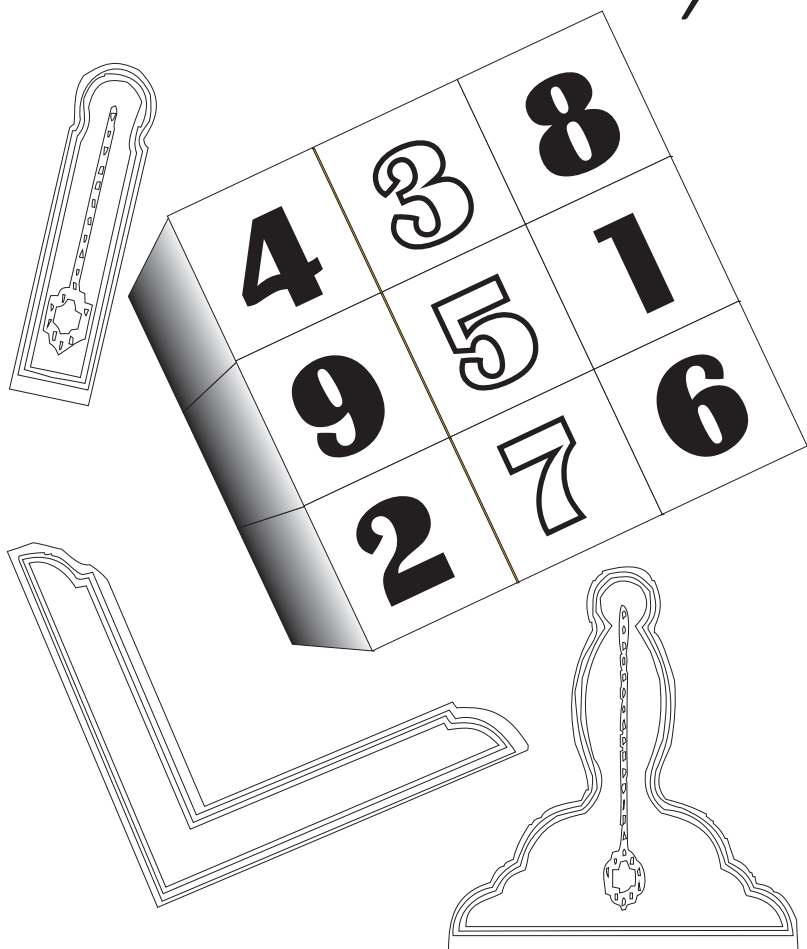



# Arithmetic of Freemasonry



W. Bro. Rev. F. de P. Castells, A.K.C.

Originally published in 1914

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# Foreword

By W. Bro. Stephen Dafoe

**D**espite the title of this booklet, the reader should not get the impression that they are about to read a dry account of “Arithmetic,” one of the Seven Liberal Arts and Sciences. While it does deal with the subject of Metrology, or the science of measurements, W. Brother Castells' book, “Arithmetic of Freemasonry” is a deeply esoteric work, dealing with a wide range of topic matter from how ancient civilizations developed systems of counting to the Kabalah and its connection to our Masonic Art.

The author of this booklet, originally delivered the work you are about to read, as a lecture to the “Leeds Association of Installed Masters.” That lecture was delivered in 1914, nearly a century ago, but the material herein contained has seldom been covered since that time.

Sadly few Masonic books of this present era cover the esoteric topic matter of W. Bro. Castells' brief lecture on Masonic Metrology. Today Masonic authors, as scarce as we are, tend to focus on topic matters that require little thought and certainly no further background study.

For the Masonic student, who wishes to expand his knowledge of one of the Seven Liberal Arts and Sciences in an esoteric and spiritual direction, I am proud to offer this work, expanded with illustrations to illustrate the knowledge imparted by our departed, but not forgotten Brother, the Reverend F. de P. Castells.

**Stephen Dafoe**  
**June 24<sup>th</sup>, 2005**

# Introduction

**By F. de P. Castells**

**T**he leading ideas of this lecture first came to my mind when engaged in preparing a lecture on the Hebrew names for G.A.O.T.U. which I gave to the Bible Study Guide, organized by myself at Bexley Heath, Kent. Soon afterwards I developed those ideas and embodied them in a lecture on “The Hebrew Words of the Masonic Ritual,” which I delivered at the Lodge of Instruction carried on in connection with the North Kent Lodge, 2499. And last year, having joined the Lullingstone Lodge, 1837, Dartford, when invited to give a lecture there, I undertook to deal exclusively with the Numbers of the Ritual. Before coming to Leeds, the lecture was given to the Mid-Kent Masters' Lodge, 3173, Chatham, and that gave me a further opportunity of testing my opinions before giving them out as I do here.

# Synopsis

By F. de P. Castells

**A**rithmetic is one of the “Seven Liberal Arts and Sciences” on which the Craft has been founded; it has been a potent factor in the development of the human mind, and may help us to understand some of the principles which underlie our Masonic Ritual.

Going back to primitive times, we find that there are two principle methods of counting: (1) By threes, and (2) by fives. The former leads us to the mysterious nine, and to the other sacred numbers of the ancient mysteries. The latter accounts for the ideal system of counting at the present time the Decimal system.

The evolution of the Zero or Cipher: how it originated. Its powerful aid: it imports infinity into the calculations of the human mind.

The reasons for the adoption of the numbers 3 5 7 as elements of our symbolism, explained: 3 and 5 were adopted because Nature itself suggested them of mystic power. The number 7 is *par excellence* the Masonic number; its meaning is found by observing that it combines 3 and 4, thus  $3 + 4 = 7$ . A review of the ceremonies and of the other matter contained in our Masonic Ritual will show that our ancient Brethren did not choose and of their symbolic numbers arbitrarily or at random.

Some reflections on the hidden mystery of the *summum numerorum*, i.e., the composite 15. Its internal harmonies expounded and illustrated by the magic square and otherwise.

The place assigned to this number 15, in the Masonic Ritual, an interpretation of the allegories –

(a) The 30 F.C.'s of the traditional history.

(b) The three figures 5 5 5 on the Tracing Board of the M.M., which are found to express an idea embodied in various ancient symbols, all of which agree with our story about the 30 F.C.'s The sacred seal of the G.G.O.T.U. arithmetically explained.

The cabalistic significance of the Hebrew letter-numeral YOD  
י=X.

