

The SQUARE

We are more fortunate in Freemasonry because we possess a body of ritualistic work which defines many of our symbols in at least one way. This allows us to look at our symbols in two distinct ways, the first being in the way our teachings say and secondly at the common meaning given to the same symbol by the man in the street. The similarity is usually very close but the range of meanings in the outside world is frequently much broader.

- When a new mason asks the question about symbols, "what is that?", or "what does that mean?", do we tend to back off?
- Do we have the feeling that these are 'old' symbols that really have no meaning in our modern world?

If this is the case, then we are in very serious trouble within our Lodges because the Charge at our installations very clearly states that "...it inculcates principles of morality, veiled in allegory and illustrated by symbols."

We are also told in the same breath that to penetrate through the veil of the allegories and symbols is to understand the mysteries.

While there is a far deeper meaning in the overall pattern of the craft, it is of great value to find some meanings of the individual symbols and to attempt to recall that meaning on each occasion that we see them. This creates the 'repetition' form of learning that begins to modify our life style to become that "better man" we all strive for. But one of the problems with the human mind is that it tends to ignore items which it registers frequently.

So it is, with the jewels worn by the officers of our Lodges.

How many of you have looked at your officers jewels - really looked. Firstly they are quite detailed, secondly they frequently have things on them that you were totally unaware of. There are different companies producing jewels and each may embellish the jewels differently, but you can be sure that there is

meaning behind practically every identifiable whirl and loop.

What one symbol is most typical of Freemasonry as a whole?

Mason and non-Mason alike, nine times out of ten, will answer, "The Square!" Many learned writers on Freemasonry have nominated the square as the most important and vital, most typical and common symbol of the ancient Craft.

Masonically the word "square" has the same three meanings given by the world:

- (1) The conception of right-angled-ness - our ritual tells us that the square is an angle of ninety degrees, or the fourth part of a circle;
- (2) The builder's tool, one of our working tools, the Master's own immovable jewel;
- (3) That quality of character which has made "a square man" synonymous not only with a member of our Fraternity, but with uprightness, honesty and dependability.

The first of the three meanings must have been the mathematical conception and we should reflect upon the wisdom and reasoning powers of men who lived five thousand years ago, that they knew the principles of geometry by which a square can be constructed.

The square is the symbol of regulated life and actions. It is the masonic rule for correcting and harmonising conduct on principles of morality and virtue, and as a symbol, it is dedicated to the Master. We also identify ourselves with this symbol, because we are taught that squares, levels and perpendiculars are the proper signs to know a mason.

We are surrounded by squares in our Lodge and the Immediate Past Master and the Past Masters wear it most obviously. It stands, as one of the Great Lights, in the centre of all our activities. It is repeated in our F.C. salute, our feet positions, our way of moving around the Lodge and our legs when at the altar in our Fellow Craft obligation.

History tells us that the square, which is an upright with a right top arm, is the Greek letter gamma. In the construction trade, the square is used for "trueing" stones and "proving" them correct. We can see how easily, the association with truth and virtue could arise. There was the historical belief that the shape of the ancient world was an oblong square and this is represented in our "squared Lodge."

There have been references to the square's meaning as a symbol long before the start of Masonry, as we know it. The Egyptians, Confucius and Aristotle refer to 'square actions' and associate this with honest dealings, high morality and virtue. The symbol is not original, it is certainly far from new, but it seems to have a remarkable consistency of meaning.

If we move on to the Immediate Past Master's jewel for a moment it is normally identical to the Master's in shape except that pendant from it is the 47th problem of Euclid. It is important to remember that Euclid only proved the Pythagorean theorem of about 300 years earlier. When you consider what the theorem shows it is a multitude of further squares. Squares on sides, mathematically 'squared' numbers and a central closed square, about which all the 'proof' stands. As an emphasis of the square symbol we could see nothing which could do it better. We should know that the properties of this triangular arrangement were first thought to be magical in the relationship they demonstrated. We should always marvel that such a simple figure could have had such impact on our world and still has today.

The Harpedonaptae of Egypt.

The names means, literally, "rope stretchers" or "Rope fasteners."

