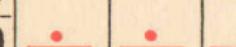
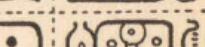
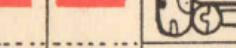






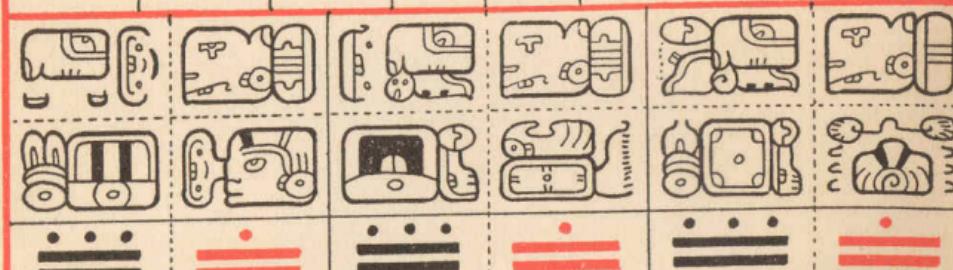
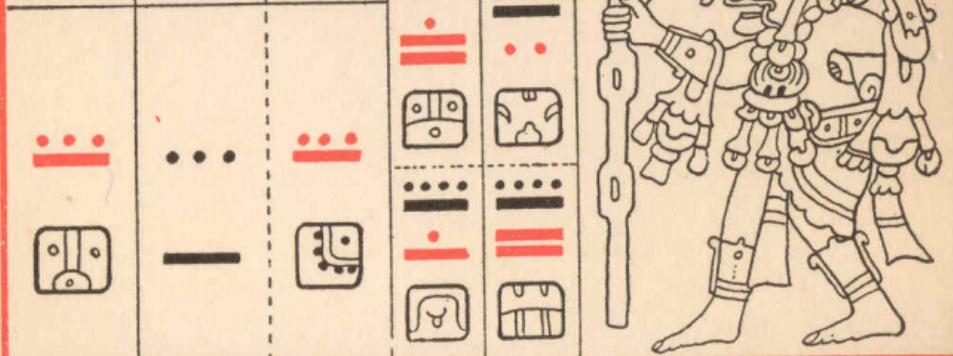
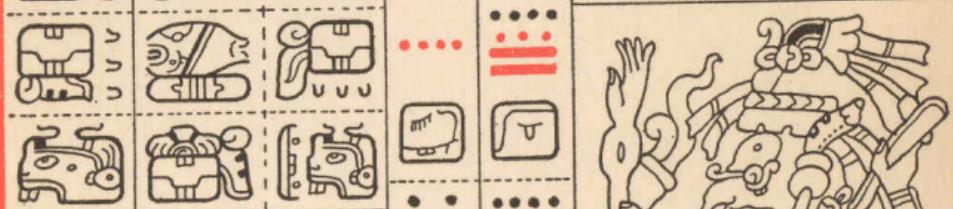
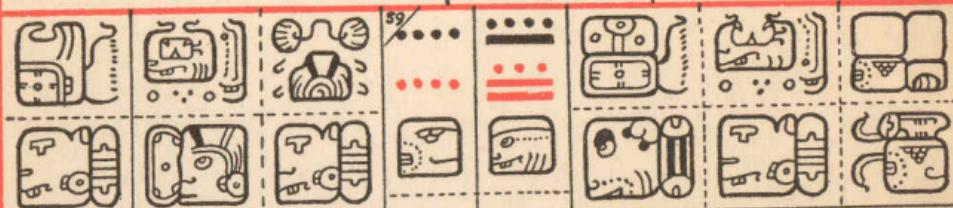


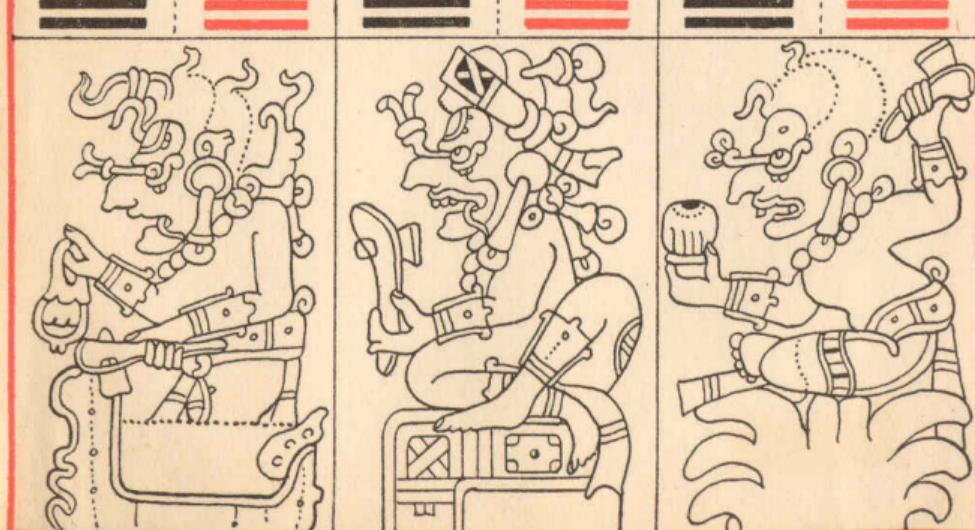
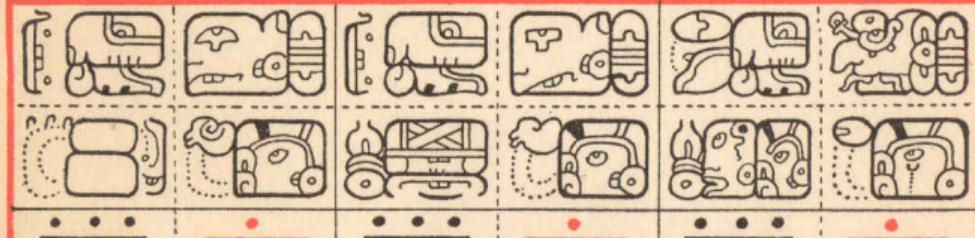
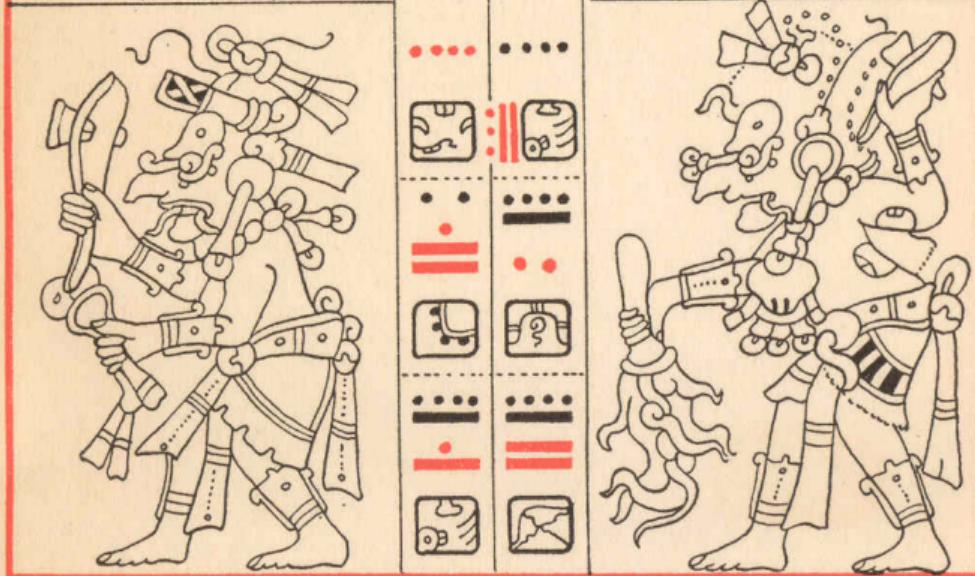
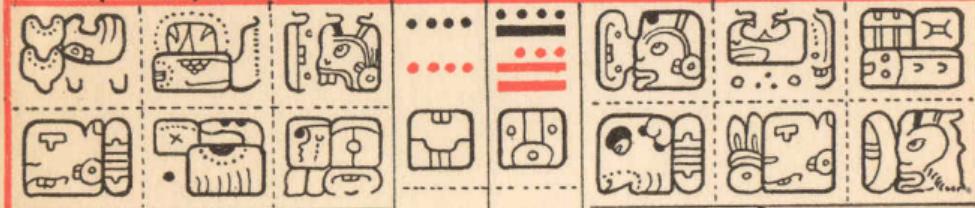
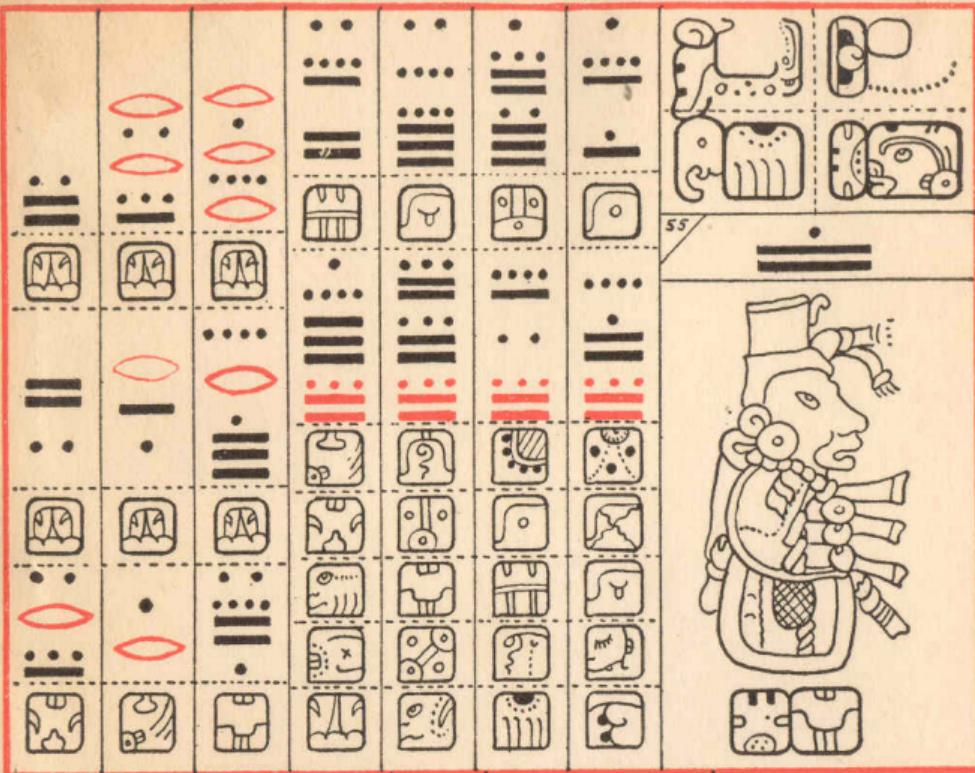


