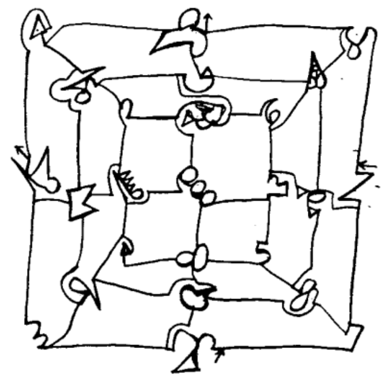
ADEPTUS

TROPERMIC CALCULUS

By

C. F. RUSSELL



LOS ANGELES

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I - THE TABLOCK - The word, Trope, means "Turn" & Perm is an abbreviation for "Permutation". This book is a scientific study of the turns or Tropes which can be made with a Tablock, each of which corresponds to a particular permutation of the categorical components of an exact-face which stands for one of the 48 possible total-postures of the block. There are many sorts of perms, such as punctual perms, toperms, postured-flexed-astrals, paraperms, etc., for all of which the general name is Troperm.

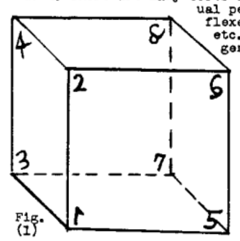


Fig. (1)

Let there be a Cube, called K which is a concrete expression of the Tablock. Procure a cubic block of hard wood, 2 inches each way, sand-papered & suitable for marking on its six sides or faces, with colored crayons; numbers, letters &/or other sigils to name the several parts where such marks are put. Each of the six faces is divided into 4 parts, governed by the 4 corners respectively & each of these 4 on one is called an exact-face, there being 24 exact faces on each tablock. Theoretically, the cube is composed of 8 smaller cubes or blocks, one at each corner or vertex & these 8 are called points or numbers (#s) & counted or located relatively as shown in Fig.(1), above. Thus, each # is really a small cube, 1/8th of the tablock & each side of the tablock comprises 4 #s, or one half the whole, while each edge, or crystal, consists of 2 #s, or 1/4th of the tablock.

The convex tablock has 1 3 5 7 on the bottom, 2 4 6 8 on the top, 2 1 6 5 for back, 8 7 4 3 for front; the left is 4 3 2 1 & the right is 6 5 8 7. The concave tablock is its horizontal reflection, with bottom = 5 7 1 3; top = 2 4 6 8; back = 6 5 2 1; front = 4 3 8 7; left = 8 7 6 5 & right = 2 1 4 3.

The first operation in marking the tablock is to put the numerals which designate the corners, four on each face. In Fig.(2) we show how this is done on five of the faces. Set the tablock upon its bottom with the back facing you, then, e.g. the #2 will be placed upright in the upper left hand corner of the back; on the same face, the #1 lies supine with respect to the #2, the #5 is supine with respect to the #1, but averse with respect to the #2; & the #6 is supine to #5, averse to #1 & prone to #2. Thus, if we rotate the block on the axis perpendicular to the face, a quarter of a revolution, or 90 degrees of a circle & then put the number in each corner upright, we shall achieve the desired effect, provided we put the first # on correctly. We will tabulate, below, or list the first numbers to be marked on each face, in the upright posture, then rotate the face deosil (clockwise) & put the rest on upright in the new postures respectively & they will all be properly related to each other when you are through.

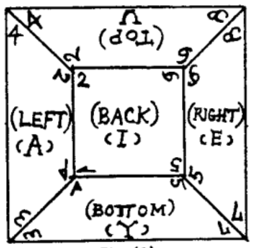


Fig.(2)

Name of the Face (Not to be written on it yet)

Name of the Face	First # to be made in the posture Upright; then with respect to this, the others:	Supine	Averse	Prone
I = BACK	2	1	5	6
A = LEFT	4	3	1	2
U = TOP	6	8	4	2
O = FRONT	8	7	3	4
E = RIGHT	6	5	7	8
Y = BOTTOM	1	3	7	5

II - FACIAL DETAILS - The method of making the several faces can be illustrated, as in Fig.(3) with the O face, or Front. The figure is drawn to scale; the face is 2 x 2 inches; the parallel lines which criss-cross are 1/2" from the edge; divide the small corner squares diagonally, to put the numerals within the outer diagonal half thereof, leaving the inner blank, for the present. Divide the four outer sections, between the corners, in half, parallel to the edge, the symbol for the Turn which will be explained later, goes next to the edge & the number of the Exact-Face next to the center. Within the center square put the Vowel in Script which names the face, here an "O" & within the vowel an arrow, pointing upwards, or in the upright posture, to correspond with the upright posture of the face, itself. If you rotate the above face, you will see that when the 7 is upright, the arrow is prone; when the 3 is upright the arrow is averse; when the 4 is upright the arrow, which postures the face, is supine; & both the 8, which indicates the Immediate corner of the Upright O Face, & the arrow on that face are simultaneously upright.

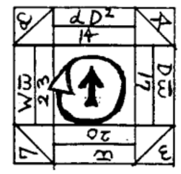


Fig.(3)

Rule off all six faces of the block in the appropriate colors first, then put on the numbers all in the proper colors; the arrows will be white; the vowels in the same color as the rule; the exact facial numbers the same color as the corners which give the immediate # of the same face; with the turn the same color as the number of the exact face; then the background, or what is left, of all faces the same color for each whole tablock, viz-black for the male & white for the female which will be described later. On the next page we will give a tabular picture of all six faces. The six vowels in script are made thus:-

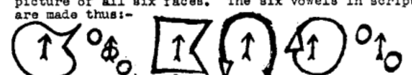
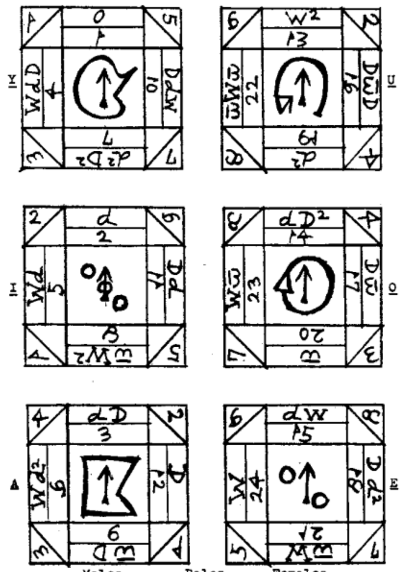


Fig.(4)

III - TABLE OF THE SIX EXACT-FACES - Fig.(5)



Males - Poles - Females

IV - MEANING OF THE TURN-SYMBOLS - Regard, e.g.,Exact Face No.22, viz - Prone U; the Immediate # here is #8; the No.22 means that,beginning with Upright Y as the first exact-face,then in the sequence of the Closed-Integral-Astralit this is the 22nd face we reach as we roll or turn the tablock from face to face next in order.

Set your tablock, now marked & colored, shellaced & ready for use, on the table before you with the Upright Y exact-face in sight, thus- Fig.(6).

Each corner or point on a face is named for reference as follows:- the upper left is called the Immediate point; the lower left is the Mediate point; the lower right is the Remote # & the upper right is the Neoteric #; this refers to the exact-face as you look at it; when the face is rotated, since the immediate # is always that number in the upper left hand corner, & will always be upright, another # assumes the immediate position;thus "immediate" "mediate" etc., refer to the corners of a view,regardless of what #s fill that corner,as we rotate the face.

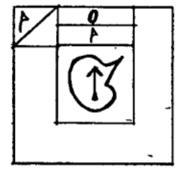


Fig (6)

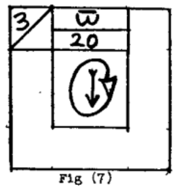


Fig (7)

Now, from Upright Y, turn the block so that Averse O is in view. This is by one simple turn,rolling the block away from you. This sort of a simple turn is called a Minor Widdershins turn, symbolised,as w .

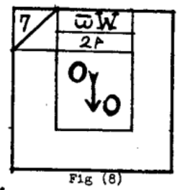


Fig (8)

Next, from Averse Q, roll the block with the left hand toward the left, making what is called a Major Widdershins turn & bringing into view exact-face No.21, which is Averse E & has #7 for its immediate point. Finally, from No.21 make a Minor Widdershins turn, coming to No.22 which is Prone U with #8 as the immediate #. See Fig (9).

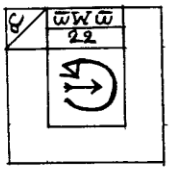


Fig.(9)

From No.22, return to Upright Y, simply by repeating the same series of turns which changed Up-Y into Pr-U, viz- w-W-w; the first or minor wid takes us to Up-A, the next, major wid gives Up-I, then another minor wid brings back Up-Y.

Now, for further practice, starting at Up-Y, make a Minor Deosil turn, which rolls the block one quarter toward us & yields Upright I with #2 immediate & is the No.2 face; then a Major Deosil brings No.3, the Up-A face with #4 immediate; then make another minor deo & get Prone U again. Thus you see that the series, w-W-w = d-D-d with respect to the exact-face reached at the end of the turning, although the intermediate faces are different. Thus, in both cases we go from the face in Fig.(6) to that in (9); but with w-W-w, we go through (7) & (8); with d-D-d we go through (10) & (11). Finally, repeat d-D-d from No.22 & regain No.1.

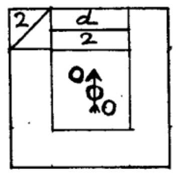


Fig.(10)

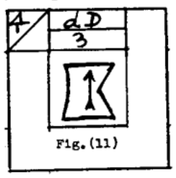


Fig.(11)

V - COLOR SCHEME - The posture sigil on each face is an arrow, which points toward the top of the block on quicksilver & sulphur faces & toward the back of the block on the salt faces; these arrows are made white on the male or convex tablock; on the female or concave tablock they are all made black.