Some considerations on the Divine Name JAH in its relation to the preceding facts.

Didactic characters of the three elements 3 5 7 according to the actual statement of the Ritual.

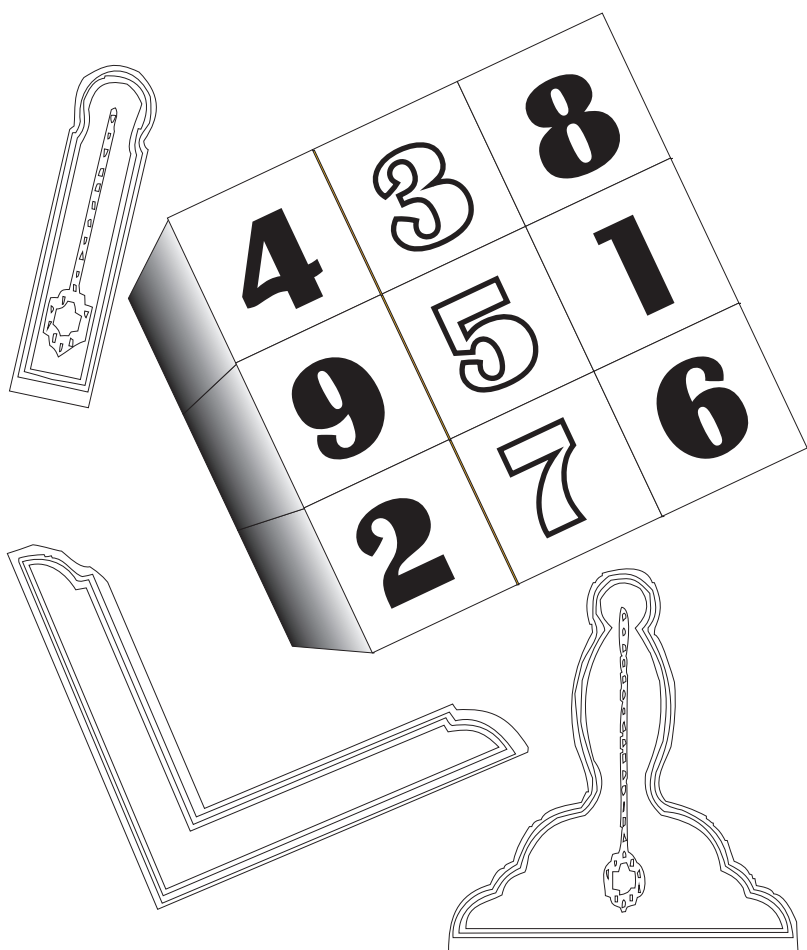
Some remarks on the Metrology of the Craft.

Measures mentioned in the course of the ceremonies

(a) The inch; (b) the foot; (c) the handbreadth; (d) the cubit; (e) the cable's length.

The symbolism of the cable according to its construction.

The dimensions of our last resting place; 3 feet wide, 6 feet long, 5 feet deep or more. (see appendix one.)





# The Lecture

**By F. de P. Castells**

**W**hat we familiarly call Arithmetic has been, historically, one of the most potent factors in the development of the human mind; and as it is one of the Liberal Arts and Sciences on which Freemasonry has been founded, the stuffy of it should help us to understand some of the ideas underlying the Ritual of the Craft. The Architect, the Geometrician, and every Mason, whether operative or free and speculative, are absolutely dependent on the Science of Numbers.

Long ago Pythagoras made his whole system of philosophy rest on the conception of numbers as regulating the relations of all things; and on this account he may be regarded as the philosopher of numbers. Philolaus, the earliest exponent of his teaching, put it in a nutshell, thus: "Number is the principle order, the principle on which the cosmos, or ordered world exists." When 500 years ago, King Henry VI made inquiry concerning Freemasonry, he was told this: "It is the knowledge of nature and the power of its various operations, particularly the skill of reckoning, of weights and measures, or constructing dwellings and buildings of all kinds, and the truer meaner of forming all things for the use of man." And when he asked: "What do Masons conceal and hide?" his informer mentioned among other things: "The way of obtaining the faculty of ABRAC," which is, it seems, just the sort of Arithmetic of which I am to speak to you in this lecture. Having regard to these facts we are justified, I think, in expecting that any numbers, quantities, and measurements mentioned in the Ritual must have a hidden significance. And, indeed, I am of the opinion that in the Ritual there is nothing arbitrary, superfluous or meaningless.

I am not aware that anyone has attempted to explain how the Art of Counting was evolved; but having travelled extensively and gained some knowledge of the ways of primitive races, I may venture to give you some of my own thoughts on the subject. At the dawn of civilization there seem to have been tribes counting "by threes" and tribes counting "by fives." The trinal system must have been based on the intuitional conception which men had by nature of things and

persons placed in three relative positions thus: --

I – Thou – He.  
This – That – The other.  
One – Two – Three.

But the quinary system was based on the five fingers of the hand, whence the name of digits still given to any integer under 10, a word which in Latin means “fingers.” As an illustration of the two systems let me take you on a journey Westwards, to the West Indies, and then afterwards to the mainland, Central America. The Caribbean people who dwell around the Bay of Honduras have only three indigenous words wherewith to express numerical values, viz., *Aba*, *Biana*, *Urua*, meaning 1 2 3. At present they count as we do, because they have learned the other numerals from the French missionaries who Christianized them; but when Columbus discovered the West Indies those three words, *Aba*, *Biana*, *Urua* were all the numerals they had. Then, if we quit the shores of the Bay of Honduras and travel inland into the interior of Central America we shall find that all the aboriginal tribes in that region follow the other system of counting, using their fingers and their toes in the operation, their name for 20 being *Hu-winak*, which means “one man,” because that number is the sum total of the fingers and toes on the human body.

The crude system of the ancient Caribs may appear to us hopelessly inadequate for any practical man of the present time; but of course the Caribs had ways of extending their calculations beyond three, saying for instance “twice two” for four; “two and three” for five; “twice three” for six; “three times three” for nine; and if they had learned the use of markers for this high number, they would be able to count up to at least “three times nine,” which yields 27, a sort of grand and Omnific number. It was through this method of counting among primitive men that when in course of time someone was able to devise a system of expressing numbers as figures, each of the nine digits came to be expressed by a separate character as is the case in our Arithmetic at the present day: 1 2 3 4 5 6 7-8-9.