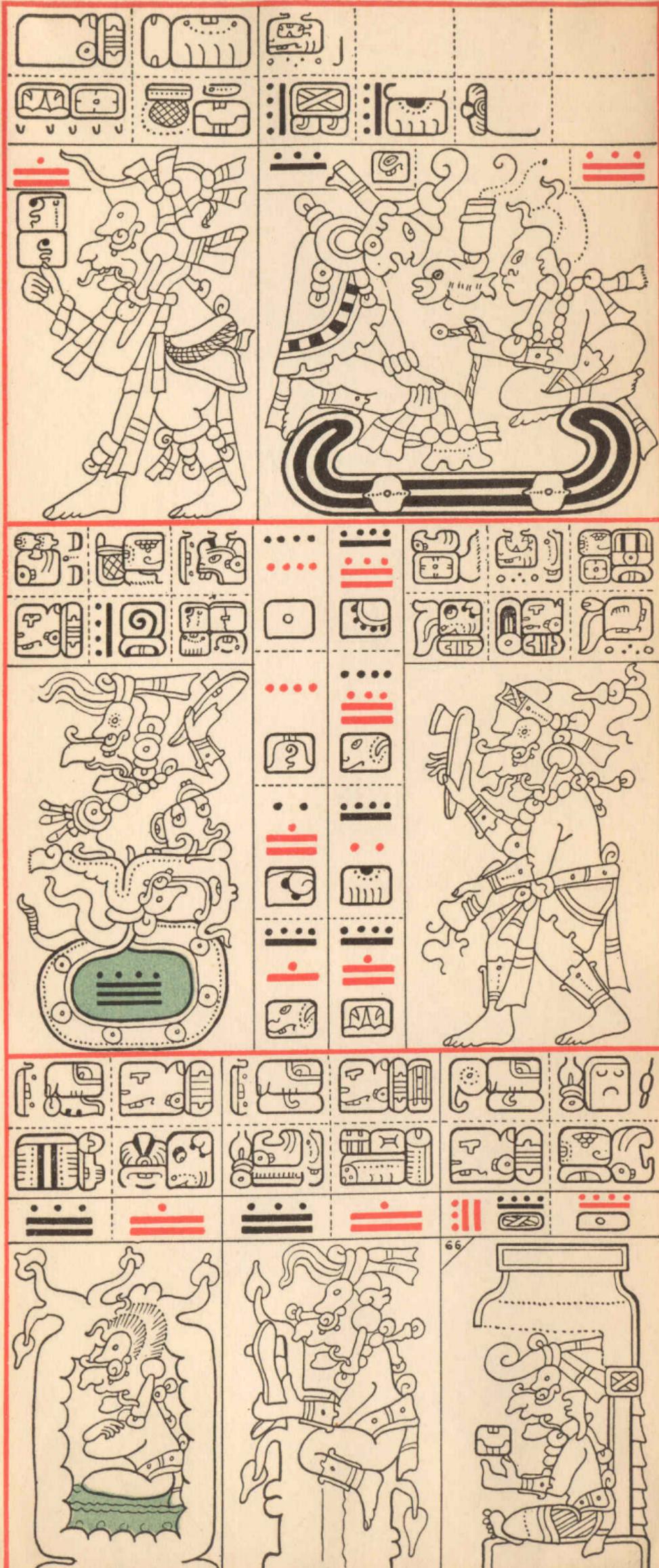
					
					
					
					
					
					
					