In the Berlin museum is a deed, written on leather, dating back to 2,000 B.C. which speaks of the work of rope stretchers; how much older rope stretching may be, as a means of constructing a square, is unknown,

although the earliest known mathematical hand-book (that of Ahmes, who lived in the sixteenth or seventeenth Hyskos dynasty in Egypt, and is apparently a copy of a much older work which scholars trace back to 3400 B.C.), does not mention rope stretching as a means of square construction.

Most students in school days learned a dozen ways of erecting one line perpendicular to another. It seems strange that any other people were ever ignorant of such simple mathematics. Yet all knowledge had a beginning. Masons learn of Pythagorean's astonishment and delight at his discovery of the principle of the Forty-seventh Problem. Doubtless the first man who erected a square by stretching a rope was equally happy over his discovery.

Researchers into the manner of construction of pyramids, temples and monuments in Egypt reveal a very strong feeling on the part of the builders for the proper orientation of their structures. Successfully to place the building so that certain points, corners or openings might face the sun or a star at a particular time, required very exact measurements. Among these, the laying down of the cross axis at a right angle to the main axis of the structure was highly important.

It was this which the Harpedonaptae accomplished with a long rope. The cord was first marked off in twelve equal portions, possible by knots, more probably, by markers thrust into the body of the rope.

The marked rope was then laid upon the line on which a perpendicular (right angle) was to be erected. The rope was pegged down at the third marker from the one end, and another, four markers further on. This left two free ends, one three total parts long, one five total parts long. With these ends the Harpedonatae scribed two semi-circles. When the point where these two met, was connected to the first peg (three parts from the end of the rope, a perfect right angle, or square, resulted.

Squaremen

The Companies of wrights, slaters, etc, in Scotland, in the seventeenth century, were called "Squaremen." They had ceremonies of initiation, and a word sign, and grip like the Masons. "The Squaremen Word' was given In conclaves of journeymen and apprentices wrights slaters, etc., in a ceremony in which the aspirant was blindfolded and otherwise prepared;' he was sworn to secrecy, had word, grip and sign communicated to him, and was afterwards invested with a leather apron. The entrance to the apartment, usually a public house, in which the brithering was performed, was guarded, and all who passed had to give the grip. The fees were spent in the entertaining of the brethren present. Like the Mason,, the Squaremen admitted non-operatives. In the St. Clair charter of 1628 among the representatives of the Masonic Lodges, we find the signature of 'George Liddell, deakin of squaremen and now quartermaistir This would show that there must have been an intimate connection between the two societies of Crafts.

The Forty-Seventh Problem of Euclid

The Pythagoreans defined the relationship between numbers around 500 BC and Euclid's work on geometry refined these at around 300 BC.

For the benefit of those who may have forgotten their geometry days, Euclid's problems included:

- 47th - In every right angle triangle the square of the hypotenuse is equal to the sum of the squares of the other two sides.
- 48th - If the square described of one of the sides of a triangle be equal to the squares described of the other two sides, then the angle contained by these two is a right angle.

This is demonstrably true regardless of the length of either side. But in the Problem as diagrammed in the lodge, and for simplicity's sake it is usually shown with sides the proportions of which are as three, and four

units when the hypotenuse, or longest side of the triangle will be as five units.

The 47th problem of Euclid (called that because Euclid included it in a book of numbered geometry problems) in which the sides are 3, 4, and 5 - all whole numbers - is also known as "the Egyptian string trick." The "trick" is that you take a string and tie knots in it to divide it into 12 divisions, the two ends joining. (The divisions must be correct and equal or this will not work.)

Then get 3 sticks - thin ones, just strong enough to stick them into soft soil. Stab one stick in the ground and arrange a knot at the stick, stretch three divisions away from it in any direction and insert the second stick in the ground, then place the third stick so that it falls on the knot between the 4-part and the 5-part division. This forces the creation of a 3 : 4 : 5 right triangle. The angle between the 3 units and the 4 units is of necessity a square or right angle.

Or

If one draws on paper a line three inches long, and at right angles to it, and joined to one end, a line four inches long, then the line connecting the two ends will be five inches long when the angle is a perfect right angle, or one of ninety degrees. The square of 3 is 9. The square of 4 is 16. The sum of 9 and 16 is 25. The square root of 25 is 5.