The Greek imagination pictured Nine Goddesses, the Muses, who were said to be the daughters of Zeus and Mnemosune, that is, “God and the Memory,” each of them presiding over one of their “Nine Liberal Arts.” And in the Ancient Scottish Rite we find a Ninth Degree, in which the brethren are styled “Elected Knights of Nine.” Here, incidentally, I may call your attention to a curious property of “the Mysterious Nine,” which is that, whenever we add together the figures by which we express any of its multiples we always get either

another nine or some lesser products resolvable to the same number. For example:  $2 \times 9 = 18$ ; add  $1 + 8$  and you get 9;  $4 \times 9 = 36$ ; add  $3 + 6 = 9$ ;  $11 \times 9 = 99$ ;  $12 \times 9 = 108$ ; and so on.

The tribes that counted by threes and those that counted by fives developed their genius independently of each other; but we should not imagine that there ever was any race of men completely detached from the rest of the world or that owed nothing to the other races. There always was more or less inter-tribal commerce, and by that means men must have learned much from one another. For instance, in the barter of produce or merchandise, the Caribs, who always counted by threes, must have observed how easy it was to express the idea of five by showing "one hand" with extended fingers; ten by showing "both hands"; fifteen by presenting "two hands and one foot"; twenty by calling out "one man." And having gone so far, they would see how easy it was to express forty by saying "two men," and sixty by saying "three men." May we not assume that it was in this way that the ancient Babylonians in Central Asia came to adopt their own sexagesimal system, using the number 60 (or "three times twenty") in the same way as we use the 100? Then, too, by the exchange of produce, many must have found that, however dissimilar the two methods of counting may have appeared, they could easily be harmonized. Imagine for a moment, two groups of men engaged in arranging what they have brought for barter; one group count "two hands" and lay down ten articles eggs, melons, tubers, fowls, or as the case might be; but the other group counting by threes, lay down the wares they offer in piles of three, and then, for every complete tale of "three times three," another article is "thrown in." This extra something is placed either in front or by the side of the piles; and while to one party it helps to show at a glance the quantity of the goods involved in the transaction, to the other party it is an indispensable item for it turns the tale of nine into a full decade, completing the "two hands,"  $9 + 1 = 10$ . It must have been in this way, through the intercourse of tribe and tribe, that the highly useful decimal marker came to be adopted; and then at length, somewhere, somehow, the use of this marker would also suggest the cipher of our arithmetical notation, the invention of which was needed for a great achievement, for, although the cipher when it stands by itself is but an empty symbol, when conjoined with any of the nine digits, may mean ten, hundreds, thousands of millions. The wonderful cipher or zero (however it may have originated) has led men to a great advance in the art of calculation. We may still call it *nought*, but it would be more appropriate to call it all, seeing that it imports infinity into our arithmetical operations. Our way of expressing the idea of TEN is

10, that is, a unit plus the decimal marker; and this unit signifies that on reaching ten we have begun a new series, v. gr. 9 + 1. to the decimal marker we have given the form of a circle, and this is quite fitting, too, for the circle is the emblem of eternity and infinity. I have illustrated the potentiality of the nine numerals when brought into combination with this circle in another of my diagrams, which shows the triple trine within the all-encircling orb. (See Appendix two.)

What I have said thus far, explains the rise of two of our symbolic numbers, 3 and 5. But now, what about the number 7? This is a distinctively Masonic numeral, the mystic significance of which goes far deeper than that of the other two. It is a combination of 4 and 3, the square and the triangle, as we may see in the Ceremony of Raising by the steps which the candidate takes when advancing to the East, the first four describing a square in the c... of the L..., and the next three bringing him up to the Pedestal on which is the Volume of the Sacred Law. Beneath the ground so squared there is a yawning grave; but the candidate is a living being and his steps are emblematic at once of human life and of the four quarters of the globe. And as the last three steps indicate a triangle, which is symbolical of the G.A.O.T.U.. the two numbers 4 and 3, when conjoined or combined, suggest the thought of "God" brought into relations with his creatures and dominating human life." I might enlarge on this, but it would lead me beyond the limits of our subject.

Having explained the origin of the three symbolic numbers 3 5 7, we may now make a rapid review of the Ritual and see the function which each of them is made to discharge; and in this we ought to begin with the first, that is, number 3, which is recurring constantly in connection with (I.) our organization, (II.) the appointment of the Lodge, (III.) the traditional history, and (IV.) the actual mysteries or secret ritual acts.

### *In our organization:*

Our Order stands on three grand principles, which are "Brotherly Love, Relief and Truth."

There are three degrees, each degree with its respective signs, tokens and word.

There are three principal, and three assistant, officers, the three principal ones occupying three different quarters of the globe, E., S. and W.

The distinguishing characteristics of a good freemason are three: Virtue, Honor and Mercy.

There are three main lines of duty: to God, to our neighbor, and

to ourselves; three sacred dictates: of truth, honor, and of virtue; three foremost excellences of character: secrecy, fidelity and obedience; three lowest staves in the mystic ladder, which are said to be emblematic of the three graces, Faith, Hope and Charity; also there are :the three most celebrated orders of architecture, the Ionic, the Doric, and the Corinthian.”

*In the appointment of the Lodge:*

There are three sets of tools for each degree, that is, a different set of three tools for each one of the three classes of workmen.

There are three Masonic reasons why the Lodge should be situated East and West.

The interior of a Freemason's Lodge is composed of Ornaments Furniture and Jewels”; the Ornaments are three in number, viz. the Mosaic Pavement, the Blazing Star, and the Indented or Tessellated Border; the Furniture, too, comprises three articles, which are the Volume of the Sacred Law, the Square and the Compasses; while the Jewels are six, three moveable and three immovable.

Similarly the Master Mason's Lodge is said to be distinguished by three Ornaments; the Porch, the Dormer and the Square Pavement.

The emblems of mortality are three: the coffin, the skull and the cross-bones.

There are (we are told) three pillars supporting the Lodge: Wisdom, Strength and Beauty: there are also three greater lights and three lesser ones.

*In the traditional history:*

The first Lodge is said to have been consecrated with three grand offerings.

The chapters of the pillars, B. and J., are described as enriched with three varieties of ornamentation, viz., network, lily work and pomegranates; and these are said to symbolize Unity, Peace and Plenty.