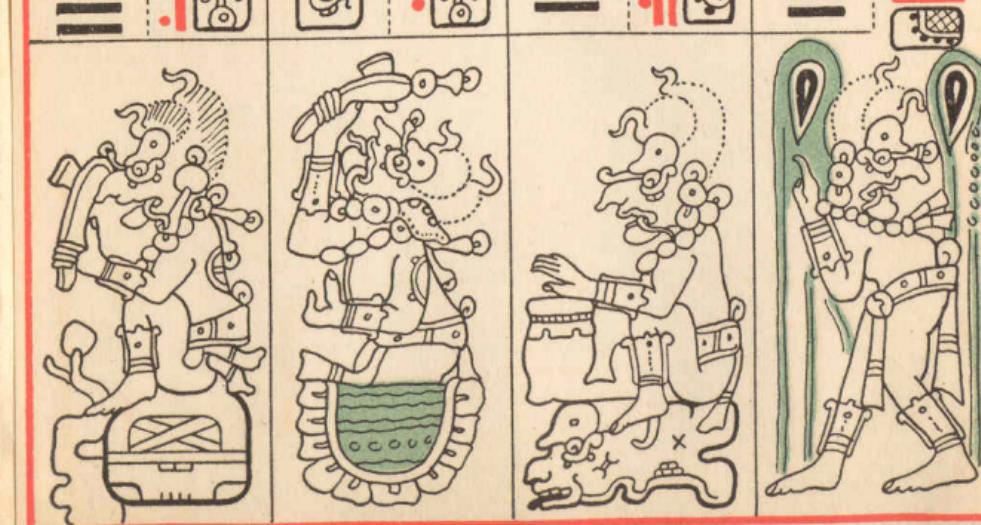
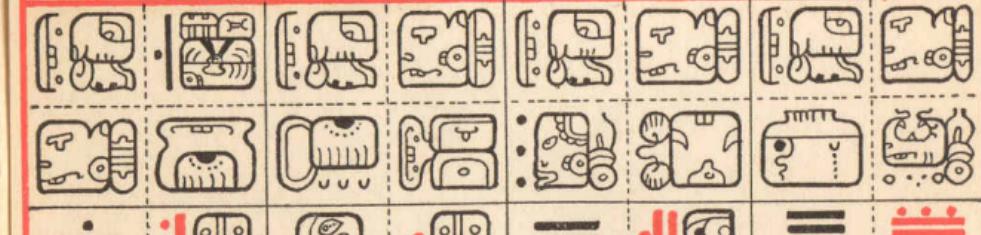
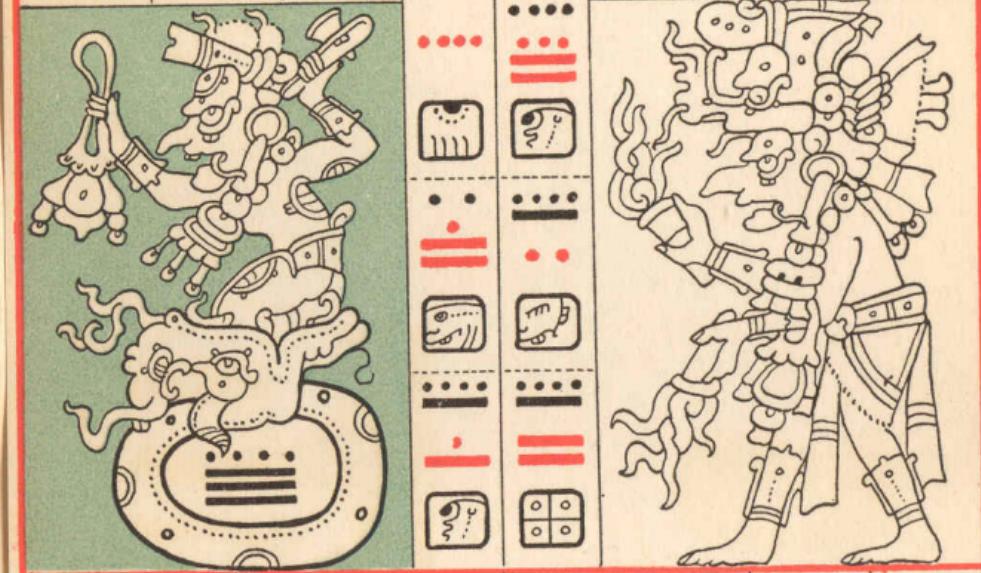
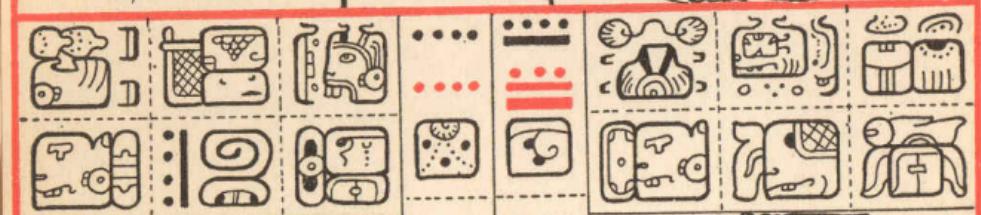
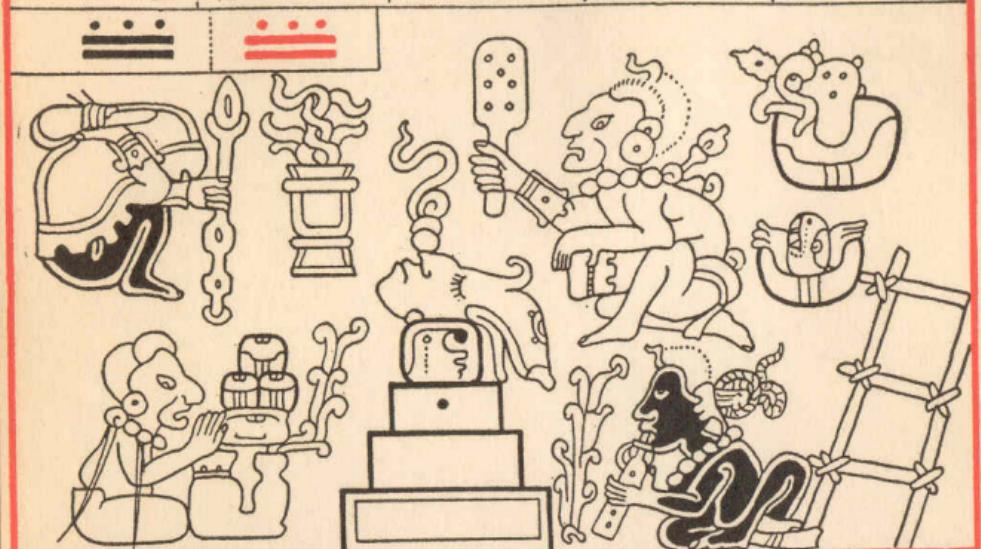


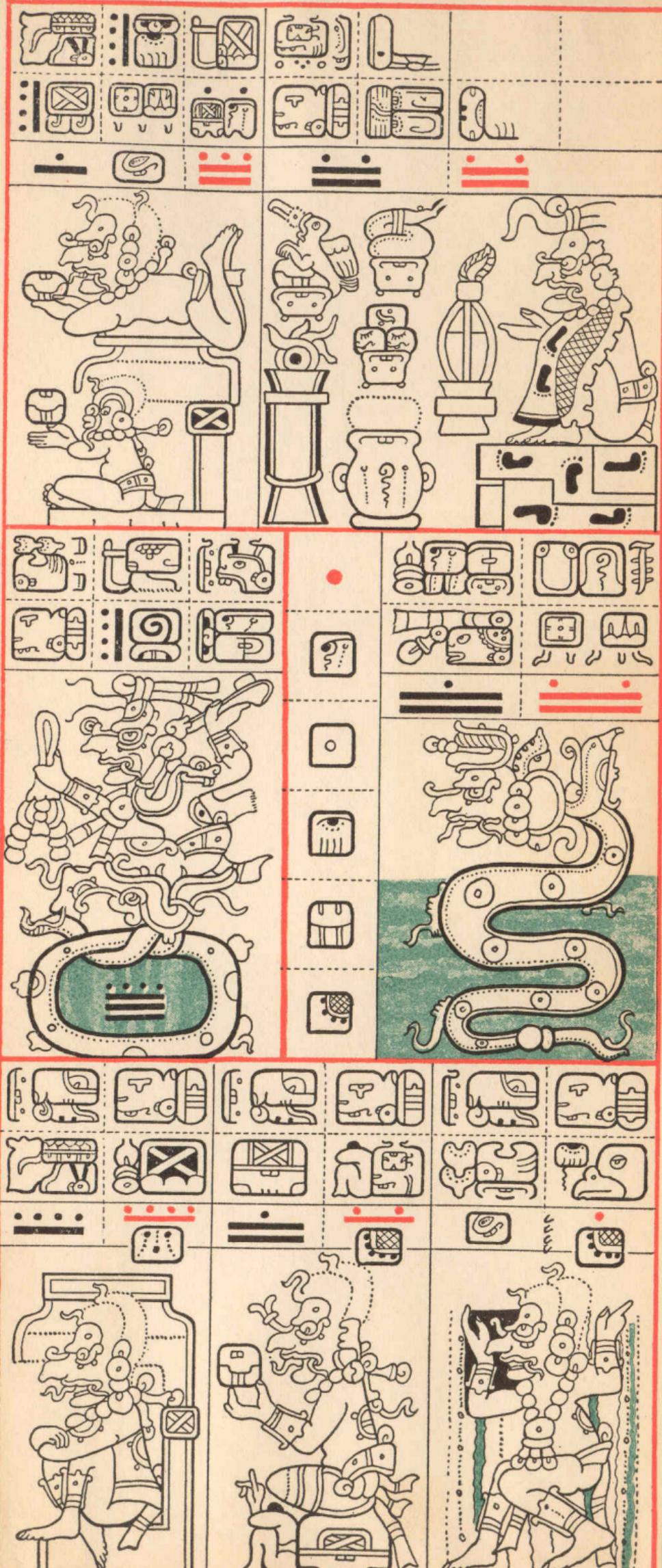
The image displays a 6x8 grid of Mayan calendar symbols, specifically the 260-day cycle. Each symbol is enclosed in a square frame. The symbols are arranged in rows as follows:
Row 1: Three horizontal bars, three vertical bars, four horizontal bars, a jaguar head, and three horizontal bars.
Row 2: Three dots, three vertical bars, four horizontal bars, a jaguar head, and three horizontal bars.
Row 3: Six horizontal bars, three dots, four horizontal bars, a jaguar head, and three horizontal bars.
Row 4: Six horizontal bars, three dots, four horizontal bars, a jaguar head, and three horizontal bars.
Row 5: Six horizontal bars, three dots, four horizontal bars, a jaguar head, and three horizontal bars.
Row 6: Six horizontal bars, three dots, four horizontal bars, a jaguar head, and three horizontal bars.
Row 7: A red eye, three vertical bars, a red eye, a jaguar head, and a red eye.
Row 8: A red eye, three vertical bars, a red eye, a jaguar head, and a red eye.
Row 9: A red eye, three vertical bars, a red eye, a jaguar head, and a red eye.
Row 10: A red eye, three vertical bars, a red eye, a jaguar head, and a red eye.
Row 11: A red eye, three vertical bars, a red eye, a jaguar head, and a red eye.
Row 12: A red eye, three vertical bars, a red eye, a jaguar head, and a red eye.



