

Persistence in the use of Units.

Dating stone rings has proved to be problematical. The main difficulty has been that most rings, on excavation, have proved to have had few objects that could be dated and even when such objects have been found, it has often proved difficult to show that they are contemporary with the ring. From the results that have been obtained they tend to show that the larger rings are older, but as with cathedrals and churches, there appear to be many exceptions and size can only be a very rough guide to age. It seems that the earliest rings were constructed around 3000 B.C. and the latest ones about 1300 years later. At least that is the period when most of the rings seem to have been constructed.

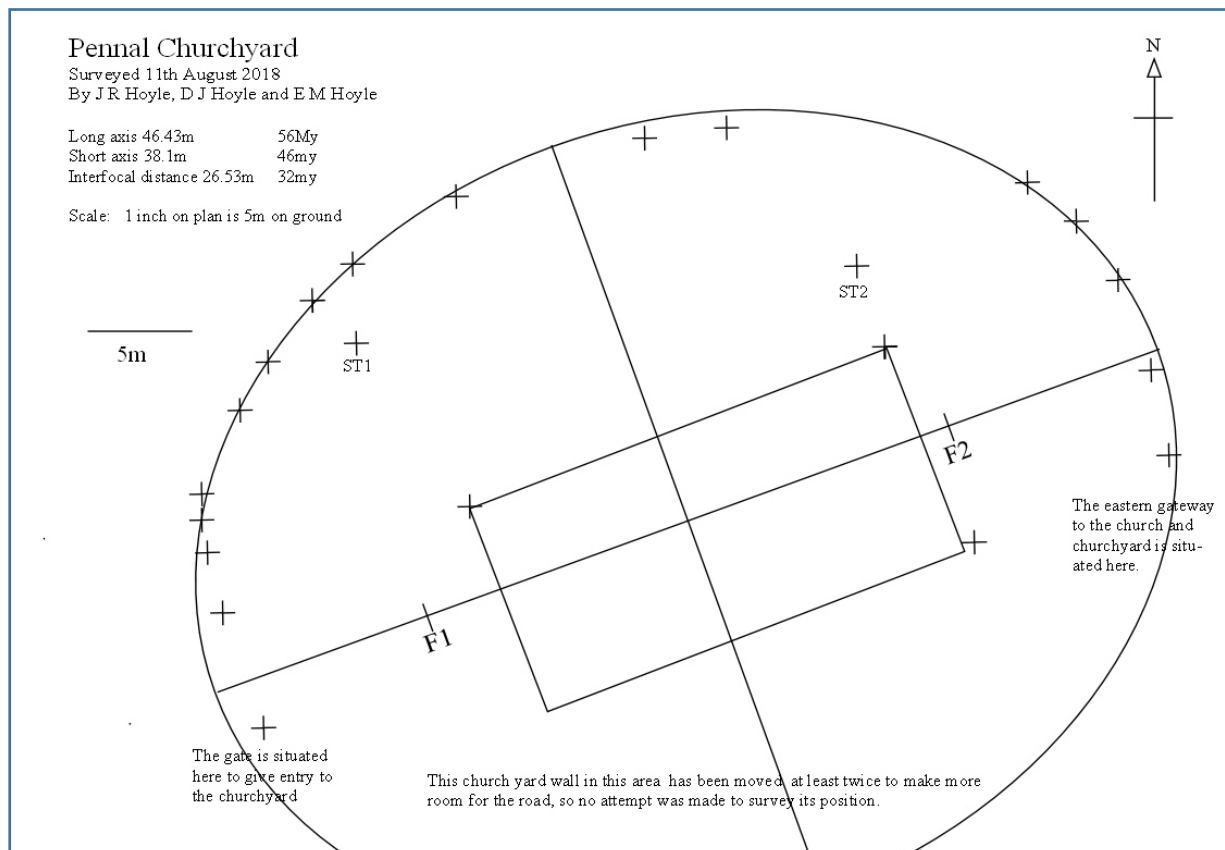
During that period, and probably starting long before, there was a profound interest in Astronomy, the movements of the Sun and Moon and the prediction of eclipses. There seems to have been an interest in Geometry and perhaps a more general fascination in mathematics as well, because many rings were set out with the arcs of circles centred on the corners of Pythagorean triangles, such as those with sides of 3, 4 and 5 units or 5, 12 and 13 units, which have a perfect right angle opposite the longest side. In their natural world of rocks, trees, plants, animals, streams and rivers, a straight line was virtually unknown. If they drew a triangle in sand with sides of 3, 4 and 5, then they always ended up with a right angle opposite the longest side and no matter how accurately they drew the lines of this triangle, they could never detect any discrepancy in this angle. Was this a glimpse of something perfect that lay beyond their visible world? If so it links up with the later ideas of Plato who believed that what we experience of our world is but a shadow of reality.