The vowels, or astral sigils, are of the same colors on both tablocks & as follows.

Y = Violet; I = Orange; A = Green; U = Brown;
O = Blue; E = Red.

The numbers, or punctual sigils, in the outer corners are made the same colors on the three conjoining faces, viz -

1 = Gray; 2 = Orange; 3 = Yellow; 4 = Green; 5 = Blue;
6 = Violet; 7 = Red; 8 = Pink.

The turn sigils, or Tropes, are made the same color as the immediate # to which they refer & the number of the trope is the same color also.

Everything else constitutes background & is colored uniformly on each block, respectively, black for the convex & white for the concave tablock.

The guiding rules should be made the same as the vowel on the same face & the edges of the face can be ruled in the same colors.

VI - THE FACES OF THE CONCAVE or FEMALE TABLOCK -

The location of the points on the corners is found by putting the two tablocks together & making a horizontal reflection, as in a mirror.

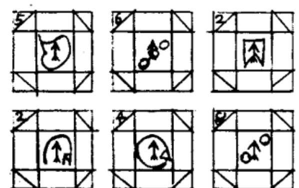
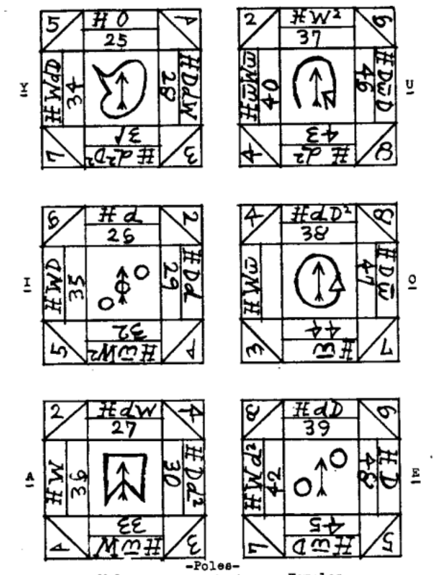


Fig.(12)

TABLE OF THE SIX EXACT-FACES OF THE CONCAVE TABLOCK-



Males -Poles- Fig.(13) Females

VII - TABLE OF PRINCIPAL & POLAR COMPONENTS -

	X J Q	J X Q	X Q J	Q X J	J Q X	Q J X
—— —— ——	A I Y U-Y-V	I A Y S-Y-C	A Y I A-I-C	Y A I P-I-V	I Y A A-A-V	Y I A P-A-C
—— —— - -	A I U U-U-C	I A U S-U-V	A Y O A-O-V	Y A O P-O-C	I Y E A-E-C	Y I E P-E-V
—— - - ——	A O Y A-Y-C	I E Y S-Y-V	A U I U-I-V	Y E I P-I-C	I U A U-A-C	Y O A P-A-V
—— - - - -	A O U A-U-V	I E U S-U-C	A U O U-O-C	Y E O P-O-V	I U E U-E-V	Y O E P-E-C
- - —— ——	E I Y U-Y-C	O A Y P-Y-V	E Y I A-I-V	U A I S-I-C	O Y A A-A-C	U I A S-A-V
- - —— - -	E I U U-U-V	O A U P-U-C	E Y O A-O-C	U A O S-O-V	O Y E A-E-V	U I E S-E-C
- - - - ——	E O Y A-Y-V	O E Y P-Y-C	E U I U-I-C	U E I S-I-V	O U A U-A-V	U O A S-A-C
- - - - - -	E O U A-U-C	O E U P-U-V	E U O U-O-V	U E O S-O-C	O U E U-E-C	U O E S-E-V

(V=Vex,for Convex; C=Cave,for Concave; Upright, Prone,Averse & Supine = U,P,A,S.)

VIII - CATEGORICAL COMPONENTS OF EXACT-FACES.-

In the table of the previous section we see 8 x 6 = 48 exact-faces in the particular places,as particles,of the table, their principal components indexed across the top margin,or major parameter & the polar or astral components shown down the left margin,or minor parameter.

The 11th particle in the table is taken out & shown here to illustrate the nomenclature & explain the nature of the various categorical components,or categories, of an exact-face.

```
Fig.(14)   J
Particle   X
No.11      Q
           ------
   ___     I
   - -     E
   ___     Y

          S-Y-V
```

Beneath each particular astral triad of the table, as here, | I E Y |, its name is given in abbreviated form, as,here, S-Y-V,which stands for,SUPINE-Y-VEX; the S is the posture, as U,P,A,S for Upright,Prone, Averse & Supine; the Y is the vowel or astral sigil for the sexed principal pole or side of the cube,as Y,U;I,O;& A,E; for Bottom,Top;Back,Front;& Left, Right; the V is the flex, as V for Vex or Convex & C for Cave,or Concave. Thus the 11th particle as shown in the table & in Fig.(14),here, represents the supine posture,of the male salt (Y = silver) face of the convex tablock. Take your black block, set it in this same posture & you will see 5 as the immediate #, the arrow points to the left,Y lies on its back with head to the left; the trope = D-d-W, meaning that from Upright Y Vex,this particular exact face is reached by making first a Major Deosil , then a minor deosil,followed by a Major Widdershins turn & in the order of the closed-integral-astralit (to be explained later),this exact-face is No.10.

Each exact-face has the following four categorical components- FLEX, PRINCIPAL, SEX & POSTURE. There are 2 flexes, 3 principals, 2 sexes & 4 postures; 2 x 3 x 2 x 4 = 48 exact faces. In the table (VII) the indices have been constructed so that the six principal permutations(= perms) combine with the eight polar perms, 6 x 8 = 48; the posture & flex being the result or conclusion from these parametric premises. Study the table carefully.

IX - DERIVATION OF COMPONENTS - In order to distinguish one exact-face from another it is necessary to specify all four categorical components; or else name the face in such a way that all four can be derived from the given nomenclature or device.

When any one exact-face is fully specified the posture of the whole block is wholly fixed,so that we can tell or calculate precisely where every other exact-face is located with respect to the given face,which is termed the Immediate Face,that directly in view, usually on the "top" of the tablock as we look at it lying upon the table before us.The reference frame,or array of co-ordinates,is constructed precisely the same as already explained with respect to the cube. But since we may roll & turn the block around to adopt 24 different postures & then reflect these 24 ,getting 48 in all, we must have a fixed reference-frame so that we can aptly & adequately described each new posture without confusion. Thus,if we say the top of the cube, we mean the female salt face, U,which when upright & convex has #6 immediate,#8 mediate,#2 neoteric & #4 remote. If we state these four points in a fixed sequence,as here = 6 8 2 4, we have what is called a punctual perm & this completely fixes the face. If then, 6824, is the face in view, we can deduce that a minor deosil turn will put 5612 into view; a major widdershins turn from 6824 brings into view 1357, which is Upright Y vex, & so on.

```
6   2
  U
8   4
```

6824 is simply a sequence of four numerals,representing a special sequence of Immediate-Mediate-Neoteric-Remote,or i - m - n - r; from this we can deduce the pole,as male or female,of the principal, as salt,quicksilver or sulphur; the flex,as vex or cave & the posture of the arrow,as U,P,A or S.

```
1   5
  Y
3   7
```

Another way of designating an exact face is by using what is termed an astral toperm,which names the immediate face first by its vowel, then what is called the vertical component,or face which can be reached from the immediate by a minor deosil turn, then the horizontal component which is that face which can be reached by a minor deosil plus a major ~~major~~ deosil turn; as faces these three are also termed respectively,immediate,mediate & remote. Thus, 6824 = UIE, the sixth particle of Table(VII).

Another way of naming an exact-face is to give the astral toperm in numerals, thus UIE = 236.

1	3	5		Y	I	A
2	4	6	=	U	O	E

Fig. (15)

Fig. (15), either the numeral or the vowel form, is called an astral cradle. This cradle has as many permutations or different arrangements as there are different exact-faces, namely, 48. As it stands in Fig. (15) it represents the idemfactorial change, posture, or face which is No. 1 = Upright-Y-Vex, or 1357, as a punctual perm & 135 or YIA as a toperm.

The Upright-U-Vex face = 6824 = 236 (or UIE) is expressed by the cradle, 2 3 6 / 1 4 5, in which, with respect to the idemfactorial form, the first or Q file has been transposed, the second or J column remains as it was & the third or X major row of the cradle has been transposed.

The ranks of this cradle are polar & the files are principals; thus the three odd numbers, 1,3,5, stand for male astrals or poles in the three principals & the three even numbers, 2,4,6, are the female poles of the same three principals.

The first number or vowel is called the astral component because it names directly the astral category or sexed principal of the face, which is found written, as the vowel, on the face itself.

The second number represents the vowel which is written on the mediate face, viz- a minor deo from the first face & is called the vertical component because it also stands for the astral nature of the vertical crystals or edges of the ~~xxxx~~ immediate face. Thus, the 3 of 236, represents male quicksilver; the vertical crystals of U-U-V are 6-8 & 2-4, reading from l to m & from n to r, or from "top" to "bottom" of the face. RULE: when the first # is less than the second, the crystal is male; if more, then it is female. Read from the immediate point for both vertical & horizontal crystals; thus 6-2, represented by the third number, 6 , is the horizontal component, & since 6 is more than 2, it is female & stands for female sulphur, or E. RULE: if the difference is 1, it is salt; if 2 it is quicksilver & if 4 it is sulphur. Thus, 6 from 8 leaves 2, hence J; & 6 minus 2 = 4, hence X. 6824 has QJ X for its principal components.

Whenever an exact-face receives its necessary & sufficient designation all other similar adequate specifications for the same face can be found by deduction & the total-posture of the tablock is also fully indicated.