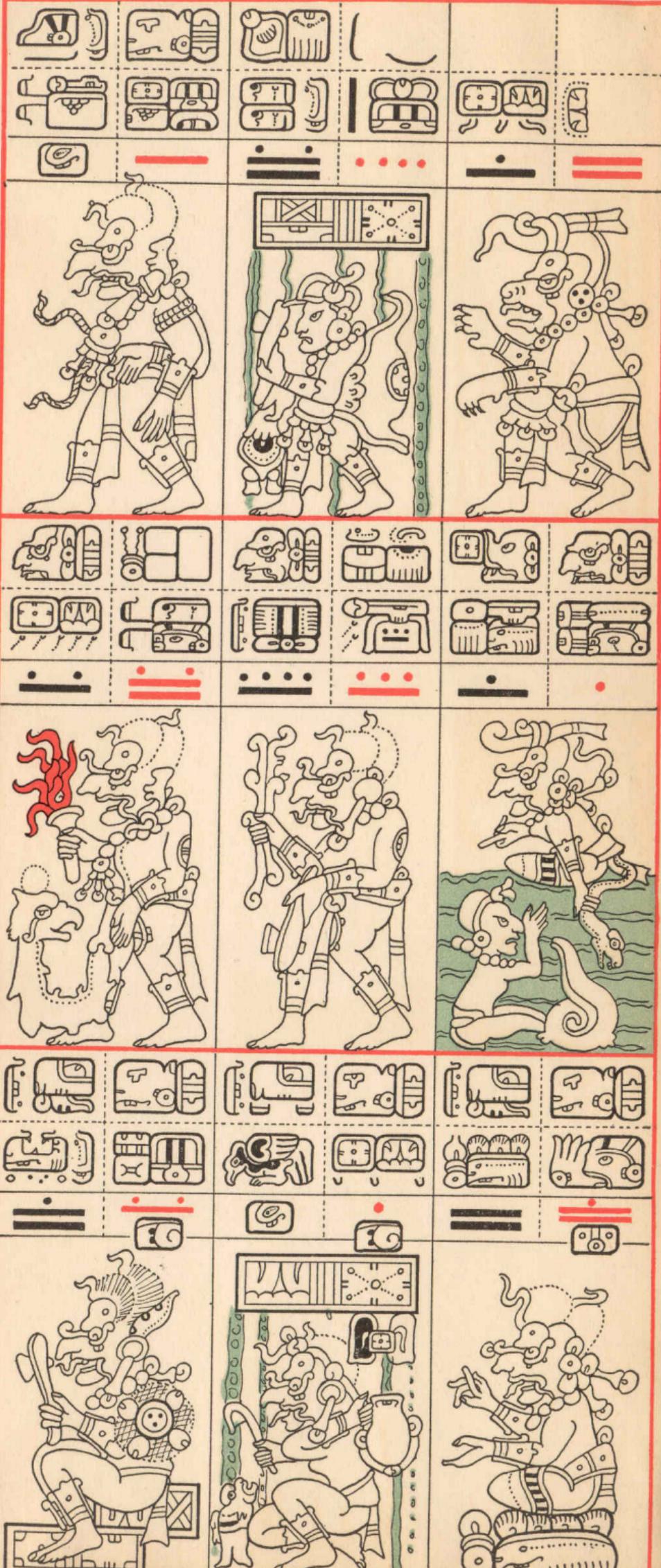


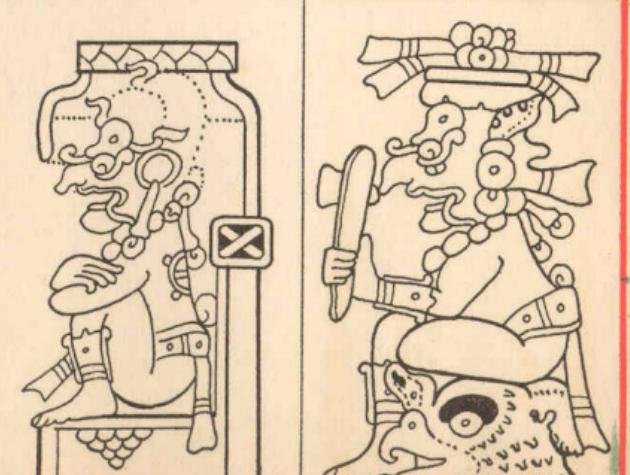
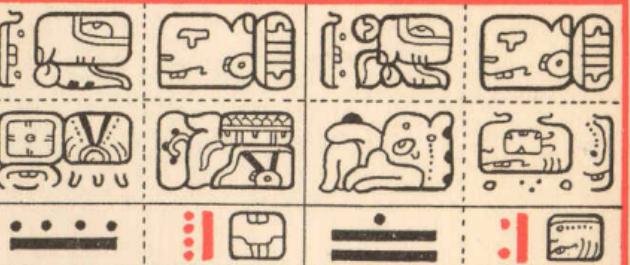
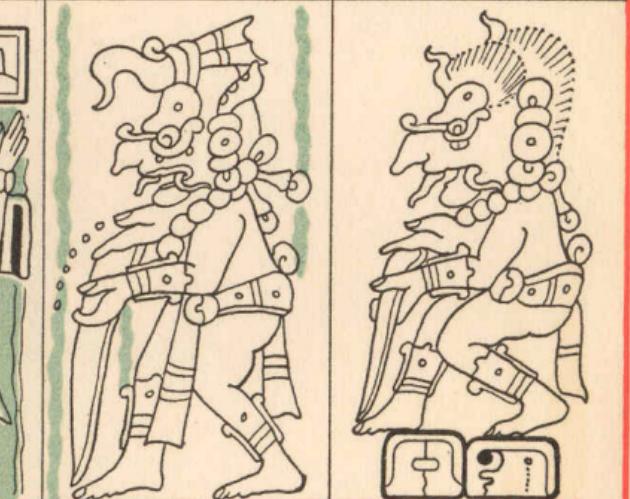
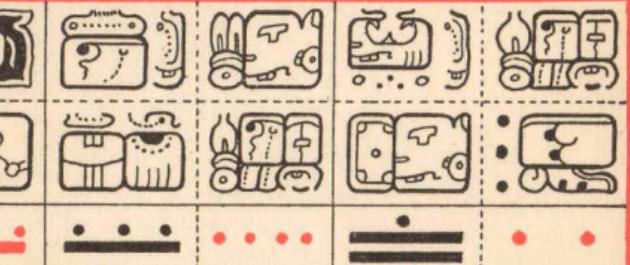
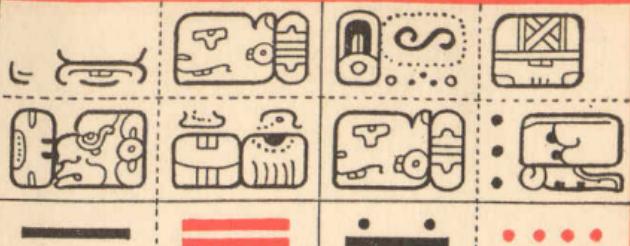