The Entered Apprentices employed in King Solomon's Temple received a weekly allowance of Corn, Wine and Oil, which may be said to answer to what the present day laborer still regards as three necessities of life: Bread, Beer and Butter.

At the time of the great Conspiracy there were but three men who possessed the secrets of the Master Mason.

There were “three Grand Masters who bore sway at the building

of the first Temple of Jerusalem.”

The secrets of the Master could only be imparted with the consent and by the joint action of three.

The trusty Fellowcrafts divided themselves into three Companies or Lodges.

Our Master, H.A., was slain with three blows, struck by three different men, on three parts of the head, with three different tools, at three points of exit of King Solomon's Temple, situated on the S., N. and E. sides.

### *In the mysteries:*

The Lodge opens and closes with three knocks and every candidate gains admission by three knocks, given differently at each Degree.

In every Degree the candidate who seeks the privileges corresponding to it by a three-fold plea: (1) by the help of God, being free and of good report; or (2) by the help of God and the assistance of the square and the benefit of the password; or (3) by the help of God, the united aid of the square and compasses, as well as the benefit of the password.

On opening the Lodge the W.M. prays for three things: Order, Peace and Harmony.

Every Initiate is made to strike the right sh... of the J. and S.W.'s with three knocks; he is made to advance to the pedestal by three steps; he has to answer three searching questions of the W.M.; he is told of the three dangers; the three reasons for soliciting his charity; the three aspects of his character, which are, “as a citizen of the world, and individual, and a Freemason.”; also of the threefold way of dividing the 24 hours of the day, viz., some for “prayer to Almighty God,” some for “labor and refreshment,” and some for “serving a friend or brother.”

In the Second Degree the sign is of a threefold nature.

In order to raise the candidate to the sublime degree of a Master Mason, three methods are tried; only the third can succeed.

In closing the Fellowcraft Lodge, the dismissal formula, recited by the J.W. alone, is of a threefold nature.

In the ordinary way of closing the Lodge, according to ancient custom, all the Brethren present unite in a threefold sign of F.F.F.

The Master Mason, when raised, is asked to make his Solemn Obligation binding for as long as he shall live by sealing it with his lips three times on the Volume of the Sacred Law.

We frequently have a threefold perambulation of the Lodge.

The sign of g... and d... in Scotland, Ireland and the U.S.A. is given with a threefold movement of the hands accompanied with the threefold exclamation of "O.L. my G., etc."

This list does not exhaust all the references to the symbolic 3 occurring in the Ritual, but it should suffice to show the important part that number plays in it.

We may now pass on to consider the next number, 5.

Three rule a Lodge, but five hold it, which means that there cannot be a lodge with less than five members.

The Fellowcraft's of the traditional history form themselves into three Companies, that is three Lodges of five members.

When the Entered Apprentice comes into a Fellowcraft Lodge, in order to be "passed," he is taught to advance to the East by five steps.

We acknowledge five Orders of Architecture.

The Blazing Star is one of five points.

There are five secret words, viz., those distinctive of the three degrees and the two passwords.

There are five points of fellowship for us all, and these are said to correspond in number to the five signs of the Third Degree.

The grave of our Grand Master was five or more feet deep.

The chapters on the pillars at the porchway or entrance of King Solomon's Temple were five cubits high.

And now as regards the number 7:

Seven is the number by which the Lodge is made perfect.

In every properly constituted Lodge there are seven officers, that is, including the Tyler and Outer Guard.

The first Tracing Board exhibits "seven stars, which have an allusion to as many regular made masons."

In the ceremony of Raising, the method of advancing is by seven steps.

We are told that King Solomon's Temple was "seven years and upwards in building."

The height of B. and J. was  $17\frac{1}{2}$  cubits, which equals  $7 + 7 + 3\frac{1}{2}$ , or the two pillars conjointly 35 cubits, which equals 5 times 7.

The qualifications required from the would-be Master Mason are given thus: (1) Just, (2) Upright, (3) Free, (4) Men, (5) of Mature Age, (6) Sound Judgment, and (7) Strict Morals.

The qualification of "Mature Age" is explained as meaning "the full age of 21 years," which equals 3 times 7.

Finally there are "seven Liberal Arts and Sciences" on which Freemasonry has been founded, viz., Grammar, rhetoric, Logic,



Arithmetic, Geometry, Music and Astronomy.”

But now, after this rapid survey of the Ritual, we shall find that these symbolic numbers, 3 5 7, important as they appear, are but fractions of what may be called the *summum numerorum*, thus  $3 + 5 + 7 = 15$ . I hope to throw some new light on the mystic significance of this number; but first of all, I beg leave to call your attention to its internal harmonies. It has been said that “there is divinity in odd numbers”; and the number 15 is remarkable in many ways:

It combines the first two of our symbolic numbers, for  $3 \times 5 = 15$ ; and strangely enough the two numbers 3 and 5 joined together represent thirty-five, which equals  $5 \times 7$ , the other two symbolic numbers. Moreover, if we multiply the three numbers  $3 \times 5 \times 7$ , the result is 105, their L.C.M., which also equals  $7 \times 15$ , and is practically the same number 15, with the nought inserted between the figures.

Chronologically, a period of fifteen days is that which is enclosed within three Sabbaths. Many of the ancient nations held their great Festivals on the 15<sup>th</sup> day of a month; and as they usually followed the lunar year, the moon must at that time Have been full.

In Greece, the Ceremonies of Initiation into the Eleusinian Mysteries (both in the Autumn and in the Spring) began on the 15<sup>th</sup> day of the month, and lasted nine days. (*Note these nine days, which equal “three times three.”*)

In Music the number 15 represents two complete scales, that is, the notes comprised between three C's.

As 5 stands for “one hand,” fifteen equals “three hands”; and there is somewhere a Chapter which has for its distinctive Badge a Triangle within which we see two hands stretched out from the sides and grasping each other, while a third hand descending from the apex holds up both of them. Although the interpretation of this symbol belongs to the Royal Arch, we may all read a beautiful thought into it, that of fraternal union on earth, maintained under the protection of the Most High.

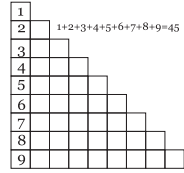
In the trinal system of primitive man, the numbers 6 and 9, which are the first trine doubled and trebled, were considered round numbers, and adding them together we get  $6 + 9 = 15$ .