Given, e.g. 7384, as uppermost, or immediate, we see that from 7-3, we get female sulphur = X = E; from ~~from~~ 7-8 we get male salt = Q = Y. E is the vertical component; Y is the horizontal; hence the astral component must be the only principal left, viz- quicksilver & since #8 is on the face, it is female quicksilver, for the quicksilver difference of 2 cannot be added to 8, since 10 is not a #, hence 2 must be taken from 8 making #6 the other end of the quicksilver crystal. Then since 8 is more than 6 this crystal component is female. Thus, every one of the six faces contains either #1 or #8, a face with #8 on it is female & with #1 is male.

However, the opposite face itself has four different postures. Of these, 6251 is reached from 7384 by a major deosil turn, or a major wid; 2165 comes by w-W-w; 1526 from d-2 ; i.e. a minor deosil twice & 5612 by D-w-D.

X - CATEGORICAL DEDUCTION - Give, say, 7384, as the punctual perm which determines an exact face & the question- what is its posture? First, find the components of the toperm. The vertical is 7-3; here the difference is 4, so the principal is sulphur & 7 is more than 3, hence the sex is female. The horizontal is 7-8, whose difference is 1, with 7 less than 8, hence male. 8 is on the face so the astral is female; the toperm then is 4 6 1.

Rule:- if the vertical component is less than the horizontal, the posture is vertical; if the horizontal is the lesser, the posture is horizontal.

Here the vertical component, 6 is greater than the horizontal, 1, hence the facial posture is horizontal. Next, we must determine whether this horizontal is prone or supine.

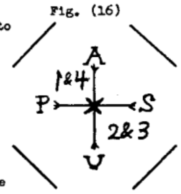
Rule:- A vertical face with 1 or 4 as the vertical is averse; with 2 or 3 it is upright; a horizontal face with 1 or 4 as the horizontal is prone, with 2 or 3 it is supine.

In 7384 we have a horizontal face with 1 as the horizontal, hence 7384 is Prone, viz- Prone Q convex. Now, how can we tell that it is convex?

The eight #s are divided into two series, 1-4-6-7, called Widdershins #s & 2-3-5-8, called Deosil #s, because this is the direction of the vitalit about these #s respectively.

The sequence of principals, as in a principal perm, QJX, XJQ, etc, is called Probite when it is QJXQJXQ... & Rebite when it is XJQXJQX..., or the reverse sequence.

Fig. (16)



Now, to determine the flex of an exact-face from the toperm thereof, make a tabular scheme as Fig. (17), in which the dichotomy of flex, as V & C, is combined with the dichotomy of #s as Wid & Deo, & a further diagonal dichotomy of Probite & Rebite. Then let the directions, Wid & Deo refer to the Immediate # of the face & the Sequence as Pro or Reb refer to the sequence of principals in the toperm of the face, viz. the Astral, Vertical & Horizontal components thereof.

Example:- with 7384, the toperm = 4 6 1; whose principal sequence is J X Q = Probite; the im # is #7 which is Wid; the combination Wid Prob is under the Vex index; therefore this exact face is convex.

Another example:- take 6857 = 6 3 2 whose principal sequence is X J Q = Rebite, with im # 6 which is Wid; the combination Wid Reb is under Cave; hence this exact-face is concave.

Vex	Cave	
Pro >	Reb <	Wid # 1,4,6,7,
Reb <	Pro >	Deo # 2,3,5,8

Fig. (17)

The horizontal 2 is less than the vertical 3, hence the face is horizontal & with 2, hence it is Supine; in fine, Supine E Cave. Each exact-face has a certain, force or function which will be explained next.

XI - TROPIC ANALYSIS - There are but four elemental turns or tropes: minor deosil (d), major deosil (D), minor widdershins (w), major widdershins (W). Included inthe class of primitive operations also are Reflections, which change a face from one tablock to the other or reflex, & the zero turn(O), or identical trope which changes a face into itself, viz- leaves it identically the same as it was. There are two perpendicular reflections, horizontal & vertical & two diagonals, primary & secondary. For the present we need consider only the horizontal which, e.g. changes U-Y-V to U-Y-C, i.e. exact-face No.1 to No.25.

The No.1 face is taken as the starting-point & is reached from itself by a zero (O) turn; it is termed the Idemfactor, or Idemfactorial face. It is expressed punctually by 1357; the toperm is 135 & the postured-astral-flexed = U-Y-V (Upright Y Vex).

The No.2 face is reached from No.1 by a d turn & is represented by the punctual perm, 2165, the toperm, 325 & the p-a-f, U-I-V.

If we make a w from No.1 we reach No.20, which is A-O-V = 3478 = 415.

If we turn from No.1 by a D, we get No.12, which is S-A-V = 2413 = 532.

By W from No.1 we find No.24 = P-E-V = 5768 = 631. Note that the tropic symbol marked on the tablock above the No. means simply that by this turn, or series of turns we reach this exact-face from the No.1 face; e.g. if we start with No.1 which is the O turn & then make w-W we reach No.21 which is 7856 = 614 = A-E-V. Now, if we make , a D from No.21 we get No.20 = 3478. Therefore, the turn which changes No.21 into No.20 is the same trope which changes No.1 into No.12. We express this as a Proportion or Equality of the two Ratios, thus:-

No.21 = 7856 = wW = Multiplicand

No.1 = 1357 = O = Idemfactor
No.12 = 2413 = D = Multiplier

No.20 = 3478 = w = Product

Fig. (18)

No.1 is to No.12 as No.21 is to No.20; or No.12 times (x) No.21 equals (=) No.20. X No. P. In order to multiply one face by another we must operate through the Idemfactor.

XII - THE TROPIC ALGORITHM - The actual turning of the tablock proves that 12 x 1 = 12 & that 12 x 21 = 20. We express this as a "multiplication" but it must be remembered that this operation is not commutative, for 1 x 12 ≠ 12 x 1, necessarily, except where the unit or No.1 face is one of the factors; thus 12 x 21 = 20, but 21 x 12 = 4 = W-d-D. Therefore, whenever a product is given, the operator is the first No. mentioned, which is the multiplier.

Now, given one face as the multiplier & another as the multiplicand, we can always calculate the product without making the actual turns, if the two faces are expressed as adequate perms (of any sort), by writing the symbols in connection with the idemfactor & working out the proportion according to certain rules, or formal procedure, called an Algorithm, just as in arithmetic by another systematic process we can do examples of long division or square root, etc.

S-I-V = No.11 = 6251 = Multiplicand

U-Y-V = No.1 = 1357 = Idemfactor
A-Y-V = No.7 = 7531 = Multiplier

Fig. (19)

Suppose, for example that we wish to discover what face will turn up, if we make d-2-D-2 from Supine I Vex; that is, set No.11 in view then make a minor deosil twice followed by a major deosil twice. The Algorithm has four places which are filled as shown in Fig. (18); so we set-down the Multiplicand with the Idemfactor directly beneath it & then the Multiplier as shown for our example in Fig. (19) above. Now, compare the digits of the multiplier with those of the idemfactor. For every digit in the one case there will correspond in the other case either the same numeral or its reciprocal, which is that # which is diagonally opposite through the cube. Identicals = 1 2 3 4 5 6 7 8

Reciprocals = 8 7 6 5 4 3 2 1.

In working the algorithm, then, we set down as the product immediately below each digit of the multiplier the same digit which is above the same digit of the idemfactor; or, if the corresponding digit of the idem is the reciprocal of that in the multiplier, then we set down the reciprocal of that which is above it.

In Fig. (19), the 7 of the multiplier finds

7 or its identical in the idemfactor, so in the product, beneath the 7 of the multiplier we set down the identical of the 1 of the multiplicand.

Similarly 5 connects with 5 & we set down the 5 above. 3 connects with 3 & brings down 2. 1 connects with 1 & brings down 6.

The answer = product = 1526 = P-I-V, or W-d from No.1, viz, No.5.

6 2 5 1
----
1 3 5 7
7 5 3 1
----
1 5 2 6

Fig. (20)

Thus, just as 7531 is the averse of upright Y convex; so 1526 is the averse of 6251, on the same face. In order to find the averse on the same face in any case we must in each case multiply by the averse on the upright Y or idemfactorial face.

Take another example where we will have to use reciprocals. To find what face results from a Major Wid followed by a Minor Wid from Averse A Vex. Set down the terms in the first three places of the algorithm as shown in Fig. (21).

1 2 3 4 = A-A-V
----
1 3 5 7 = U-Y-V
7 3 8 4 = P-O-V = W-w
----
4 2 8 6 = A-U-V

Fig. (21)

Then 7 is identical with 7 so bring down 4; 3 is identical with 3 so bring down 2; but 8 is the reciprocal of 1 so bring down the reciprocal of the 1, above 1, which will be 8; similarly, the 5 of the idem is the reciprocal of the 4 of the multiplier, so bring down the reciprocal of the 3, above 5, which will be 6 to put beneath the 4.

Take another example which involves reflection in addition to turning. Here, the operator in Fig. (22) is 6284, = H-D-w-D, i.e. a horizontal reflection, then a major deo, + a minor wid + a major deo, applied to Prone E vex. Make a horizontal reflection of P-E-V using the cave tablock & getting S-E-C = 6857, then make D from there getting 2468, then w getting 4387, finally D giving 2143, the answer. In the algorithm we proceed as before getting the very same answer by calculation.