So now we have three methods

- Rope
- Calculation
- Graphically

We are taught little about this Problem in our Rituals, and we are instructed that it was invented by Pythagoras, that he was a Master Mason, that he was so delighted with his invention that he exclaimed "Eureka" (I have found it), that he sacrificed a hecatomb, and the Problem "Teaches Masons to be general lovers of the arts and sciences." Our Rituals are accurate in neither date nor fact; and yet of all the symbols of Freemasonry the Forty-Seventh Problem is one of the most beautiful and most filled with meaning.

"By this the operative MN SQR. his work, that it may be true to the right

angled lines along which the great Central Forces act and thus be united and held together by the dominant power in nature.

By it the speculative MN is to SQR. his action, true to his conscience and the dictates of eternal justice, so that, thus wisely governed, his life work may be established etc”

How came this wonder to be? What is the magic of 3 and 4 and 5? (or 6 and 8 and 10, or 36 and 64 and 100, or any other set of numbers of the same relationship)? Why is the sum of the squares of the two lesser always equal to the square of the greater? What is the mystery which always works out so that, no matter what the length of any two sides, so be it they are at right angles, the line joining their free ends will have a square equal to the sum of the other two squares?

With this certainty, man has reached out into space and is able to measure the distance of the stars! With this knowledge he has surveyed land, marked off boundaries, constructed railroads and built cathedrals. When tunneling through a mountain, it is the Forty-Seventh Problem of Euclid by which the two parties digging toward each other meet in the center of the mountain. With this knowledge man navigates the ocean, and goes serenely and with confidence upon a way he cannot see, to a port he does not know; with this problem he can locate himself in the middle of the ocean so that he knows just how far he has come and how far to go.

If we put down the squares of the first four numbers (1, 2, 3, 4); thus, 1, 4, 9, 16; we can see that by subtracting each square from the next one we get 3, 5, and 7; which are the steps in Masonry, the steps in the Winding Stair, in other words, the sacred numbers. They have held meanings for those who attached a significance of spiritual import to mathematics. They have been symbols of the interrelation of science, knowledge, exploration, building, religion, worship and morality.

Our finite minds cannot think of a world or a universe in which two and two make other than four, or in which the relation of the circumference of a circle to its diameter is other than 3.1416 plus. Thus, if the sum of the squares of the two sides of a right-angled triangle are equal to the square of the hypotenuse is a truth here, it is a truth everywhere. This particular mathematical truth is so perfect, so beautiful, so inevitable and so fitting to the art and science of Freemasonry, that it is used as a symbol of the universality of law.

Point Within a Circle.

An addition to what Dr. Mackey very fully sets forth as an explanation of the term and emblem *point within a circle* may be given, by referring to one of the oldest symbols among the Egyptians, and found upon their monuments, which was a circle centered by an A U M, supported by two erect parallel serpents; the circle being expressive of the collective people of the world protected by the parallel attributes of Power and Wisdom of the Creator The Alpha and Omega, or the W.II representing the Egyptian omnipotent God, surrounded by His creation, having for a boundary no other limit than what may come within his boundless scope his Wisdom and Power. At times this circle is represented by the Ananta (Sanskrit, eternity) a serpent with its tail in its mouth. The parallel serpents were, of the cobra species.

It has been suggestively said that the Masonic symbol refers to the circuits or circumambulation of the initiate about the sacred Altar, which 'supports the three Great Lights as a central point while the brethren stand in two parallel lines.

From medieval times up till the end of the eighteenth century, all representations of Mason's squares show one limb longer than the other. In looking over the series of Masonic designs of different dates it is possible to observe the gradual lengthening of the shorter limb and the shortening of the longer one, till it is sometimes difficult to be certain at first glance if there is any difference between them.

It is simply the “trying square” of a stonemason, and has a plain surface, the sides embracing an angle of ninety degrees, and it is intended only to test the accuracy of the sides of a stone, and to see that its edges subtend the same angle.”