Then, too, the number 15 combines the two leading terms of the decimal system,  $10 + 5$ ; which reminds us of the fact that the decimal system, now acknowledged to be the most perfect system of Arithmetic, is but the early method of counting by fives, that is to say, by the fingers of the hand. There really is nothing new under the sun.

But suppose we take the first five digits as representing a progressive arithmetical series, and that we add them up,  $1+2+3+4+5$ ,



again the total will be 15. and if we add up all the nine digits in the same way, we then bring the total to 45, which equals 3 times 15, and is half the number of the square  $45 + 45 = 90$ . This I have illustrated by a diagram (right) which has a pile of bricks arranged in that same progressive order.



Look for a moment at this magic square. In it, the nine digits are arranged in three rows, “three times three,; and however the figures may be added up, vertically, horizontally, or diagonally, the sum of every three is always the same, viz., 15. The key to the various operations possible is to be found in the symbols from which we obtain the Masonic Alphabet. # X No other arrangements of the numbers will ever yield and other such harmony.

2	7	6
9	5	1
4	3	8

Please observe that the central column consists of the symbolic 3 5 7; the first at the bottom, 5 in the centre, 7 above; 5 stands between 1 and 9, the unit which is the root of all number and 9 the highest digit; these two together complete the decade.

My object in calling your attention to these facts is to show that the use of the number 15 in our Masonic symbolism is not arbitrary. It is the best our ancient could have chosen to convey the idea of fullness or completeness. Let us see, therefore, how it is that the number comes into the Ritual.

I have said before that we open and close the Lodge with three knocks; but it would be equally correct to say that we open and close with 15 knocks, because the knocks prescribed by the Ritual are struck successively by the Worshipful Master, The Senior and Junior Wardens, and by both the Inner and Outer Guards, five officers in all and 5 times 3 make 15.

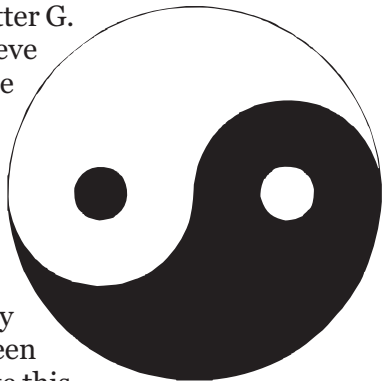
Then we know how the candidate advances to the place of light by stages which are measured by a fixed number of steps: The Entered Apprentice takes 3; the Fellowcraft 5; the Master Mason 7. Add up all these and you have 15 as the total. This advancing order in the steps of each degree is foreshadowed by the Entered Apprentice at his initiation, for in his case the steps are of varying length, the second of a little longer than the first, and the third a little longer than the second, as expressed by the numerical proportion of 3 5 7.

In the explanation of the Second Tracing Board we read that our ancient brethren “passed up the winding staircase, consisting of 3-5-7 or more steps”; and these correspond with the steps taken by our

candidates. And it should be observed that the phrase “or more steps” does not imply any uncertainty as to the height of the staircase; it is merely a necessary reservation, the margin allowed for the requirement of the higher degrees.

In the traditional history of the Third Degree we hear of a conspiracy organized by “15 Fellowcrafts.” They were “of that superior class appointed to preside over the rest,” which means the order now denominated Master Masons. Out of the fifteen, twelve recanted but three proved to be “of a determined and atrocious character,” and were responsible for a great tragedy. As against these rebellious Fellowcrafts, there are mentioned another 15, who went to search for our Master, Hiram Abif; and we read that when these fifteen “trusty Fellowcrafts” were commissioned by King Solomon for their work, they divided themselves into three Companies, which means of course three Fellowcraft Lodges of five members each. One Company sought and found not; one Company made the discovery; and the third Company brought the evildoers to judgment. What then are we to think of the 30 Fellowcrafts? In my opinion they are emblematic of the struggle which is ever going on in the world between antagonistic forces with which every human being is more or less acquainted; the evil being ever envious of the good; the ambitious seeking to achieve success by deceit and rapacity, and in extreme cases by the most heinous crimes; the selfish and greedy thwarting and defeating the very ideals they profess to admire; all this in the hope of obtaining wealth, position or power. And Freemasonry steps in and counsels to substitute virtue, industry and perseverance for dishonesty, covetousness and violence, and to aim at the happiness of the fraternity. We may see the counterpart of this in the two intersected triangles shown on the Second Degree Tracing Board; one of the triangles is black and the other

white, and the two are united by the letter G. inscribed in the common centre. I believe that the tragedy in the forefront of the Volume of the Sacred Law Cain slaying his brother Abel was intended to illustrate the same conception of life which is inculcated by Freemasonry. And the Chinese have from time immemorial represented the struggle which is ever going on; by the symbol they call Yin Yang, to be seen in one of the diagrams used to illustrate this lecture (right).



In the Tracing Board of the Master Mason there is another memorial of the death of our Master Hiram Abif; it takes the form of three fives arranged triangularly thus.

They suggest an equilateral triangle, each 5 representing one side; but we know that historically they correspond to the three methods tried for the purpose of bringing back to life the Ideal Man, our Master, Hiram Abif. The Junior Warden was the first to endeavor it, trying the g. of the E.A., which proved a slip; then the Senior Warden tried the G. of the F.C., which also proved ineffective; and then the W.M. applied the third method, which was successful. The three fives therefore are the three hands with fifteen fingers in all. There has been confusion over this, and some Rituals have been put forth that give the Fellowcrafts of the traditional history as twelve in number instead of fifteen. It seems to have arisen from certain distinctions being overlooked or forgotten. Let us remember that while the tradition mentions two Companies of 15 Fellowcrafts, in each case, they are divided into 12 + 3; because one three of the rebellious Fellowcrafts are held responsible for the murder of our Master, and likewise his restoration to life is attributed to the action of three of the trusty Fellowcrafts. Three hands struck the fatal blows and three hands were exerted in raising the dead body; on this account both death and life may be expressed by three fives, or three hands.