P-E-V = 5768

Idem = 1 3 5 7
S-U-C = 6284

U-A-C = 2143

Fig. (22)

XIII - THE INTEGRAL CLOSED ASTRALIT - An Astralit is a series of exact-faces which are consecutive,i.e. connected by simple or primary turns; an integral astralit is one which includes every one of the 24 exact-faces on a tablock in one series of consecutive faces; an integral closed astralit is a series of 24 faces such that from the 24th we may return to the 1st consecutively,or by a simple turn. Thus we start with any exact-face & make 24 primary tropes & return to the starting-face having passed through,in the process,each & every one of the whole 24,once & just once. The idemfactorial of this process begins,of course, with No.1 & according to the way we have numbered them on the tablock, the series is consecutive numerically, 1,2,3,4,.....24,1. The following table is called a Rational Cradle. Fig.(23)

Postures=	U	P	A	S ▫	U	S	A	P
Astrals =	A	A	A	A	E	E	E	E
No.of Face -	3	6	9	12	15	18	21	24
Prior Turn	D	d	W	w	D	w	**W**	d
X								
	I	I	I	I	O	O	O	O
-	2	5	8	11	14	17	20	23
J	d	W	w	D	w	W	d	D
	Y	Y	Y	Y	U	U	U	U
-	1	4	7	10	13	16	19	22
Q	D	w	D	d	D	d	D	w

Supposititious Male Side ▫ Female Side

We could start the integral closed astralit with any one of the 24 faces of the tablock, vex or cave; therefore,there will be 48 different rational cradles to correspond,which may be erected by calculation according to a set of rules,or else by the empirical process of rolling the block through the prescribed sequence of turns. Thus,beginning with Upright I Vex, the posture indices alone will come as follows.

Fig.(24)
P A S U - S A P U
A S U P - A P U S
U P A S - U S A P

The astral symbols will be- for the male side A | U | I |

& for the female side - | E | Y | O .

XIV - CRADULAR CO-ORDINATES - Study of any one of the 48 possible rational cradles will demonstrate that there is a certain uniformity throughout which can be indexed & abbreivated for reference & use. Thus the minor parameter will always be one of the six principal perms & every category can be determined & located if we know what goes in the first three places, where No.1, No.2 & No.3 are located in the idem (Fig.23). Thus,e.g. the posture scheme as depicted in Fig/(24) can be deduced, as follows.

Vertical postures remain the same;horizontal postures are reflected,viz- prone on the male side becomes supine on the female & vice versa. The transformation is simply that effected by a double major deosil (or widdershins) turn which does not alter a vertical posture but reverses one that is horizontal.

Now, to derive the whole set of Co-ordinates from the index,e.g. the first three places of No.2 = U-I-V, A-U-V,P-A-V. These are the O, d & dD turns from No.2.

These are two sorts of posture sequences,-the Probite = U P A S & the Rebite which is U S A P. In either case we have four different starting points possibly,so that the Probite permutations are U P A S, P A S U, A S U P, & S U P A.Whereas the Rebite Perms are U S A P, S A P U, A P U S & P U S A.

Rule:- On the male side of the cradle(left), the posture perms are always probite,starting with that of the index; on the female side (right) they are always rebite beginning with the first on that side. Refer to Fig.(24) & see this exemplified.

The vowels run four at a time & simply change sex on the female side.

Now, as an exercise set up the Rational Cradle for the Closed Integral Astralit which starts with Averse A Vex = No. 9. First,turn your tablock to No.9 = 1234,which will be the first particle of the cradle. The indices are got by making a minor deo & then a major deo = No.10 & No.11, respectively. The vowels for the index are A,Y,I; the postures are A, S, S. Consequently,these same vowels will be repeated,each, four times for the male half & then changed to E, U, O,for the female.

The indicial postures with probite perms for the male side become- | S U P A / S U P A / A S U P | & for the female we reflect the first file by a horizontal reflection for the first file of the female side & then make the rebite perms from there, thus- | P U S A / P U S A / A P U S |. Now combine the postures with the corresponding vowels, retaining the same flex & you will have the cradle complete, which we will here show simply by numbers of the exact faces severally.

•11	2	5	8	-	23	14	17	20
•10	1	4	7	-	22	13	16	19
• 9	12	3	6	-	21	24	15	18

In punctual perms this becomes-

•6251	2165	1526	5612	-	7384	8743	4837	3478
•5173	1357	3715	7531	-	8462	6824	2648	4286
•1234	2413	4321	3142	-	7856	5768	6587	8675

Fig. (25)

XV - RATIONAL VARIATION - The 24 different astralits of the species just described, each with a different exact-face as the starting point, constitute a complete table for the purpose of tropic investigation. In order that we may understand this more clearly let us extend it to an exhaustive classification of all possible closed integral astralits of every species.

In the case explained, to get the triple index we rotate the tablock around the immediate # of the starting face in a widdershins direction for the first 12 or male half of the cradle & for the female half we go round the mediate # deosil of the first face on the second half which is derived from the first of the first half by a major deo or wid twice. Thus, we began with a minor deosil turn.

However, instead of the above, we might start by going around the im # ~~[illegible]~~ deosil, viz. begin with a major deo, then minor deo & so on; or we might perform the same or the reverse process around one of the other corners of the same face; making in all 2 directions times 4 corners = 8. 8 x 24 = 192 possible different clos. integ. astral.

If the first turn made is a major instead of a minor deosil then the derivation of the posture index for the female side of the cradle must follow the law involved when we turn to the reciprocal of the first face by a double minor instead of a double major turn. We have seen that, by the latter method, the double major reverses the horizontals while the vertical postures are invariant; by the former or double minor turn the vertical postures are reversed, as by a vertical reflection, while the horizontals do not vary.

TABLE OF POSTURE TRANSFORMATIONS

First Turn, Minor		First Turn, Major	
Vertical Postures			
Male Side	Female Side	Male Side	Female Side
U	U	U	A
A	A	A	U
Horizontal Postures			
P	S	P	P
S	P	S	S
Turn to Reciprocal Face by Major-Twice as D-2 or W-2		Turn to Reciprocal Face by Minor-Twice as d-2 or w-2	

Fig. (26)

As an example, erect the cradle whose first face is Prone E Vex (No. 24) = 5768 & goes deosil around the remote # = 8.

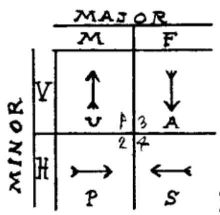
The vowel sequence for the male half then will be E, U, O; the first three postures will be P, U, U. The vowels of the female side will be A, Y, I & the first three postures, respectively will be P, A, A, viz- P-A, A-Y, A-I, which takes us widdershins around the mediate # = 1, the reciprocal of #8. Let the student practice & make the complete erection of enough of the 192 to fix the rules in mind. During this you will discover that the turn which changes the 24th to the 1st again is always the same as that which changes the 2nd to the 3rd & that which goes from the 12th to the 13th is the same.

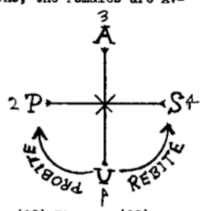
EXAMPLE- RATIONAL CRADLE from PRONE-Y-VEX -DEO-REMOTE.

24	15	18	21	-	6	9	12	3
5	2	11	8	-	23	20	17	14
4	1	10	7	-	22	19	16	13

Fig. (27)

XVI - POSTURE ANALYSIS - The four postures are divided generally into two classes, Vertical & Horizontal; each general class is divided polarically into two species, technically called male & female, the male being the first of that genus in a consecutive count or rotation of U, P, A, S. Thus, the males are Upright & Prone, the females are Averse & Supine.





(28) - Figures - (29)

The division by genus, or inclination, as V & H, gives the sexes of the minor parameter of the posture table; whereas the dichotomy by polarity, as M & F, constitutes the major parameter. The minor parameter of the posture of an adjacent face is determined by the following rules — adjacent are faces which are connected by a singulary or primary turn.

A minor turn from a salt face always finds a vertical posture on the next face; a major gives a horizontal.

A minor from a sulphur finds the next face horizontal; a major from sulphur gives vertical.

From a Quicksilver face, either sort of turn, viz. any kind of singulary turn, DOES NOT CHANGE the minor parameter of the posture. That is, given a J face with a vertical posture, as U or A, then either a min. or maj. wid or deo will find a vertical posture on the next face; or if the J face is horizontal, as P or S, then the next face by any sort of singulary turn, will also be either prone or supine.

Verify these rules with your tablock.

The first three cradular degrees, viz., the i, m & r faces, as reached by the tropic formula, Q, d, dD, from the No.1 place, always have astrals in three different principals, which are the three principal components of the exact-face, itself, called Astral (i), Vertical (m) & Horizontal (r); if these change their sex we capitalise their letters. In terms of the Q face, then, its components, the rational index is -

Trope	Degree	Components			Toperm
Q	i	i	m	r	1 3 5
d	m	m	I	r	3 2 5
dD	r	r	I	M	5 2 4

From this formula we can find the subsequent degrees when the first is given. Now, from the principal perm, alone, the minor posture parameter can be found. E.g., with P-A-V (3142) the principal perm = XJQ = 321. From X to J is (d) a minor from X, hence the m face has a horizontal posture; (P-Q-V); but m, here, is J so the next turn (minor or major) is to a new face with the same minor parametric posture, viz- horizontal (=S-Y-V). Indeed, we can say further: from Q the next two faces (m & r) are always vertical; FROM J the m repeats the J & the r is its opposite. In fact, there are but six different minor parametric posture perms on the tablock (vex &/or cave) corresponding to the six principal perms, thus - Fig. (30)

The rules are reversibly unique such that, just as from the principal perm we can deduce the V-H Perm, so, too, from the V-H we can deduce the three principal components of the exact-face, viz, of the astrals of the i, m & r faces.