Our MacBride Ritual is particular in its reference to the square:

- On Opening; As the Sun rises in the East upon the square, opens the day.....
- and, within the Compass of his power see that the Craftsmen work true to the Square.
- **THE GREATER LIGHTS** Are the Holy Book, the Square, and the Compass, or the Lights of Revelation.
- The Lodge Furniture is the revealed Word of the Grand Master of All, with the Compasses and Square, that we may know His plan and circumscribe our desires, and square our actions according to it.
- In the Square we have an emblem of the perfect Justice that governs all things.
- for if the heart be not square, the life can never be true.
- We obtain the Honours of a Master By the help of The Great Geometrician Of The Universe the assistance of the Square and Compass
- And are also told that:
- Within the Lodge, the interests of Masonry are to be your constant care, and the principles of the Square are to be the rule and guide of your actions.

It is of interest to recall McBride’s explanation of the “center” as used in our Lodge, and the “point within a circle,” is familiar to us. He traces the medieval “secret of the square” to the use of the compasses to make the circle from which the square is laid out. Lines connecting a point, placed anywhere on the circumference of a circle, to the intersection with the circumference cut by a straight line passing through the center of the circle, forms a perfect square. These ancient temple builders, by means of the centre, formed the square, and the centre was a point round which they could not err.

The knowledge contained in this proposition is at the root of all systems of measurement and the knowledge of how to form a square without the possibility of error has always been accounted of the highest importance in the art of building, and in times when knowledge was limited to the few, might well be one of the genuine secrets of a Master Mason.

The question arises, have we anything in our present ritual which might be relative in any way to this method of proving the square or obtaining a right angle without the possibility of error and which may have been connected with the instruction given in purely operative masonry.

The type of triangle most often used to demonstrate the 47th problem in Masonry is not the 3 : 4: 5 but the 1: 1 : square root of 2 form. The square and the cube which are 1 unit on each side are of great symbolic meaning to Masons. Therefore, the bisection of the square into a pair of 1 : 1 : square root of 2 triangles has important Masonic connotations. It is in this form that the Pythagorean theorem is most often visually encountered in Masonry, specifically in the checkered floor and its tessellated border, as a geometric proof on lodge tracing boards, as the jewel of office for a Past Master, and in the form of some Masonic aprons.

To create a 1:1 square root of 2 right triangle, also known as an isosceles right triangle, you need a compasses and a straight edge -

familiar tools to the Craft, of course. On soft ground, use the compasses to inscribe a circle. Then use the straight edge to bisect the circle through the center-point marked by the compasses. Mark the two points where the bisecting line crosses the circle's circumference. Using the compasses again, erect a perpendicular line that bisects this diameter-line and mark the point where the perpendicular touches the circle. Now connect the three points you have marked - and there is your 1 : 1 : square root of 2 right triangle.

We also have a fragment of great interest in the ceremony of opening the lodge in the Third Degree. It is from the East and towards the West that one's steps are directed to find that which was lost, and it is with (by means of) the centre, that point round which a Master Mason cannot err. The opening catechism of the Third Degree fits so accurately the process of forming a perfect square as used by the rope stretchers of ancient Egypt that the belief forms in the mind that we have here a fragment of the old operative instruction preserved in the mosaic of speculative Masonry.

Even today as mathematics and science moves on, aided by tetra-flop-able computers which have allowed for Stephen Wolfram's "A New Kind of Science" to be published this year, refer back to Pythagoras and Euclid's works.

His findings from running a few simple computer programs was that the outcome of their behaviour would be as complex as anything we could imagine. This implies a radical rethinking of how process in nature works and he believes that "every feature of our universe does indeed come from an ultimate discrete model".

- No wonder that Pythagoras sacrificed a hecatomb!
- No wonder Euclid called it a Problem
- No wonder that Anderson speaks of this proposition as the foundation of all Masonry!

- No wonder McBride traces through it the medieval secret of the square
- No wonder Stephen Wolfram calls his Principal of Computational Equivalence that make fundamental phenomena occur?

The only wonder is that modern Freemasonry has lost sight of the importance of this symbol.

- We seek it in the First Degree under the symbolism of light;
- we strive to attain it in the Second Degree as the summit of all knowledge;
- we learn in the Third Degree that perfect knowledge is not to be attained on this side of the grave;

but everywhere it is taught as the unifying bond of the Craft, cementing us as a common brotherhood

An old brass square was found under the foundation of an ancient bridge near Limerick, in 1830, dated 1517 containing the inscription:

*I will strive to live with love and care,
upon the level by the square.*