In closing the Fellowcraft Lodge, the Wardens report the discovery of "a sacred symbol" said to be situated "in the centre of the building." And this may be explained by what we read elsewhere: "When our ancient brethren were in the Middle Chamber of the Temple, their attention was peculiarly drawn to certain Hebrew characters, which are here depicted by a letter G., denoting God, the



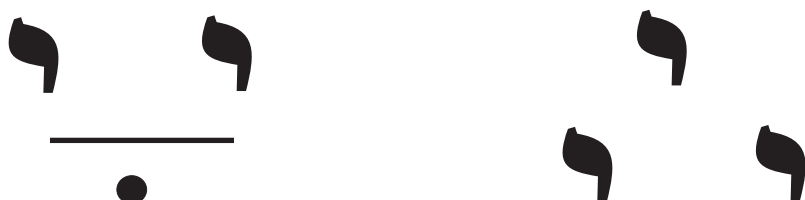
G.G.O.T.U., to whom we all must submit and whom we ought humbly to adore.” According to this, the cryptic G. is but our modern substitute for the Hebrew Characters depicted in the same Tracing Board just over the door at the top of the staircase, יהוה. These characters are now commonly read Jehovah; but the name was always considered too sacred to be pronounced by human lips; and the Jews themselves in order not to write it have frequently expressed it with only the initial י, the letter Yod. In speaking of this, however it is necessary to bear in mind that the characters of the Hebrew alphabet were numbers as well as letters, that is, they could be made to stand alternatively for a quantity or a sound. Here are the first ten of them, with their corresponding numerical value: –

י	ט	ח	ז	ו	ה	ד	ג	ב	א
10	9	8	7	6	5	4	3	2	1

We see then, that the letter Yod י, the initial of the name Jehovah, when used numerically, represented the number 10, a fact which has afforded ground for much speculation. As previously shown, the Yod, standing for 10, may be regarded as emblematic of the perfect system of arithmetic. Some Jewish Rabbis (known as “The Cabalists”) pointed out that the Divine name in Hebrew consists of four letters (hence called the TETRAGRAMMATON or Four Lettered Name”), and by taking 1-2-3-4 as a series they reached a total of ten, which agreed with the face value of the initial. In this the Cabalists came in touch with Pythagoras and his “Holy Quaternion” in Greek Tetaktys), for Pythagoras held that Four the first square number was the potential decade, and it stood for the cosmic elements “fire, air, earth and water.” Sometimes the four Hebrew letters were arranged thus: -

י				10
ה	י			5 10
ו	ה	י		6 5 10
ה	ו	ה	י	5 6 5 10

When combined the numerical value of the ten characters gave a total of 72, which the Jews regarded as an important symbolic number. (See Appendix three.) .) And sometimes in seeking to abbreviate the incommunicable Name of God they doubled or trebled the initial Yod, thus: –



In each of these cases the result is a distinct triangle, but you may see that while the first is pointing down, the second is pointing up; and numerically, while the two Yods equal 20, the three equal 30.

There is one more way of abbreviating the Ineffable Name, one which did not originate with the Cabalists, but is found in actual use in the Psalms, and may therefore be regarded as authorized by the Volume of the Sacred Law; I mean that which consists in writing the first two letters of the Name, יה'. (See Psalm lxviii. 4). Read phonetically they spell Yah or Jah; but arithmetically they should represent the number 15, that is 10 + 5. The Jews used to express the numbers from ten to twenty by writing 10 + 1, 10 + 2, 10 + 3, 10 + 4, etc.; but when they came to 15, they found that the two characters required were associated with the ineffable Name of God, and so they varied the order, writing, instead of 10 + 5, 9 + 6.

We have seen that in our Masonic symbolism, the number 15 has been made to embody the idea of fullness or totality; and now if we look again into the Ritual we may find a further illustration of this idea. For, in the explanation of the second Tracing Board, the Worshipful Master refers to the practical significance of the symbolic numbers 3 5 7, and reminds us that a Lodge is ruled by 3, held or organized by 5, and made perfect by 7. In this way those symbolic numbers suggest three leading ideas, viz., Government, Organization, and Perfect Development. And as the number 15 is reached by combining the three numbers,  $3 + 5 + 7 = 15$ , we may regard this sum as comprehending all those ideas, and as being a fitting emblem of the Grand Ideal of Freemasonry. (See Appendix four.) In the Ancient Scottish Rite the members of the Tenth Degree are called "Illustrious Knights of Fifteen" as having attained to the

fullness of this ideal.

I have undertaken to say something of the Metrology of the Craft, and I proceed to do so because it is a subject that stands closely allied with our arithmetic, but time compels me to be brief. The length measures mentioned in the Ritual are five: the two modern ones, the inch and the foot; the two ancient ones, the handbreadth and the cubit; and one which is very ancient although not a familiar one, viz., the cable's length.

The word INCH comes from the Latin *uncia*, meaning "one twelfth part" of anything; and in this connection it indicates a twelfth part of a man's FOOT, which was early adopted as a length measure, being of course standardized everywhere. But in the Ritual, the 24-inch gauge is used as emblematic of time. When the Worshipful Master gives the Entered Apprentice his tools, he says that the 24-inch gauge represents the 24 hours of the day, and it may be used in two ways: to graduate his task and to divide each passing day so as to allow of his attending to everything: (1) his devotions, (2) his regular employment, and (3) the discharge of his social obligations.

As the fingers of the hand have played an important part in the development of the art of counting, so, too, they supplied the basis for the art of mensuration all over the East; all the high metrical values consisting of so many palms or handbreadths, which like the foot, had to be standardized. In the explanation of the second Tracing Board we learn that the outer rim of the twin pillars of the porchway of king Solomon's Temple was "a HANDBREADTH in thickness." This statement agrees with the 1<sup>st</sup> Book of Kings (vi. 15). Elsewhere (Jeremiah lii. 21) we read that it was "four fingers" thick; and so I shall point out that in this there is no real contradiction, because the "handbreadth" of the Ritual is to be understood as being, not the breadth of the open or extended hand, but that of the back of a clenched hand, in which only four fingers are seen.