Is it possible that the use of such right angled triangles in the design and construction of some of the rings was an attempt to encompass something that was perfect and perhaps make some contact with the gods? If this partly true, then it is understandable that a standard length would be necessary, as just any old length would not be acceptable. Perhaps some prophet had decreed that that such a length had been handed down to him – or her – and was the means to make contact with the Gods. This is pure speculation, but the actual length seems to have been of great importance. The length of 2.97 feet, which I have termed the Old Yard, lost out to the Megalithic yard of 2.72 feet around the middle of the third millennium B.C., perhaps peacefully, perhaps not.

If the reader wishes to be totally confused, then they should try to research the origin of some of these early units of length. They will soon be bewildered by units such as Sumerian shusi, Indus inches, Drusian foot, Akbar's gaz, Northern foot, Saxon foot, Royal cubits, Sumerian feet and others and their relationship to the Megalithic Yard. It seems that anything from the Middle East, or even as far away as India, has more claim to be accepted as the precursor of the megalithic Yard, than anything originating in Britain. One of these possible derivations may actually be true, but it is not very helpful. Alexander Thom derived his value of the Megalithic Yard from the dimensions of the British stone rings that he measured and believed it to be 2.72 feet. I have surveyed other rings, mainly in Wales and found that the Megalithic yard was a suitable unit for all but two or three rings and that these exceptions used what I termed the old yard, of 2.97 feet. I have confidence that the Megalithic yard was essentially the only unit in use when the ring building period ended. Ewan Mackie found evidence for the use of the Megalithic Yard in the construction of Iron Age brochs in Scotland, but otherwise the evidence for its use is slim.

Pennal Church.

Pennal Church has a roughly oval churchyard and local tradition has it that it has been built on the site of a pre-existing stone circle. In an attempt to verify this I took the opportunity to make an accurate survey of the church and the churchyard wall, to see if the geometry conformed to the geometry of other non-circular rings. I did not expect much from the survey as the wall to the south of the churchyard had been moved at least twice in order to widen the road. The walls to the west, north and south may have largely been in their original position, but may not have accurately followed the line of the original stone ring, assuming of course that it had been one.



Pennal Church and Churchyard wall.



Two of the stones in the churchyard wall.



Two more stones in the churchyard wall

The ellipse in the plan is a passable fit to the churchyard wall, but as there are no points on the south side, the construction must be in some doubt. What I did find surprising is that the dimensions of the church were very close to:

Length	26 megalithic yards.	Width	12 megalithic yards.
--------	----------------------	-------	----------------------

As the wall are very thick, it seems likely that the interior of the church would be close to:

Length	24 megalithic yards.	Width	10 megalithic yards.
--------	----------------------	-------	----------------------

The diagonal would be 26 megalithic yards, so the width, length and diagonal would make a double size 5, 12, 13 Pythagorean triangle.

At the first opportunity, my wife and I went to the church to measure the length and breadth of the interior. The results are shown below:

Width	8.40 metres (27.56 feet)	10.13 megalithic yards
-------	--------------------------	-------------------------------

Length	19.83 metres (65.06 feet)	23.92 megalithic yards
--------	---------------------------	-------------------------------

These dimensions are indeed close to the ones inferred from the survey. If these dimensions are not due to chance, then it means that the megalithic yard was still being used 2000 years after the end of the ring building period. What is more, the properties of Pythagorean triangles were being used in the design of this church, as they had been used, perhaps up to 3000years earlier, in the design of some of the local stone circles.