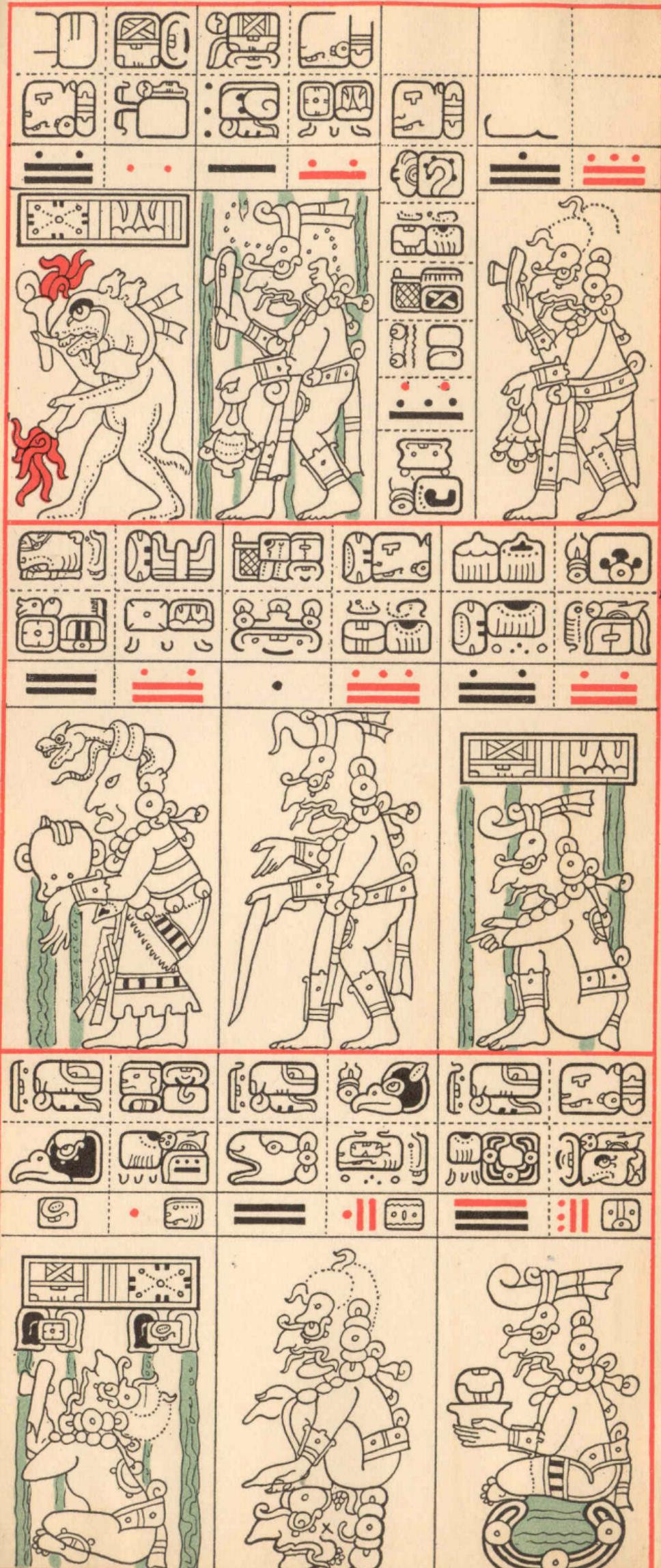


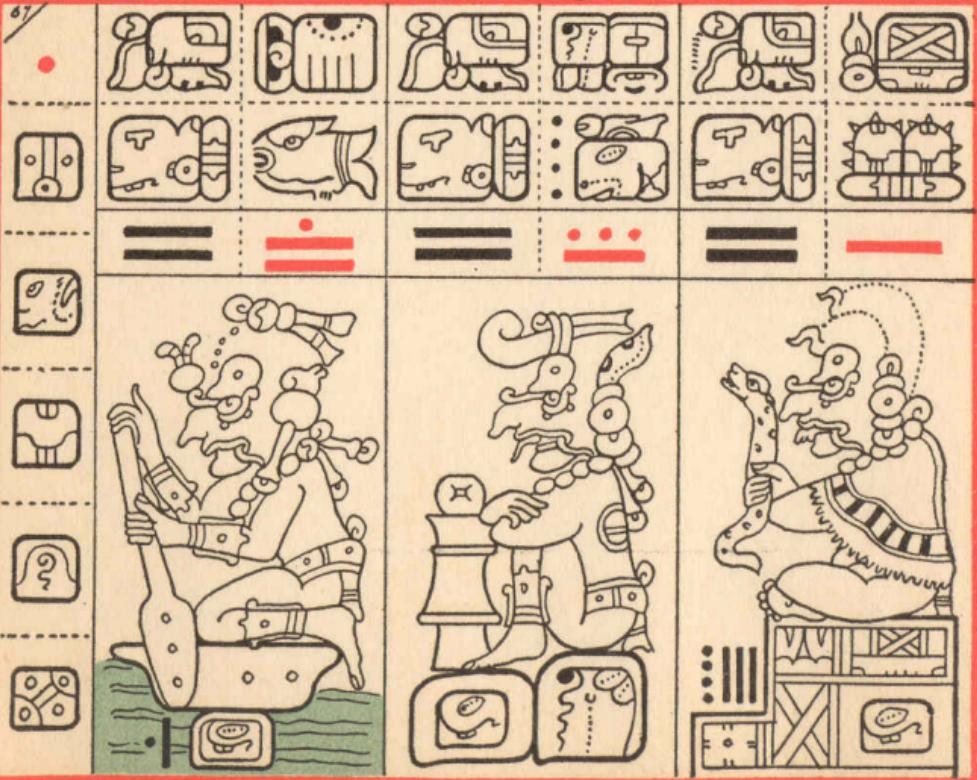
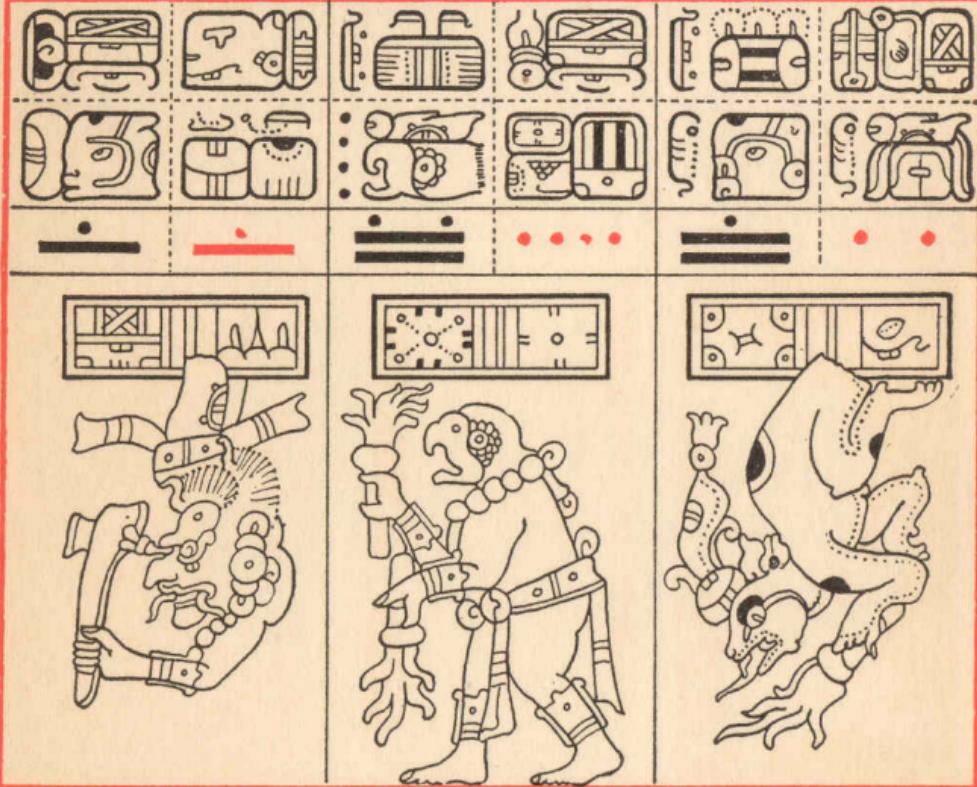
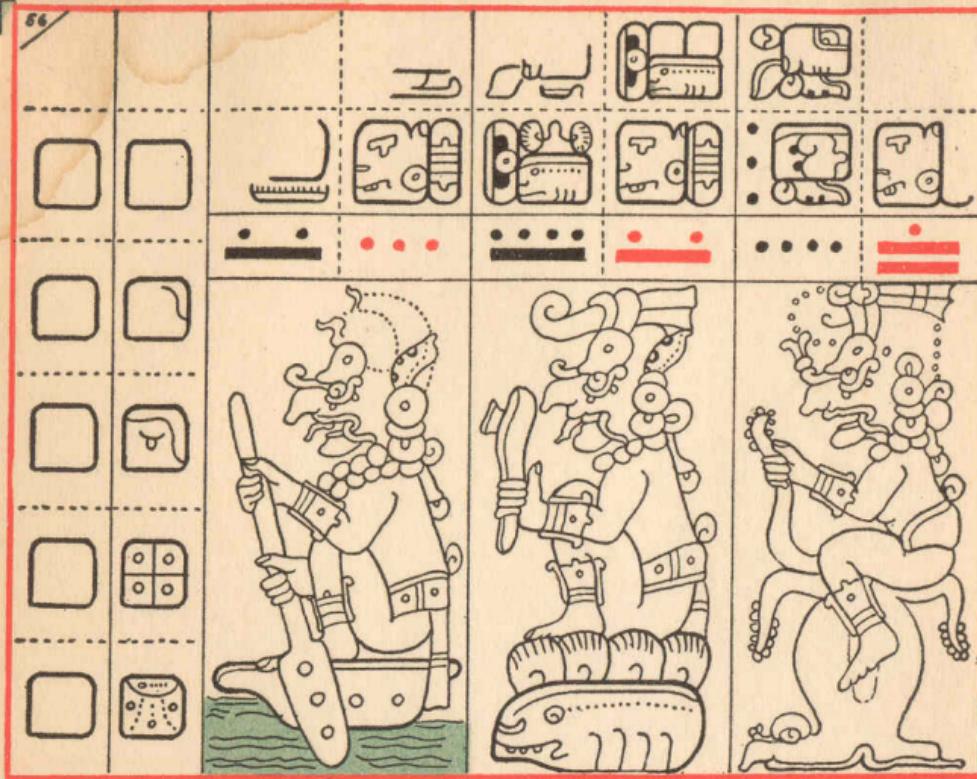