Theoretically, the CUBIT was the length of the forearm from the elbow to the tip of the middle finger; but unfortunately as each nation adopted a different standard, we find a great deal of variety of cubits; indeed, some nations had two or three sorts of cubits according to the objects that had to be measured. This may explain the confusion and the controversy that there has been as to the actual length of the cubit employed in designing King Solomon's Temple. In Egypt, there were two different cubits, the short, which was one of six, and the royal, which was one of seven palms of handbreadths. In Babylonia there were three measurements known by that name: one of three palms, used in measuring fine decorative work and gold ornaments; one of four palms, which was used ordinarily for all

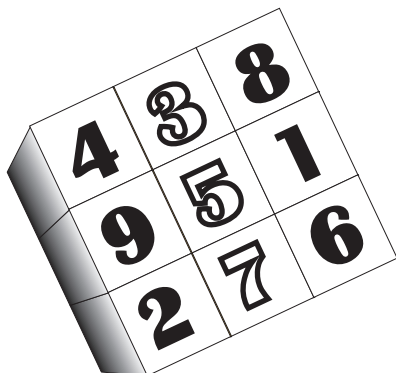
masonry work; and one of five palms, which was used in measuring land-spaces. By the recovery of two scales of linear measurements engraved on the statues of Gudea, nearly 5,000 years old, we have found that these three cubits equaled 10.8, 14.4 and 18.0 inches respectively. Some archeologists argue that both King Solomon's Temple and in the Tabernacle, all three cubits of ancient Babylonia were used. On this calculation the thickness of the pillars would be equivalent to 3.6 inches of our present-day measure, although even now we cannot be quite certain.

Finally about the CABLE'S LENGTH. When this expression is now used by sailors, they mean to indicate a distance of about one hundred fathoms, or the tenth part of a nautical mile. But as used in the Ritual, "at least a cable's length from the shore," it means a distance equal to the length of a coil of cable, which has always been understood to be 120 fathoms, that is to say, 720 feet. The idea is that, being buried in the sands at the bottom of the sea at that distance from low-water mark, as a minimum, the remains of a traitor might be considered to be definitely consigned to everlasting disgrace, and therefore as having absolutely perished, "no trace or remembrance: being any longer conceivable. This cable's length must not be confused with "the length of my cable tow" mentioned in another part of the Ritual, this latter being a figure of speech intended to convey the idea of one's ability to execute an acknowledged obligation, the power to fulfill one's own responsibilities in life. The introduction of the "cable" into the ceremonies may appear strange, but, apart from other considerations, if we only bear in mind the way the cable has been manufactured from time immemorial, we shall recognize that it is a very suitable emblem for the threefold cord which is not easily broken, of brotherly love, relief and truth. In a book compiled nearly one hundred years ago there is a description of it: "Every cable, of whatsoever thickness it be, is composed of three strands; every strand of three ropes; and every rope of three twists; the twist is made of more or less threads according as the cable is to be thicker or thinner."

The Ritual anticipates that after this life every Master Mason shall be "decently interred"; but the penalty of our Obligation in the Third Degree involves the very opposite of that idea. I shall therefore close this lecture with a few words on the dimensions of the grave of our Master Hiram Abif, and their significance. I have spoken of fathoms, saying that a "cable's length" equals 120 fathoms; but the fathom is not named in the Ritual. It may be defined as "the measure of a man's embrace," fixed for all practical purposes at six feet; and therefore, although not expressly named, it is the length of the grave



which the trusty Fellowcrafts of our traditional history are said to have prepared. It was “from the centre 3 feet East and 3 feet West.” (See Appendix One.) This is an unusual form of expression, but we may account for it by observing that the navel is regarded as lying in the centre. Remember where the Master Mason rests his squared hand when he stands to order. The navel is our link with the past; and inasmuch as by being buried the body returns to the bosom of our common Mother, the old link is very properly viewed as the central point in the grave. The width of the grave “between North and South” was 3 feet. These dimensions are still the ordinary minimum dimensions of an adult's grave at the present time; but in the ritual they are given for a practical purpose, being emblematic. As the area was one of 18 square feet,  $6 \times 3 = 18$  (nine to the East and nine to the West); and as the depth was a minimum of 5 feet, the total capacity of the grave was of 90 cubic feet, which is the number by which we define the Square “an angle of 90 degrees.” The cubic measurement of the grave, therefore, is but another way of representing the Square. By being laid under the sod, back to the bosom of Mother Earth, we come into the closest possible fellowship, one with another, and the depth of 5 feet harmonizes with our five points of fellowship. In assigning such dimensions to the grave of our Master, Hiram Abif, therefore, the Ritual may be said to bring our symbolism into the reign of death; and we, by endorsing and adopting its provisions, are testifying to the fact that the bond which unites Master Masons in this life is not broken when we are let down into the tomb of transgression. Having ordered our life according to the Square, we take that Sign with us into the grave and we may rest assured that when we finally rise from the last resting place, the same old sign will procure our admission into the Grand Lodge above where the world's great Architect lives and reigns forever.





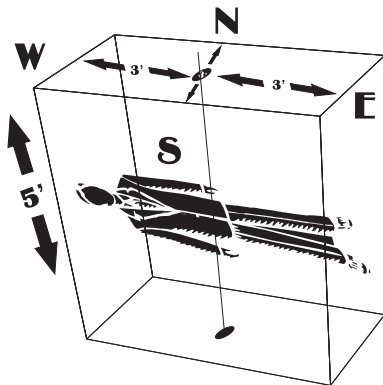
# Appendix One

## Metrological Symbolism of the Grave

**F**rom the ritual referred to by the author we find the following in reference to the grave of referred to in the Tracing Board:

*“Our Grand Master, Hiram Abif, was ordered to be interred as near the sanctum sanctorum as the Israelitish laws would permit, in a grave from the center three feet east, three feet west, three feet between north and south, and five feet or more perpendicular.”*

The following illustration is provided to add further light to the author's comments on the size of the grave.



3' East, 3' West = 6 feet.

3' between North and South = 3'

5' Deep = 5'

6' x 3' x 5' = 90 cubic feet.

# Appendix Two

## Further Thoughts on the Evolution of Counting

I have spoken of what I observed among the Aborigines of Central America. In the South Sea Islands I discovered other facts which corroborate my views on the subject. In several of the Malay-Polynesian languages the words used for ten are modified forms of some terms alluding to an action in which both hands are shown. Thus, for instance, the word sangpoo, “ten” in Tagalog (Philippine Islands) is a contraction of sangpolan, which means “the whole”; and turo in the Pampango dialect means “the breadth of two hands.” Still it was long ages after men had learned to count by tens that the decimal system in its complete form as we have it now was evolved. What is really wonderful about this system is not its having a set of figures, from 1 to 9, but the fact that the figures are employed in such a way that by the aid of the zero, their value changes according to position. Take for example,  $333 = 300, 30, 3$ .