The design and layout of the floor area of Pennal Church is not the only unusual feature. The church is believed to have been founded by two Saints, St. Tannwg and St. Eithrias in the 6th Century. These two Saints came from Brittany with St. Cadfan in a large party, 847 in total, or so it is claimed. This was a period of rapid change as the Romans were leaving and with their departure, Britain was losing its rulers and law enforcement. Into this void of great uncertainty, the Church began to expand by building small churches throughout Wales and other areas of the British Isles. The pattern was that one man – later a Saint – would establish a church, which would then be named after him, and in many cases the nearby village would also carry his name. Llanegryn church was established by St. Egryn and the village is also known as Llanegryn. There are many more such small churches, such as Llangelynin, Llandecwyn and Llandanwg to mention but a few. Pennal Church is different.

- | | |
|----------|--|
| Firstly | It required two such Saints to establish the Church. |
| Secondly | The Church does not bear the name of either Saint. |
| Thirdly | The name of the village, Pennal, is not related to either of the Saints. |

Another odd thing about the Church is that it is the only Church in Wales to be dedicated to St. Peter in Chains.

The only explanation I have for these facts is that Pennal did have a stone circle and that this was still being used as a place of worship for the old pagan religion. This was possible, as although the Romans had made Christianity the official religion, they had not banned other religions and the Druids, who were presumably at the head of the old religion, were still influential. According to Julius Caesar, who made a study of them before he invaded, the Druids had to learn a huge body of facts in order to qualify, and were not allowed to write anything down. This could take up to twenty years, so only very able, dedicated people were able to accomplish these tasks. When Druidism was the only religion, there were plenty of candidates and those who were successful were highly regarded. They officiated in legal disputes of all types and dispensed judgments, not just between individuals, but between tribes. Their power was immense. The coming of the Romans greatly limited these powers, and the growth in the number of Churches and their converts, reduced the numbers who wished to go through the rigorous training programs. Druidism must have been severely weakened, but for Christianity to succeed in this area, it would be necessary to take over the centre of Druidism, which may well have been the stone ring in Pennal. It would be essential to get a toehold there, even if some compromises had to be made. That could explain why two Saints were sent there, in order to provide stronger arguments. Perhaps, with diminishing numbers, the Druids realised they could not continue as they were and allowed the building of a Church inside the ring, on condition that it incorporated some of their beliefs and was not to be called after one, or both, of the two Saints. There may have been other restrictions on what could be done in the Church. Sometime later, possibly when one, or more, of the older Druids died, the restrictions were lifted and the Church was then dedicated to St. Peter in Chains, as the shackles had dropped off. This is pure supposition, but it would explain a lot and it does seem likely that something, not unlike it, happened.

I have not been able to find a definite meaning for the name Pennal. If however it was derived from Pen anallu, which could be translated as "*end of the inability*", it is easy to see how the name could be shortened to Pennal and the meaning to "*end of the restrictions*". Not being a Welsh scholar, I only offer this as an outside possibility and await with interest any other suggestions.