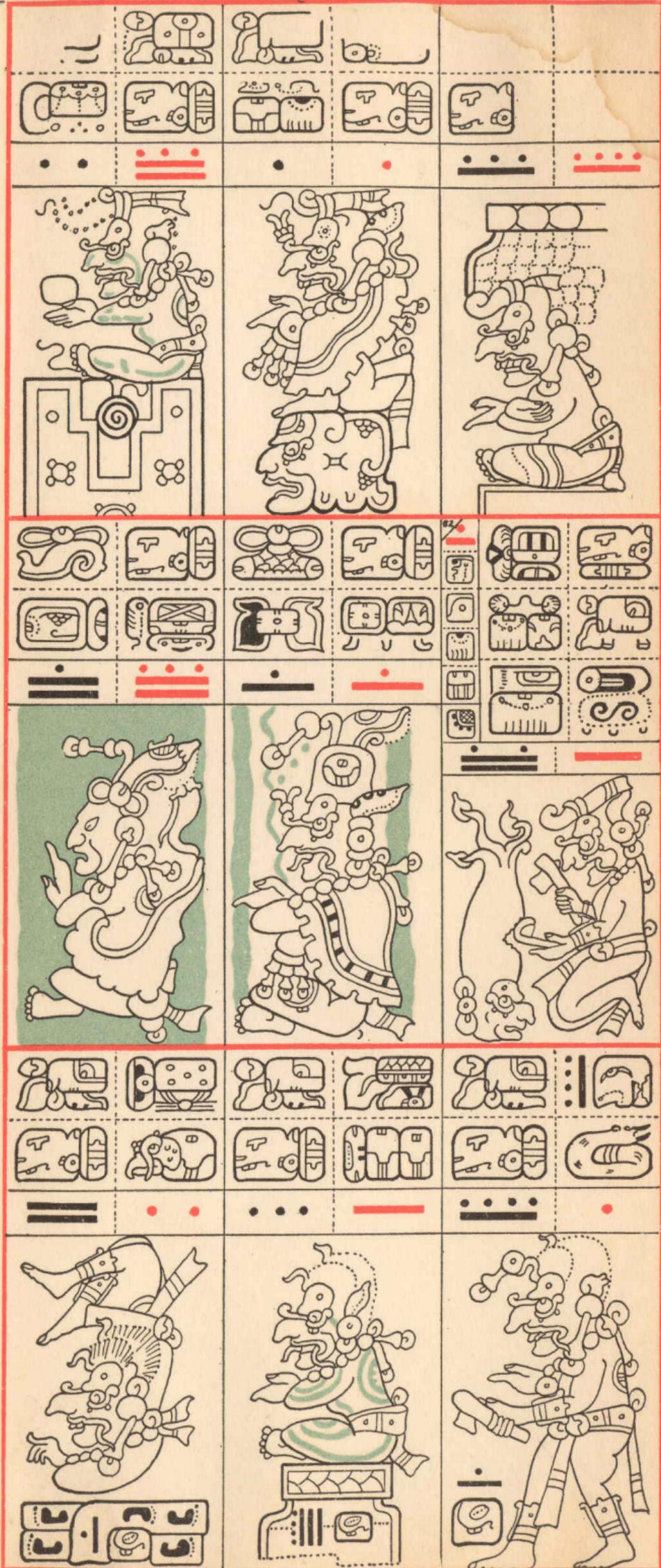


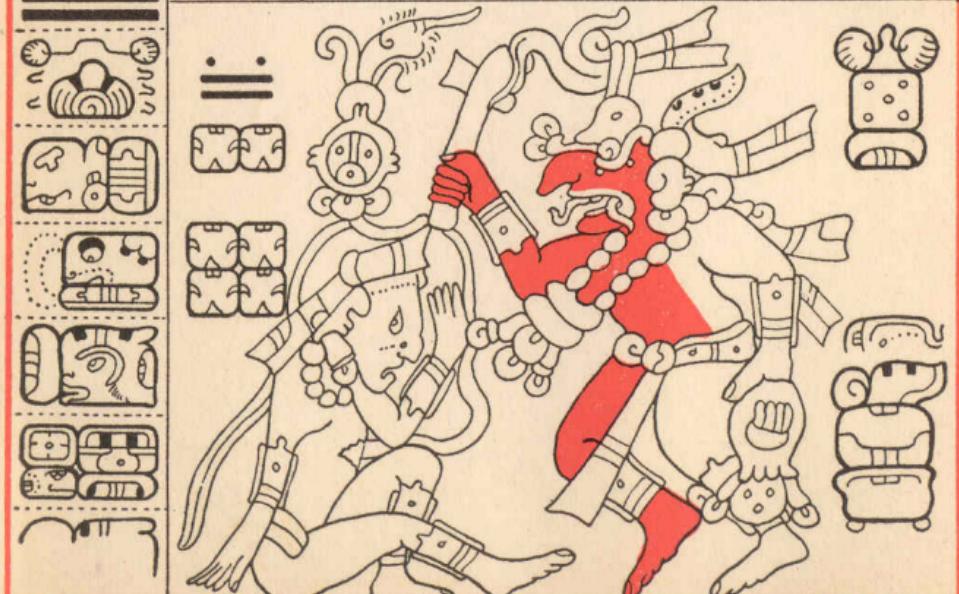
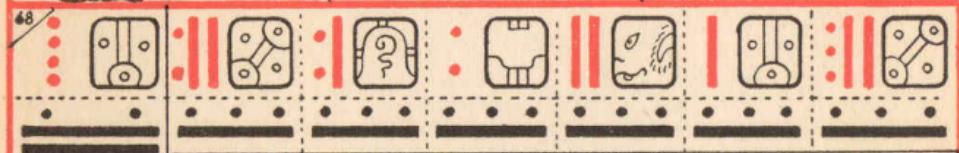
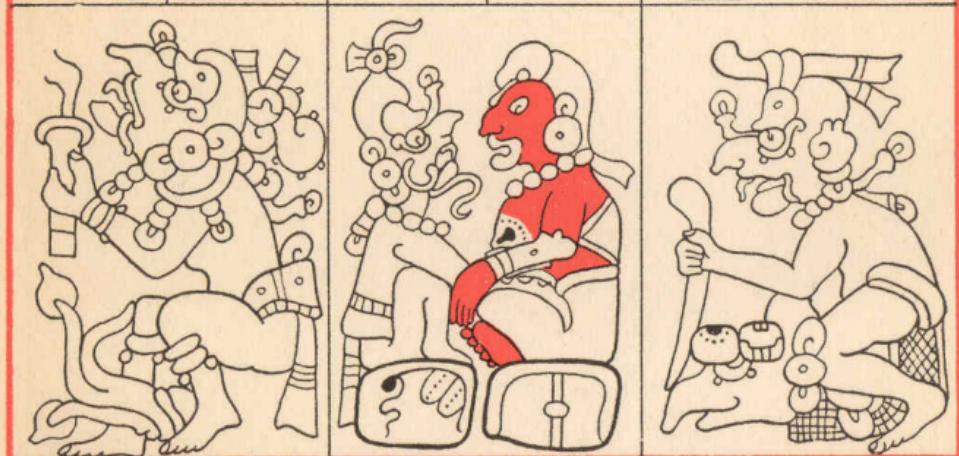
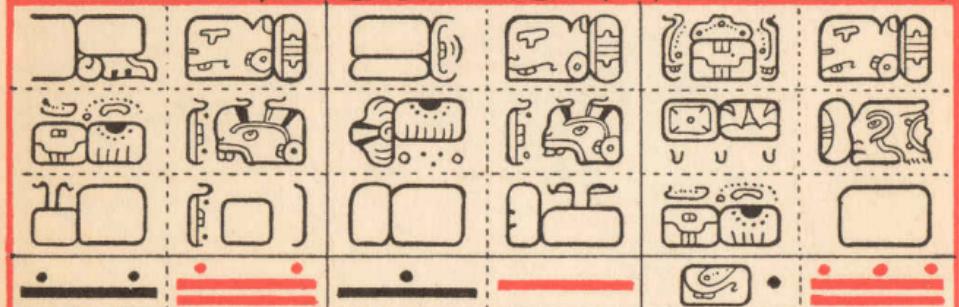
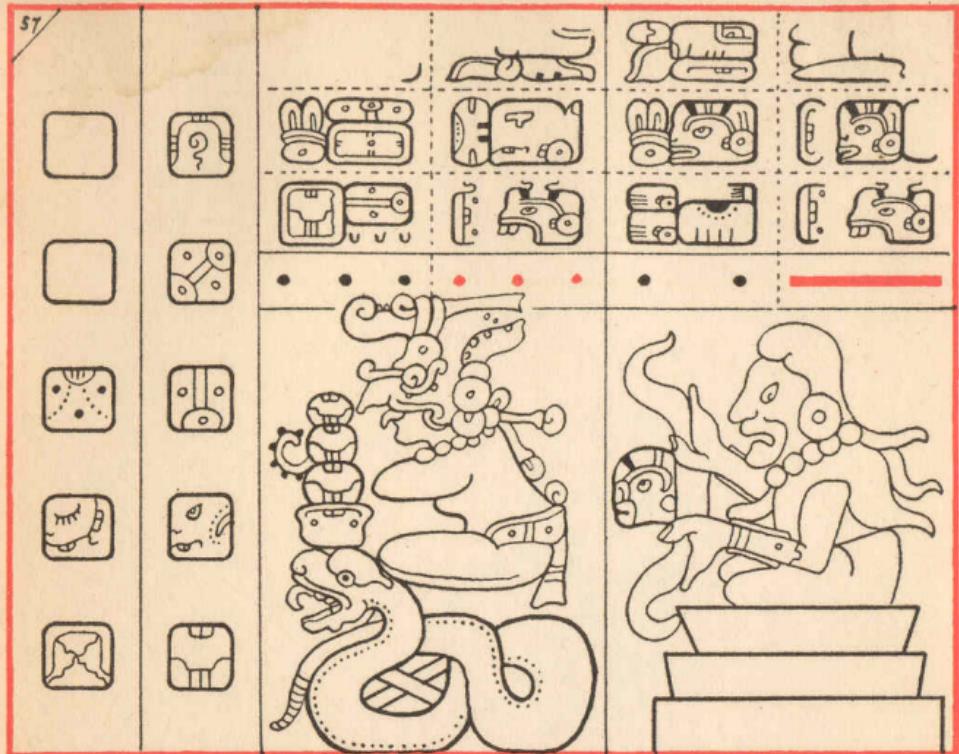