When primitive men wanted to make a record of their count, they would cut notches on a stick, and on reaching ten they would cut a cross like the Roman X; or if they had been marking the units by lines on any surface, after nine of these they would run another line across them to indicate the completeness of a decade.

Our numerical figures are commonly said to be Arabic, because they were introduced into Europe by the Arabs; but those people did not invent them; indeed, in the time of Caliph Walid, A.D. 705-715, they had as yet no signs of numeration. The Arabs obtained them from India, where they had been in use for one thousand years before the Hegira, as is evidenced by the Nana Ghat inscriptions, which date from about 300 B.C. Presumably this method was suggested by the use of an abacus or counting-board, having an upper row of nine balls and a space beneath with one or more balls to indicate the tens, the hundreds and the thousands. The system in vogue in Ancient Egypt implies the existence of some such mechanical aid; for in the hieroglyphic inscriptions we find that the digits are expressed by plain strokes, nine being written thus, ||| ||| ||| (“three times three” once more), ten by a sort of inverted u, thus **∩**, which is repeated as required up to 90, and the hundreds by another character.

As to the origin of the zero it has always puzzled investigators, but I am able to throw some light on it. Every authority I have consulted derives the word zero from the Arabic sifr, "empty," through the Latin zephirus. The Arabic sifr has indeed so come to us in the form of Cipher; but I venture to say that the zero is a distinct word derived from the Hebrew oser, osarah, which means "ten." The initial letter ain in the modern Hebrew script takes this form, AIN GOES HERE, but in ancient times, as we may see in the Moabite inscriptions of about 900 B.C., it took the form of a ring, whence the name ain, still given to the letter, which means, "an eye."

# Appendix Three

## Some Thoughts on the *Shem Ha-Meforash*

Some of the Rabbis have taught that there are 72 angels or principalities who are the bearers of the “preeminent Name,” the *Shem Ha-Meforash*, which was arranged as shown below. These 72 angels are supposed to be alluded to in Exodus xiv. 19,20,21, three verses which in Hebrew consist of seventy-two letters each.

### *Exodus 14: 19 21*

<sup>19</sup>And the angel of God, which went before the camp of Israel, removed and went behind them; and the pillar of the cloud went from before their face, and stood behind them:

<sup>20</sup>And it came between the camp of the Egyptians and the camp of Israel; and it was a cloud and darkness to them, but it gave light by night to these: so that the one came not near the other all the night.

<sup>21</sup>And Moses stretched out his hand over the sea; and the LORD caused the sea to go back by a strong east wind all that night, and made the sea dry land, and the waters were divided.



# Appendix Four

## The Metrology of Solomon's Temple

In the measurements of King Solomon's Temple we constantly find multiples of the number 15. Here are some conspicuous instances: -

The common interior height of the Holy Place up to the centre of the attic was 30 cubits, that is, twice 15.

The breadth of the porchway or entrance was also 30 cubits.

The circumference of the Molten Sea was 30 cubits.

The joint interior length of the Holy Place and the Sanctum Sanctorum was 60 cubits, which is four times 15.

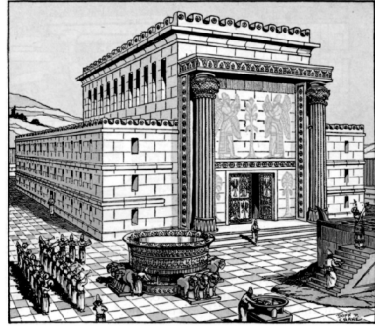
The exterior width of the facade was 60 cubits.

The total exterior length of the Sanctuary, including the Porch, was 90 cubits, six times 15.

The total exterior height of the Porch, including the Middle Chamber and the Third Chamber, was 120 cubits, which equals eight times 15. (This is one-third of 360, the number of degrees into which we divide the circle, being equal to  $4 \times 90$ ,  $12 \times 30$ ,  $24 \times 15$ .)

Between the Women's Court and the Court of Israel there were fifteen steps, and we are told that the worshippers used to sing the fifteen "Songs of Degrees" (Psalms cxx – cxxxiv.) while ascending those steps.

Above all we should remember the 3-storied Chambers built for the Priests upon whom devolved the care of King Solomon's Temple. The tradition embodied in the Books of the Kings does not tell us how many there were; but Ezekiel gives us the number as 30; and we know that they were built on the three sides North, South and West. This number agrees with our tradition as to the 15 trusty and 15 rebellious Fellowcrafts; also with the fact that when Samuel gave a



Sacrificial Feast, he had 30 men to partake of it. Compare 1<sup>st</sup> Samuel ix., 22; 1<sup>st</sup> Kings vi., 5-8; 1<sup>st</sup> Chronicles ix, 26; Ezekiel xli., 6.

### **1<sup>st</sup> Samuel 9: 22**

<sup>22</sup> *Then Samuel brought Saul and his servant into the hall and seated them at the head of those who were invited about thirty in number.*

<sup>23</sup> *Samuel said to the cook, "Bring the piece of meat I gave you, the one I told you to lay aside."*

### **1<sup>st</sup> Kings 6: 5-8**

<sup>5</sup> *Against the walls of the main hall and inner sanctuary he built a structure around the building, in which there were side rooms.*

<sup>6</sup> *The lowest floor was five cubits wide, the middle floor six cubits and the third floor seven. He made offset ledges around the outside of the temple so that nothing would be inserted into the temple walls.*

<sup>7</sup> *In building the temple, only blocks dressed at the quarry were used, and no hammer, chisel or any other iron tool was heard at the temple site while it was being built.*

<sup>8</sup> *The entrance to the lowest floor was on the south side of the temple; a stairway led up to the middle level and from there to the third. <sup>9</sup> So he built the temple and completed it, roofing it with beams and cedar planks. <sup>10</sup> And he built the side rooms all along the temple. The height of each was five cubits, and they were attached to the temple by beams of cedar.*

### **1<sup>st</sup> Chronicles 9: 26**

<sup>26</sup> *But the four principal gatekeepers, who were Levites, were entrusted with the responsibility for the rooms and treasuries in the house of God.*

### **Ezekiel 41:6**

<sup>6</sup> *The side rooms were on three levels, one above another, thirty on each level. There were ledges all around the wall of the temple to serve as supports for the side rooms, so that the supports were not inserted into the wall of the temple.*

# Notes

# Notes