Principals		V-H Perms
1 2 3	-	V V V
1 3 2	-	H V V
2 1 3	-	V V H
2 3 1	-	H H V
3 1 2	-	V H H
3 2 1	-	H H H

XVII - POSTURE DERIVATION - Given, 5 4 1; = X J Q = i m r ; r is less than m , hence i is horizontal & with 1 as that horizontal, hence, prone; m face = m I r = 4 6 1, whose r is less than m, hence is also horizontal & with 1, so 'tis also prone; the r face = r I M = 1 6 3, whose r is less than m, so 'tis horizontal, but with 3, so supine; the totally-parametrised postures of 5 4 1, therefore are P P S, which we put beneath as P P S to correspond with the digits. The student should solve many examples; e.g. 3 5 2, whose three degrees by the formula are - - - 5 4 2 ; the i & m faces have smaller horizontals, 2 4 6 hence are horizontally postured, but with 2, hence = supine; the r is a vertical with 4 , hence averse: S S A.

XVIII - PARAMETERS OF A TOPERM - As shown in table (VII), each toperm is the result of combining a principal with a polar perm. The six principal perms are shown & numbered consecutively from 1 to 6 as in Fig.(30). The eight polar perms (trigrams) are numbered from 1 to 8 consecutively as shown on the minor parameter of table (VII).

Q	______	1
J	__ __	2
X	______	1
(6)		(3)

Fig.(31)

E.g., 5 4 1 is X J Q with Yang-Yin-Yang or 1-2-1. Thus, the odd numbers in the perm are yangs (1) & the even are yins (2). Writing the principal first, then the polar 5 4 1 = 6-3, as in Fig.(31). Trigrams are made (erected) from the bottom up. The name of an exact-face in terms of its principal & polar perms is called a PARAPERM. 6-3 = 321-121.

Fig.(32) TABLE OF PARAPERMS = EXACT- FACES

Polars	Principal Perms 1-1	2-1	3-1	4-1	5-1	6-1
1-1 #1 O	O 1-1 #1 O	HDdW 2-1 #28 HDdW	HwWw 3-1 #32 HwWw	Wd 4-1 #5 Wd	wD 5-1 #9 wD	HW 6-1 #36 HW
1-2 #37 HWW	1-2 #37 HWW	2-2 #16 DwD	3-2 #20 WW	4-2 #41 HWw	5-2 #45 HWd	6-2 #24 W
1-3 #31 HdDD	1-3 #31 HdDD	2-3 #10 DdW	3-3 #2 d	4-3 #35 HWd	5-3 #27 HdW	6-3 #6 Wdd
1-4 #19 dd	1-4 #19 dd	2-4 #46 HDwD	3-4 #38 HdDD	4-4 #23 Ww	5-4 #15 dW	6-4 #42 HWdd
1-5 #25 HO	1-5 #25 HO	2-5 #4 WdD	3-5 #8 wWW	4-5 #29 HDd	5-5 #33 HwW	6-5 #12 HD

(continued on next page)

Fig.(32)-continued -

Polars	1	2	3	4	5	6
1-6 #13 WW	1-6 #13 WW	2-6 #40 HwWw	3-6 #44 Hw	4-6 #17 Dw	5-6 #21 wW	6-6 #48 HD
1-7 #7 ddDD	1-7 #7 ddDD	2-7 #34 HWdD	3-7 #26 Hd	4-7 #11 Dd	5-7 #3 dD	6-7 #30 HDdd
1-8 #43 Hdd	1-8 #43 Hdd	2-8 #22 wWw	3-8 #14 dDD	4-8 #47 HDw	5-8 #39 HdD	6-8 #18 Ddd

XIX - PARAPERMIC EXPANSION - The paraperm of No.15, e.g., = 5 - 4; the toperm = 623; as a parapermic operator this face(U-E-V) is expressed in the expanded form = 1 / 6 /-421/223-/ 5 (See table XXV, page 30), which means that: 1, it does not change the flex; 6, it makes a 6 polar (2 1 2) change; 421/223 = 4/2,2/2,1/3 = its effect respectively on the l, m & r faces of the operatand; before the / (oblique) is what it does to a vertical & after the / what it does to a horizontal posture, thus V/H.

We give the four postures numbers; as U = 1, P = 2, A = 3 & S = 4; thus e.g., 4/2 is called a posture function wherein 4/ is a verb which says to "supine a vertical" & /2 means "to prone a horizontal posture"; 2/2 means to prone both; 1/3 = "abite (= no change) the vertical & / averse (reverse) the horizontal". Thus the expanded paraperm = parapermic operator, has four terms; (I) the flexual function; (II) the polar; (III) posture; (IV) principal function. (II) the polar or sexual function is the same as the trigram or # which is the immediate # of the exact-face, here, e.g., 5 -4 = 6 5 8 7, whose l # = #6. This can always be found by counting the sexes of the principal letters in the Q J X sequence, as, 6 2 3 in the QJX order is 236 = sexually, yin, yang, yin = 2 1 2 = #6. The principal function is the principal perm of the l m r faces. The posture-function for verticals comes directly from these same faces; for horizontals- apply the rule of parity given on page 28, or the method explained in Sections (XXI) et seq.

Singulary Fig.(33) Posture Multiplication

	1	2	3	4
1-	1	2	3	4
2-	2	3	4	1
3-	3	4	1	2
4-	4	1	2	3

XX - Fig.(34) TIMES TABLE OF POSTURE FUNCTIONS

Multiplier	(1) 1/1	(2) 1/3	(3) 2/2	(4) 2/4	(5) 3/1	(6) 3/3	(7) 4/2	(8) 4/4
	Multiplicand							
(1) 1/1 -	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(2) 1/3 -	(2)	(1)	(7)	(8)	(6)	(5)	(3)	(4)
(3) 2/2 -	(3)	(4)	(6)	(5)	(7)	(8)	(2)	(1)
(4) 2/4 -	(4)	(3)	(2)	(1)	(8)	(7)	(6)	(5)
(5) 3/1 -	(5)	(6)	(4)	(3)	(1)	(2)	(8)	(7)
(6) 3/3 -	(6)	(5)	(8)	(7)	(2)	(1)	(4)	(3)
(7) 4/2 -	(7)	(8)	(5)	(6)	(3)	(4)	(1)	(2)
(8) 4/4 -	(8)	(7)	(1)	(2)	(4)	(3)	(5)	(6)

XXI - DERIVATION OF POSTURE FUNCTIONS - In practice we have been using toperms of the third degree; the degree is counted by the number of places or digits. These are the necessary & sufficient expressions for any exact-face because these first three degrees (i,m,r) represent the first three faces of the cradle & can serve as an index of all 24 or (with reflex) 48 particles. The question now is - what happens to the postures of the three faces of one toperm when multiplied by those of another third degree toperm? For example- suppose we make a minor deosil turn (d). Here there is a permutation of the multiplicand such that i-m-r becomes m-I-r. (Capital I here means that the same principal is involved but with sex changed, viz- I is the reciprocal of the i face.) Thus if we should start with Q-J-X, after the d we would have J-q-X, in other words from 1 2 3 we get 2 1 3. The polar change is from 1 1 1 = #1 to 1 2 1 = #3.

The mediate face of the multiplicand becomes the immediate face of the product without any sexual change,flexual change,principal change,or posture change; the remote face of the multiplicand stays the remote face of the product without any change except in posture which is proned; the immediate face of the multiplicand is changed into its reciprocal (opposite sex in the same principal) but since there is a double minor turn between the two, while a horizontal posture is not altered, a vertical is reversed,or aversed; the posture function then,here, is 1/3 (U/A),meaning just that fact. The function for the m face = 1/1; the r face is revolved 90º deosil = proned & since this affects

both vertical & horizontal postures in the same way, the function is 2/2. Thus the whole posture function of d, or the U-I-V face as an operator,is 3/1, 1/1, 2/2 or 312/112. The figures before the / refer to the effect on verticals; after the / to the effect on postures that are horizontal in the multiplicand. The three places of the function refer respectively to the three first degrees of the toperm of the multiplicand,viz- im, med & rem .

XXII - EXAMPLE OF DERIVING THE POSTURE FUNCTION OF A REFLEX OPERATOR - Take A-Y-C = 1 4 5 ,No. 31. In order to reach this face from No.1 we must make a horizontal reflection, then minor deosil-2 + major deosil-twice = HddDD. This tropic formula tells us what this face will do then to another. The postures of the 3rd deg.toperm of No.31 are averse,upright,upright,(A U U). Without further ado these three postures tell us what has happend to the three vertical postures of 1 3 5 = U-Y-V, the idemfactor, the unit face, the identity operator of the group = the No.1 face of the tablock pair.

1 3 5 becomes 1 4 5 ; the formula then for vert-
U U U   A U U   icals is 311/ or 3/, 1/,1/.

To discover the other half, the horizontal part of the function, apply the same operation (HddDD) to some other toperm all of whose (i-m-r) postures are horizontal, such,e.g., as Supine-E-vex,which = 642 / SSS . Making the No.31 trope from No.18 (= 8675), we get first its horizontal reflection which is P-E-C (No.42) = 7586, then the double minor,dd, gives No.36 = P-A-C = 1324, then the double major, DD,yields S-E-C = No.48 = 6857, the required product whose third degree postures are S S P / 6 3 2 . Now, since there has been no principal permutation we can compare the postures directly by a one-one correspondence, noting the first two SS- have not moved but the third S has become P,i.e. reversed or aversed; therefore the horizontal function in question is /113 & the whole posture function of No.31 is 311/113.

XXIII - CONCERNING TOPERMIC POSTURE FUNCTION IN THE FIRST DEGREE - The toperm's first digit is its first degree & represents the immediate face.

Thus, of 5 4 1, (No.6 = 3142), P-5 or Prone A Vex is a P P S first degree toperm. To get its posture function is to find out what it will do to the posture of any face when we use it as a multiplier; i.e. put the multiplicand in the first place of a 48-fold cradle & then count to the sixth degree or place, or, what amounts to the same thing, take any face & make the P-A-V trope, which is Wdd, a major wid followed by two minor dec's. Here, we consider the factors as single faces only, viz- 1st deg. toperms.