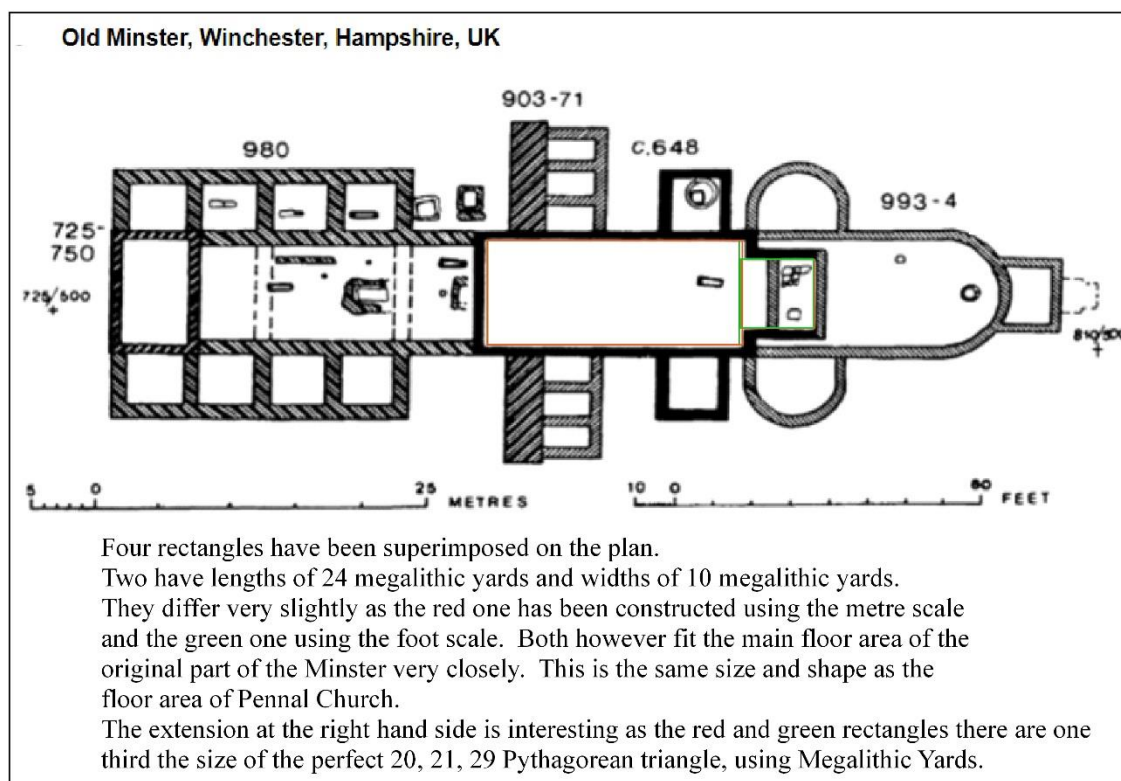
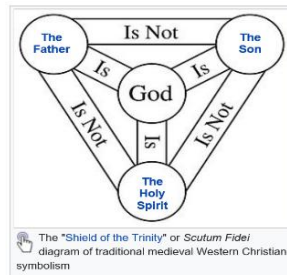
The Old Minster, Winchester.

In his book, *Professor Challenger and his Lost Neolithic World*, Ewan W. MacKie mentions, on page 100, that the Drusian foot, of 0.333 metres, was in use in Saxon times in the building of The Old Minster in Winchester. As there are two and a half Drusian feet in one megalithic yard, the Drusian foot would seem to be a derivative of the megalithic yard. Also, if Thom was correct in his assertion that the megalithic yard was divided into 40 megalithic inches, then a Drusian foot would be 16 megalithic inches. All things considered, it seemed to be worth considering the possibility that The Old Minster would show evidence for the use of the megalithic yard.

The Old Minster no longer exists as it was dismantled after the New Minster was built between 901 and 903AD. However the lines of the walls have been recovered, are visible on the ground and provide an accurate plan of the building from which the dimensions can be recovered. This is shown on the following illustration. The main part, that was built around 648 AD, has a large hall that is 24 megalithic yards long and 10 megalithic yards wide. This makes it the same size and shape as the interior of Pennal Church and the design is based on a double sized 5, 12, 13 right angled triangle. This is beyond co-incidence and it must be that the megalithic yard was in use as late as the fifth or sixth century AD. Because of this, I began a search for a similar type of solution to fit the extension to the right of the main hall. This is almost but not quite square. The solution was found to be a one third sized 20, 21, 29 perfect Pythagorean triangle. It is unusual to have the megalithic yard divided

into three, but the fit is as perfect as the plan will allow, so readers must make up their minds as to its likelihood.

No doubt, the builders of the stone rings would have understood the reasons for basing the design of The Old Minster on the properties of Pythagorean triangles, but we do not. When the Old Minster was built it is evident that that knowledge was still around and the beliefs were so well ingrained that they were incorporated in this building. Was the Old Minster replaced by the New Minster because it was found to be too small, or was it because it incorporated ideas that came from the old religion, that had to be obliterated before it could become a truly Christian centre? Even Christians resort to the use of groups of three.



It is an interesting thought that someone entering Pennal Church, is entering a building, whose size and shape could well have been determined by ideas and beliefs that are more than twice as old as Christianity.