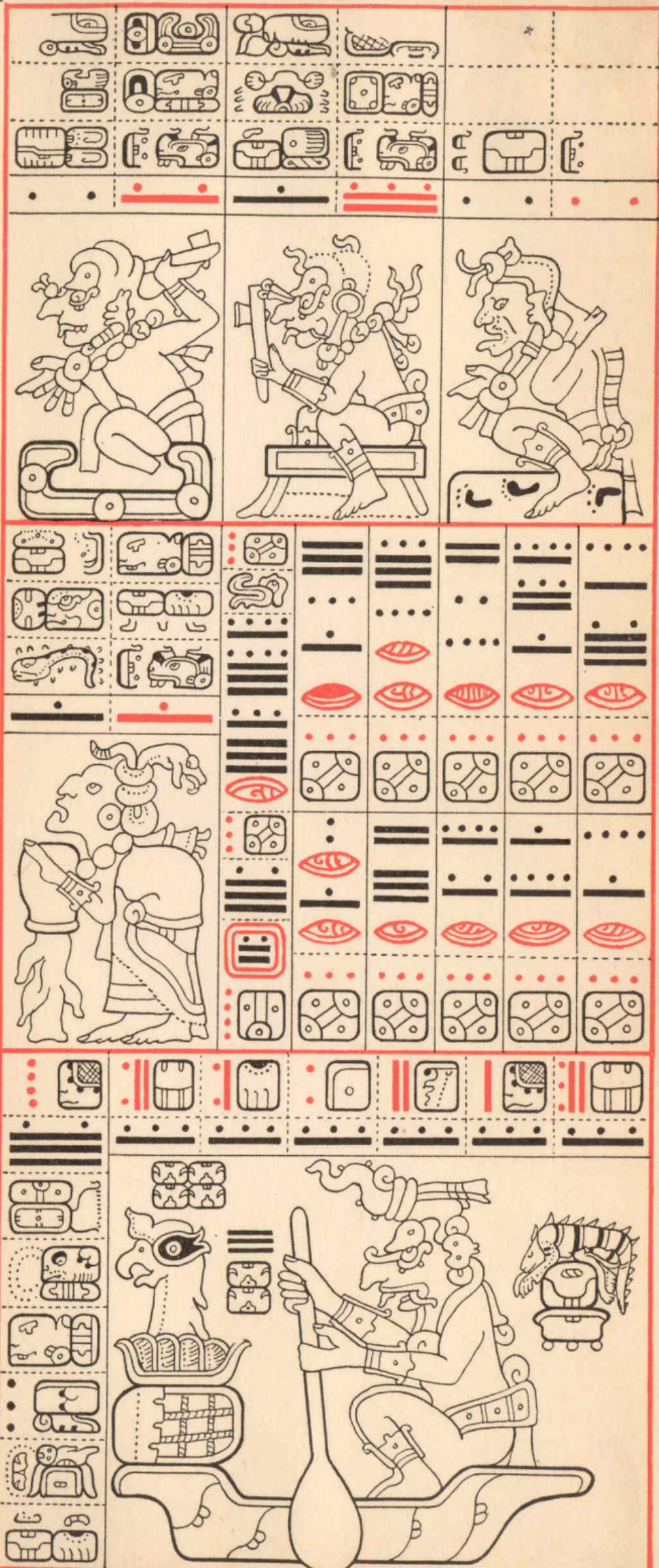


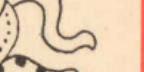
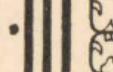
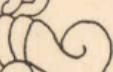
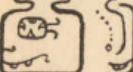
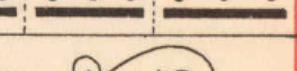
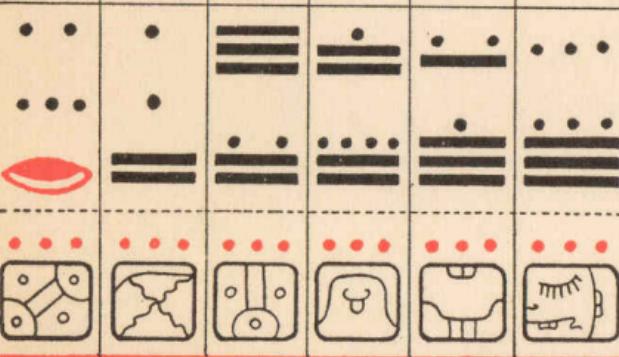
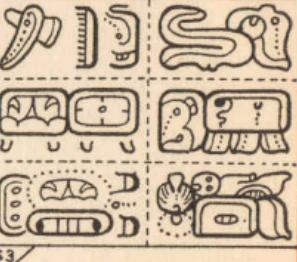
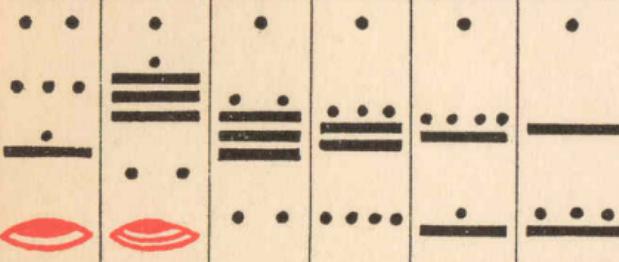
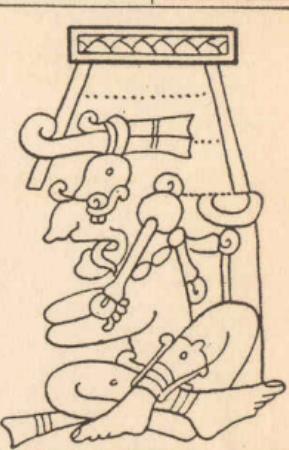


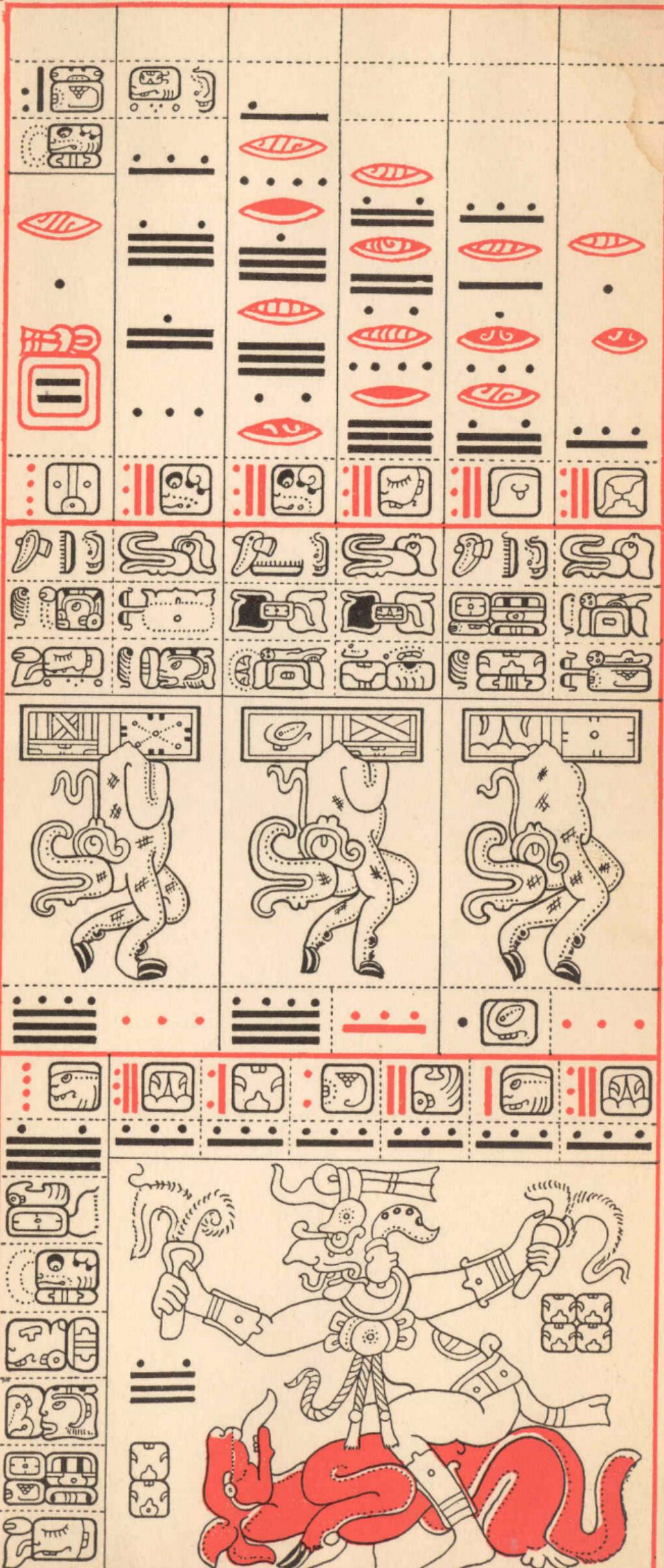












Dresden Sections and Tzolkins.

\S	cl.	p.	\S	cl.	p.	\S	cl.	p.	\S	cl.	p.
1	abc	1b	30	def	11c		e	35a	69	abc	65a
2	ab	1c	31	abc	12c		fg	36a		def	66a
3	a-d	2a	32	ab	13c		ijk	37a		ghi	67a
4	ab	2b		cd	14c		lmn	38a		jkl	68a
5	abc	2c		ab	15c		o-r	39a		m	69a
6	ab	2d	33	ab	16a	56	abc	40a	70	abc	65b
7	a-e	3a	34	a	16a		def	41a		def	66b
8	abc	4a		bcd	17a	57	ab	42a		ghi	67b
	def	5a	35	abc	18a		cde	43a		jkl	68b
	ghi	6a		de	19a		fg	44a		m	69b
	jkl	7a	36	a	19a	58	abc	29b	71	1-6	53a
	mno	8a		bed	20a		def	30b		a	53a
	pqr	9a		e	21a		g	31b		7-13	54a
	st	10a	37	ab	21a	59	a	31-2b		b	55a
9	a	10a		c-f	22a		b	32-3b		14-18	55a