Now, the immediate face, P-A-V, is a transform of the third topermic face of U-Y-V, the idemfactor. Thus 5 4 1 is the transformed 1 3 5 ; but the 5 of the idem is upright, while that of the new face is prone. Consequently, the operator No.6 has chosen the third degree of the idem & then proned it. There is no flexual or sexual change, so the effect would be the same on a horizontal; the first degree posture function of No.6 then is 2/2 ,but this does not work on the first degree of the multiplicand; consequently in writing posture functions we write them in degrees of the multiplicand not in those of the multiplier. This rule must be kept in mind to avoid confusion. Thus, e.g., with all sulphur faces, the third function is what corresponds to the immediate face; with quicksilver it is the second & with salt, the first.

Rule:- For the immediate face, whenever there is a disparity of flex & sex the V/H posture functions are reciprocal; but whenever there is parity of flex & sex (i.e. 11 or 22) the V/H are identical.

This rule is important for it enables us to determine easily the posture of the immediate product of two faces. E.g. suppose we are to multiply a face by Prone U Cave (No.40). We see at once that P-U-C has no disparity between its sex & flex, for U is female= 2 & C = 2 (the 2nd flex), hence the V/ & /H will be identical (not-reciprocal); but the V/ is P = 2, hence the /H = 2 & the function is 2/2. It is clear, then, that No.40 seeks the first or immediate face of its multiplicand, changes its flex & sex, then prones it, whether it be a vertical or a horizontal posture. E.g., it takes No.47, S-O-C makes a horizontal reflection to No.23, then a wWw to No.2, thus changing No.47 flexually, sexually & then proning it. 4826 x 8473 = 2165 =U I V.

XXIV - MULTIPLICATION OF POSTURE FUNCTIONS -Example 11 x 13

1/3, 3/3, 3/1 = No.13 = Multiplicand
3/1, 4/4, 4/2 = No.11 = Multiplier
3/3, 2/2, 2/2 = No.5 = Product

Here the principal function of the multiplicand is 1 2 3 (=1), hence with it i-m-r is not permuted; hence we multiply directly in a one-one correspondence between multiplier & multiplicand, which would not be the case if there were any other principal perm, since we must first consider what the multiplicand does to the idem, then add to that what the multiplier does to the idem, for both are operative formulas. It is as though we applied the No.13 first, then followed with No.11. Therefore, it is 3/1 x 1/3; 4/4 x 3/3 & 4/2 x 3/1, respectively for the i, m, r, terms of the product, itself as an operator.

(i)- Now, 1/3 does not change verticals, but averses horizontals; 3/1 does the opposite, hence the product of the former by the latter = 3/3. Thus the effect of the multiplicand, 1/3 on postures- U P A S is ~~to~~ to leave the verticals "as is" & averse the horizontals, producing U S A P; now the multiplier comes along with the opposite function, prones the verticals & leaves the horizontals alone; so, applied to the U S A P produced by the multiplicand, we get A S U P. Now, compare the final stage, A S U P with the initial, U P A S, & observe that both verticals & horizontals have been aversed, consequently the functional product is 3/3.

(m)- The multiplicand ,3/3, averses both V/ & /H, so U P A S becomes A S U P at once, then the multiplier, 4/4, which supines both V/ & /H changes the A S U P to P A S U, which compared with U P A S shows that all the original postures both vertical & horizontal have been proned, so the final product is 2/2.

(r)- The multiplicand transforms 1/1 into 3/1, aversing only the verticals; then 4/2, which supines the verticals & prones the horizontals, changes A P U S into P A S U, which is 2/2 x the original U P A S.

Whenever the principal term of the expanded parapermic operator is other than the 123= 1 perm, the multiplier must work on the terms of the posture function of the multiplicand in the sequence which is that of the principal perm of the multiplicand, but the products belong in the same column with the terms, respectively, of the multiplicand. E.g.,

```
Multiplicand = #17 = 1/4/ 1/3-4/2-4/4 / 4 (= 231)
Multiplier   = #21 = 1/7/ 2/2-4/2-3/1 / 5 (= 312)
                     --------------------
```

Here, the l of #21 goes with the m of #17, but the product is put as m; the m of #21 goes with the r of #17 & the product put as r; the r of #21 goes with the l of #17 & the product put as l.

(l m r)

Thus we have 3/1 x 1/3 = 3/3 for l; 2/2 x 4/2 = 1/3 for m & 4/2 x 4/4 = 1/3 for r. The whole product is

#7 = 1/7 / 311/333 / 1.

XXV - TABLE OF PARAPERMIC OPERATORS -

Convex

#1	UY	1/1-	111/111	-/1	#2	UI	1/2 -	312/112	- / 3
#3	UA	1/4-	221/441	-/5	#4	PY	1/3 -	211/231	- / 2
#5	PI	1/1-	322/322	-4	#6	PA	1/3 -	422/442	- / 6
#7	AY	1/7-	311/333	-/1	#8	AI	1/5 -	334/332	- / 3
#9	AA	1/1-	443/443	-/5	#10	SY	1/5 -	411/413	-/ 2
#11	SI	1/6-	344/142	-/4	#12	SA	1/2 -	244/444	- / 6
#13	UU	1/6-	133/331	-/1	#14	UO	1/8 -	112/334	- / 3
#15	UE	1/6-	421/223	-/5	#16	SU	1/2 -	433/233	- / 2
#17	SO	1/4-	144/324	-/4	#18	SE	1/8 -	444/222	- / 6
#19	AU	1/4-	333/113	-/1	#20	AO	1/3 -	134/114	- / 3
#21	AE	1/7-	243/221	-/5	#22	PU	1/8 -	233/411	- / 2
#23	PO	1/7-	122/144	-/4	#24	PE	1/5 -	222/224	- / 6

Concave

#25	uY	2/5 -	111/331	-/1	#26	uI	2/6 -	312/332	-/3
#27	uA	2/2 -	421/443	-/5	#28	sY	2/1 -	411/233	-/2
#29	sI	2/2 -	344/322	-/4	#30	sA	2/4 -	444/442	-/6
#31	aY	2/3 -	311/113	-/1	#32	aI	2/1 -	334/112	-/3
#33	aA	2/3 -	243/441	-/5	#34	pY	2/7 -	211/411	-/2
#35	pI	2/5 -	322/142	-/4	#36	pA	2/1 -	222/444	-/6
#37	uU	2/2 -	133/111	-/1	#38	uO	2/4 -	112/114	-/3
#39	uE	2/8 -	221/221	-/5	#40	pU	2/4 -	233/231	-/2
#41	pO	2/3 -	122/324	-/4	#42	pE	2/7 -	422/222	-/6
#43	aU	2/8 -	333/333	-/1	#44	aO	2/7 -	134/334	-/3
#45	aE	2/5 -	443/223	-/5	#46	sU	2/6 -	433/413	-/2
#47	sO	2/8 -	144/144	-/4	#48	sE	2/6 -	244/224	-/6

XXVI - ALGORITHMS WITH POSTURED-FLEXED-ASTRALS -

E.g.,- No.41 x No.15 = No.25.

```
                       o  +  x
No.15 = 6587 = UE SU PI
        ----   ---+--+
No.1  = 1357 = UY UI UA
No.41 = 3748 = pO pA uY
        ----   -+--+---
No.25 = 5713 = uY uI uE
                +  x  o
```

Look in the idem (No.1) for the same principal & take, to set down below the operator, from the multiplicand above the term in the idem, changing its sex &/or flex only when there is a corresponding change between the idem & the operator & adjust the postures accordingly. Thus the product is related rationally to the multiplicand precisely the way the idem is related to the multiplier. Now, the UI of the idem has been transformed into the pO of No.41 by being reflected to uI, heterosexed to uO & then proned; therefore we do the same with what is above UI, viz. SU; this is reflected to pU, heterosexed to sY, which is proned to uY in No.25, the product.

Similarly, UA of the idem becomes pA of No.41, by reflection to uA then is proned to pA; so we do the same with PI, viz- reflect it to sI, which is to be proned to uI in the product.

Finally, UY of the idem becomes uY of No.41 by a simple horizontal reflection (H), so the UE of No.15 becomes, by H, the uE of No.25.

As the student grasps each concept & rule he, or she, should select & work many examples so as to fix them in the understanding & memory.

XXVII - HOW TO DETERMINE THE NUMBER OF ANY PERM -

Perms are numbered consecutively in the sequence of their construction in series or groups; not all are made in the same way, but the system of numbering & finding the number corresponds to the method of construction & grouping. To take a simple instance, we have the six principal perms already described & exemplified. The unit of this group is No.1 = 1 2 3 (or Q J X). The second perm is 1 3 2; the method is to work from left to right changing a digit only when we must, to avoid duplication. This perm has three places. The total number of perms is found by multiplying as factors the consecutive numbers which exactly fill the places. Here, 1 x 2 x 3 = 6 total perms of this variety. The first two are all that we can make with 1 in the first place; then we make two with 2 in first place & the last two with 3 in the first place.

1 2 3	1 3 2	2 1 3	2 3 1	3 1 2	3 2 1
(1)	(2)	(3)	(4)	(5)	(6)

The total number of perms is called the order of the perm; the number of places in one perm is the degree of the perm. The factorial of a number, written with an exclamation point (!) after the number, is the product of all the digits from 1 through the number itself. Taking the number of places as 3, which is the degree of the perm, the order equals the factorial of the degree, as 3! = 3 x 2 x 1 = 6. The modulus of any place of the perm is the number of times that place can be occupied by any occupant. Thus, counting & numbering the places from left to right, as ( ) ( ) ( )

First Place–Second Place–Third Place,

the first place can be filled by three different digits. Divide the order by the number of possible occupants, 6/3 = 2; 2 is the modulus of the first place = the number of times each occupant can remain in that place & can be found also by taking the factorial of the number of places left unfilled. Thus, if we fill the first place, then two places are left unfilled & the factorial of 2 = 2! = 2 x 1 = 2, which is the modulus of the 1st place.

Now, having filled the first two places, there is only 1 place left; 1! = 1, the modulus of the second place. The modulus of the last place is always 1, the proof of which is somewhat subtle, something like the proof, in algebra, that any number to the zero power equals 1, as, e.g.

$x^0 = 1$, $A^0 = 1$, $4^0 = 1$, etc.

We need not prove it in detail here.

The ordinal of the digit of a perm is the number of its place ordinally in its own cradle, that is, its place in the order of choice. Thus, generally, we choose numbers to fill places in consecutive sequence, in which case 1 would be taken first, then 2, then 3 & so on. The ordinal value of 1, then, is 1, of 2, 2 etc. But, if the numbers to be used as occupants were, 4, 9 & 7 & to be taken in that order, then the ordinal value of 4 = 1, of 9 = 2 & of 7 = 3. The ordinal remainder is the number left to choose from after taking some.

I	II	III		
2	1	1		
(3	1	2)		
2	0	0		
4 +	0 +	0	+ 1	= #5

Fig. (35)

Strictly speaking the ordinal remainder is the number of choices which could precede the digit chosen & is 1 less than the ordinal value. Now, let us work an example, see Fig. (35) where the ranks are named respectively; places, moduli, digits, ordinal remainders, & the digits of the sum are the products respectively in each column of the ordinal remainder times the modulus. Thus since 3 is the digit chosen for first place (I), the ordinal remainder is 2, for two could precede 3; but nothing could precede 1, hence its ordinal remainder (O-R) = 0; similarly after 1 is selected, 2 also has an O-R of 0. Then 4 = 2 x 2; 0 = 0 x 1; 0 = 0 x 1 & the sum of these three products is 4; then 4 + 1 = 5 the number of the perm. You see, the calculation gives us 4, the number of perms which precede the one selected; then we add the 1 to get the number of that chosen, 3 1 2. This is essentially the process used in finding the number of any perm, but often has slight modifications due to the peculiar circumstances surrounding any particular manner of making the perms. It is called the PLUS-ONE ALGORITHM & its reverse is used to find the perm, when the number thereof is given.

XXVIII - THE REVERSE OF THE PLUS-ONE ALGORITHM OR HOW TO FIND THE PERM WHEN THE NUMBER IS GIVEN.

```
2 ) #5  (  2 + 1 = 3rd of 1 2 3  = 3 *
    4
 1) 1 ( 1  = 1st of 1 2 .  = 1 *
    1   Permute the rest
    0   inversely = 2 *
The perm, then is  3 1 2
                   * * *
```

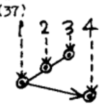
Fig. (36)

Rule:- Divide the perm's # by the modulus of the first place, then the remainder by the modulus of the second place & so on until it comes out even with no remainder, then the last (the even) quotient is taken, as is, without adding 1, but to all preceding quotients we add 1 & then take this sum as an ordinal number in the ordinal sequence (consecutive) of those that remain in the cradle. Whatever digits remain afterwards are to be permuted inversely. The algorithm becomes clearer when worked with larger perms; see next section.

XXIX - FURTHER EXAMPLES TO CLARIFY THE RULES - If we take the four degree perm, 3 2 1 4 , to get its number, we proceed as follows. The number of degrees, 4, minus 1 = 3; 3! = 3 x 2 x 1 = 6, the modulus of the 1st place; 2 x 1 = 2, the modulus of the second place; 1! = 1 is the modulus of the 3rd & 1, also, is the modulus of the 4th & last place.

6	2	1	1	= Moduli
(3)	(2)	(1)	(4)	= Digits
2	1	0	0	= O-R
12 +	2 +	0 +	0 +	1 = #15

Cradle
1 2 3 4
*
Fig. (37)



6 / 15 / 2 + 1 = 3rd of 1 2 3* 4 = (3)
12
2 / 3 / 1 + 1 = 2nd of 1 2*4 = (2)
2
1 / 1 / 1 = 1st of 1* 4 = (1)
1

*4 is left & permuted inversely = (4)
Therefore (3)(2)(1)(4) is the perm.

Take, e.g. the 6th deg. perm, 523461.

Moduli =	5!	4!	3!	2!	1!	0!
	120	24	6	2	1	1
Digits =	(5)	(2)	(3)	(4)	(6)	(1)
O-R =	4	1	1	1	1	0
OR x M =	480 +	24 +	6 +	2 +	1 +	0 = 513

+ 1
#514

(The * shows the choosing & leaving of the ordinal remainders.)

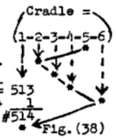


Fig. (38)

- -

120 / #514 / 4 + 1 = 5th of 1 2 3 4 (5) 6 = (5)
480
24 / 34 / 1 + 1 = 2nd of 1 (2) 3 4 - 6 = (2)
24
6 / 10 / 1 + 1 = 2nd of 1 - (3) 4 - 6 = (3)
6
2 / 4 / 2 = 2nd of 1 - - (4) - 6 = (4)
4
0, hence permute rest, 1 - 6 inversely = (6)
Therefore the perm is (5)(2)(3)(4)(6)(1) (1)
Fig. (39)

- -

XXX- TO FIND THE NUMBER OF ANY EXACT-FACE ON THE TABLOCK -

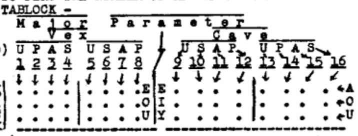
Fig(40)


Fig. (40) is the form of the idemfactorial cradle of Upright Y Vex- extended through its reflection, starting around the initial face's immediate # wid. Reduce the above to the following compact form.

Minors			Majors				
1	2	3	U	P	A	S	
Y	I	A	1	2	3	4	Vex
U	O	E	5	8	7	6	
Y	I	E	9	12	11	10	Cave
U	O	A	13	14	15	16	

Fig. (41)

Example: to find the tablock # of Averse U Cave? Look on the minor index opposite C a v e & find the vowel, U, then look across until you find under A (= Averse) of the M a j o r index, the #15, which is what you want. Thus the astral co-ordinate is under 1 & the posture co-ordinate is A, which is cave-female, or 15 of Fig. (40); hence = 1 x 15. Now, subtract 1 from the major 15 = 14 which x 3 = 42 + 1 (the minor) = #43, the number of the face.

Again, take U-E-Vex; here the major is 5 & the minor 3, so 5 - 1 = 4, x 3 = 12, + 3 (the minor) = #15, which is the Tablock # of Upright E Convex.

Take, e.g. U-Y-C; the major is 9, the minor 1; 9 - 1 = 8, x 3 = 24, + 1 (the minor) = #25, the ans.

XXXI - TO FIND THE EXACT-FACE WHEN THE # IS GIVEN - E.g., take #12. Now, since the major has three particles (see Fig. 40), or (41) which is merely (40) folded up, divide by 3. When there is no remainder, as here, take the divisor as the minor & the quotient as the major. #12, then, is Major 4 & Minor 3. Now look for 3 on the minor index (Fig.41) & "4" under majors; in the same rank as that which contains the "4", under the minor 3, see "A"& on the major index above "4" see S for supine & the right margin shows "V e x"; therefore, M4,m3 = S-A-V = Supine A Vex.

```
3 / #12 / 4
     12
```

Take another example, #47. There is a remainder here, so we must add 1 to the quotient for the major & take the remainder for the minor, hence, 16,2. In fig.(41) major 16 is under S & under minor 2 in the same rank with the 16 is O, hence #47 = S-O-C. Let the ambitious scholar work out many more examples so as to master the subject.

```
3 / #47 / 15 +1
     45   = 16th.
      2    M  m
```

XXXII - CONCERNING TABLOCK PERMS - HOW TO FIND THEIR #'S AND CONVERSELY - The enumeration of the four categories of an exact-face is called a Tablock Perm- in the sequence, Flex, Sex, Posture & Principal. The flexes are 1 & 2, for V(ex) & C(ave); the Sex' are 1 & 2 for M(ale) & F(emale); the principals are 1, 2 & 3, for Q(salt), J(quicksilver) & X(sulphur). The postures are 1, 2, 3, 4 for U(pright), P(rone), A(verse), S(upine) with the following exception. Rule:- If there is a disparity of Flex & Sex exchange the 2 & 4, but not otherwise. Thus, e.g. with Supine A Cave, the flex is 2 & the sex is 1; this is a disparity, hence instead of ascribing to the supine posture the usual 4 (See sect.XIX), we give it 2 instead; or, e.g., with Prone U Vex; the flex is 1 for vex, the sex is 2 for female; between 1 & 2 there is disparity, as opposed to 1 & 1 or 2 & 2 which would show parity, consequently the prone becomes 4 instead of the usual 2. Note that this affects only horizontal postures, the U & A are always 1 & 3 regardless of parity or disparity.

The moduli for the four places are 24, 12, 3, 1. The Ordinal Remainders are always simply 1 less than the permic digit; since this is an imprimitive perm with no "commutation" between the sub-sets.

Take, e.g. Averse Q Vex; the flex is 1, the sex is 2, the posture is 3, the principal is 2, hence the corresponding tablock perm = 1 2 3 2. What # ?