	bcd	11a	38	—	22a		c	33-4b		c	56a
	e	12a		a-e	23a		d	34-5b		19-22	56a
10	ab	12a	39	ab	16b	60	a	35b		23-26	57a
11	ab	13a		cd	17b		bed	36b		d	57a
12	abc	14a	40	abc	17b		efg	37b		27-30	58a
	d	15a		def	18b	61	abc	38b		31-36	51b
13	ab	15a	41	ab	19b	61	def	39b		e	52b
14	abc	4b	42	a	19b		ghi	40b		37-40	52b
	d	5b		b	20b		jk	41b		41-45	53b
	e	4b	43	abc	20b	62	a	41b		f	53b
15	ab	5b	44	a-d	21b		bed	42b		46-50	54b
	cd	6b	45	a-d	22b		e	43b		g	54b
16	a	6b	46	a-f	23b	63	a	44b		51-58	55b
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18	ab	9b	48	a	17c		d	30c		63-67	57b
19	ab	10b		bc	18c	65	a	30c		i	57b
20	a	10b	49	a	18c		bcd	31c		68-69	58b
	b-e	11b		b	19c		efg	32c		j	58b
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	d	5c	53	abc	29a		opq	38c		c-i	72a
25	ab	5c		de	30a		rst	39c		j-o	73a
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26	a	6c	—	—	31a		def	41c		l-f	72b
	bcd	7c	55	a	32-3a	68	a	42c		e-a	73b
27	ab	8c		b	33a		b	43c		bb-aa	71c
28	ab	9c		c	34a		c	44c		z-t	72c
29	abc	10c		d	34-5a		d	45c		s-o	73c

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