Moduli	=	24	12	3	1
Digits	=	1	2	3	2
O - R	=	0	1	2	1

O-R x Mod = 0 + 12 +6 + 1 = 19
+ 1
#20

Fig. (42)

This is a 4° perm, but of the imprimitive type, hence the order is found by multiplying together the number of units or digits which can occupy each place; viz- for the first place we have 2 flexes, for the 2nd 2 sexes, for the 3rd 4 postures; for the 4th 3 principals: 2 x 2 x 4 x 3 = 48. Then, 48/2 = 24 for the first modulus; or 24 = the product of the occupants of the remaining places = 2 x 4 x 3 = 24. Similarly, for the second modulus, 24/2 = 12, or 4 x 3 = 12. For the 3rd modulus, 12/4 = 3; or else, take simply the number of occupants of the 4th place = 3; & of course, the last place as usual is always 1.

REVERSING THE RULE:

```
24 / #20 / 0  + 1 = 1st flex = (1) = Vex.
      0
12 /  20 / 1  + 1 = 2nd sex = (2) = Female
      12
 3 /   8 /2   + 1 = 3rd posture = (3) = Averse
       6
 1 /   2 /2 = 2nd principal = (2) = J ; the perm,
       2
```

Fig. (43)

therefore, is 1 2 3 2, which is Convex, Female, Averse, Quicksilver, = Averse Q Vex.

Note that, if the posture turns out (2) or (4), you must see if there is disparity or not between the flex & sex, to determine whether or not to change the (2) to (4); with (1) & (3) there is no need to worry.

XXXIII - MULTIPLICATION WITH TABLOCKS - It is best for this purpose to have two more tablocks, one male & the other female, made just like the original couple -see sections III, Fig.(5) & VI, Fig.(13). Thus if we wish to multiply reflexes we take one vex & one cave for the factors, then have two others, one like each, for further use, & the whole process can be visibly demonstrated, as follows.

E.g., multiply No.22, P-U-V by No.48, S-E-C. The trope is written right on the exact-face, thus No.43 is H,D, i.e. a horizontal reflection + a major deosil turn from U-Y-V (= No.1), the idemfactor.

Hence, since No.48 is the multiplier, we do to No. 22 precisely what was done to No.1 to get No.48, viz the trope, H,D, as already described. The H = a horizontal reflection, is achieved by taking from the 2 remaining tablocks that which has the opposite flex from the multiplicand, 22, which would be the cave block & then set it beside 22 with the same principal & sex shown & rotate the face so as to make a horizontal reflection of the posture. Thus 22 shows the point set, 8 4 6 2; the reflection will be 6 2 8 4 with the posture supine. Now, complete the trope on this new cave block by making a D (major deosil turn) & the result is the required product, 5 1 6 2 = P I C. Do another example.

22 x 30 = 45. Set the 30 which is S-A-C on the table with 22 = P-U-V below it. Note that the result may be secured by making www, i.e. wid, WID, wid, with 30, getting No.45; or we may reason it out as follows.

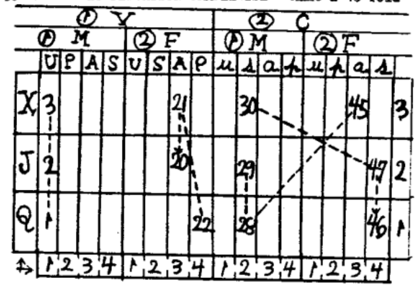
(See section XXIII). The function of No.22 is to seek the first (immed.) face of its multiplicand, change its sex & then prone it; since there is a disparity between its sex & flex, the posture function is 2/4, consequently it supines horizontals. No. 30 is supine A cave, consequently the product will be averse E cave, for E is the opposite sex of A & to supine a supine gives an averse, viz - 4 x 4 = 3, (see Fig(33) Sect. XIX.) . Remember when you are to change the sex of a face you do it by making a DD, that is, a **major deosil turn twice.**

ALGORITHMIC MULTIPLICATION OF 22 X 30 = 45 -

Punctual	Topermic	Postured Astrals Flexed		
4231	5 4 2	P A	S O	S U
1357	1 3 5	u Y	u I	u A
8462	2 6 4	p U	a E	a O
5678	6 1 3	A E	S Y	S I
		(l)	(m)	(r)

The topermic algorithm is performed precisely as the punctual; with the punctual the reciprocals add to 9, e.g. 2 + 7 = 9, so 1 + 8 = 9, etc.; with the toperms, 1 & 2 are reciprocals, 3 & 4, & 5 & 6. The above examples should be clear from what has gone before. Now, for the cradular correspondence.

XXXIV - MULTIPLICATION CRADLEWISE - Make a 48-fold



cradle-form, as shown above- Fig.(44) - for U-Y-V as the No.1 face, immediate # widdershins, which is a graphic representation of the vex & cave tablocks - count up & across; the minor parameter is divided into three ranks, one for each of the three principals, Q,J,X or 1,2,3 ; the major parameter is dichotomised, first into the two flexes, vex & cave, then each flex is divided into two supposititious sexes, each of which governs a tetrad of postures. Note the two sequences - V-M is the same as C-F, viz, Probite, while V-F & C-M are both, Rebite.

Let the problem be to multiply- No.22 x No.30, which must be performed through the idemfactor No.1, whose third degree topermic faces are No.1, 2 & 3, the first major file of the cradle.

No.30, s-A-C, whose l, m & r faces = cave s-A, s-O & s-U, respectively, Nos. 30, 47, & 46, as connected with dotted lines. Similarly we connect No.22, 21 & 20, which are the first three of P-U-V.

No.22 the immediate face of the multiplier is in the first principal, hence, by the rule it seeks the first face of the multiplicand, which here happens to be No.30 which is a sulphur face, consequently it must go through the **first** face of the idem, No.1. **Then, the ratio between No.1 & No.22 will be thesame**.

(I) as that between No.30 & No.45, namely, 1,2,2,1, = no flexual change, a sexual change, then proning, & no principal change. In this particular example in all three cases the 1st & 4th categories are 1, for after the faces are properly connected through the idem, there can be no principal change & since the multiplier & the idem are of the same flex, the multiplicand & the product must be of the same flex.

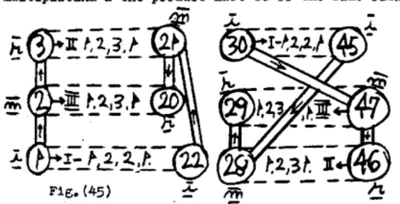


Fig. (45)

Now, from No.1 to No.22, there is a change of sex which changes No.1 into No.13, then a proning which changes No.13 into No.22; therefore the same categorical operations change No.30, first into No.42 = P-E-C, then by proning into No.45.

(II) No.3 is changed by reciprocation (= a sexual change) to No.15, then No.15 is averted to No. 21. So, a similar set of moves takes No.46, by reciprocation to No.34, then by aversion to No.28.

(III) No.2 is transformed, first into No.14 by reciprocation, then averted to No.20; therefore, No.47 is changed by reciprocation into No.35, then averted to No.29.

	i	m	r
I-(1):(22):: (30):(45)	s A (30)	s O (47)	s U (46)
	U Y (1)	U I (2)	U A (3)
II-(3):(21)::(46):(28)	P U (22)	A E (21)	A O (20)
III-(2):(20)::(47):(29)	a E (45)	s Y (28)	s I (29)

Note that each & every exact-face, as an operator, has a tropic power corresponding to a displacement from one particle to the same or another cradular.

XXXV - CONCLUSION - Now, make a 48 x 48 table of all possible products of one face by another, vex &/or cave, as suggested in Fig. (46), getting the several particles by any of the algorithms, as punctual, topermic, astral, parapermic, etc, or by direct tablock multiplication.

	#1	#2	#3	. .	#46	#47	#48
#1	1	2	3	. .	46	47	48
#2	2	19	22	. .	45	48	29
#3	3	6	23	. .	32	37	40
.	.	.	.	. .	.	.	.
.	.	.	.	. .	.	.	.
#46-46	47	48	. .	7	8	9	
#47-47	34	25	. .	6	9	20	
#48-48	39	26	. .	23	10	1	

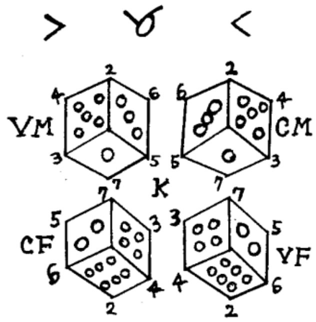
In this short treatise we have touched only the high spots, but enough has been given for a thorough comprehension of the subject of tablock tropes & their perms; for a fuller treatment of higher polypermic analysis of the cube & higher dimensional figures see Book N-W, Ta-Khu, Pih, Tui & Po. These are now out of print & hence, available only under certain restrictions; but as soon as circumstances permit we will publish a summary of the high spots of the more advanced work which has not been handled at all in this book. For a general introduction, see also Book Chameleon & the recently issued Manual of Pure Logic, called "BARBARA CUBED". These last two are available in Hod & the present volume is approved for issue in Netzach of Tiphareth.

When we multiply two faces it is the same as to put the multiplicand in the No.1 place of the grand 48-fold cradle & then find what face occupies the place in the cradle which has the same number as the multiplier. E.g., if we take #47 as the first face of the cradle, then the 47th place will be occupied by face #9; if #3 is put first, then the 2nd turn will give us 2 x 3 = 22 = Prone-U-Vex. The ranks & files of the 48 x 48 table (Fig. (46), above are Cradular Perms, which are perms of the 48th degree, but only of the 48th order; yet these are all derived from the unfoldment of the two tablocks & any one of these 48 can be set up in all 48 places thereof, simply by deduction from its #. Multum in parvo! The troperm which names the exact-face is, itself, an exact-face. But we must stop now. Thanks to everything!

TYPEWRITING & DESIGNS

By

THE AUTHOR



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