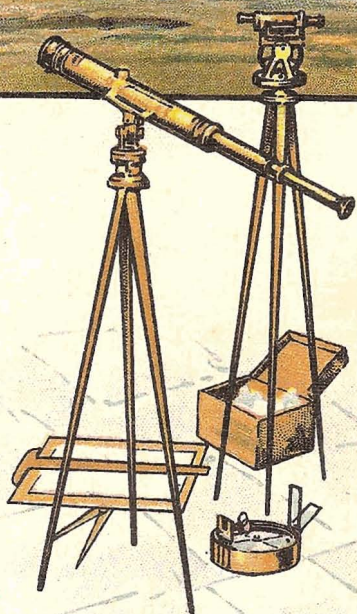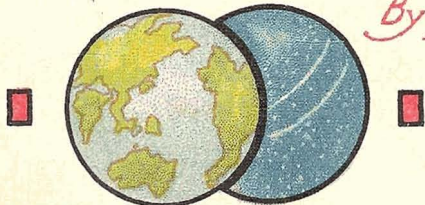# THE GREAT PYRAMID

Its Scientific Features

(1914 A.D. AND THE GREAT PYRAMID — PART I)

By Morton Edgar

THE

GREAT PYRAMID

ITS SCIENTIFIC FEATURES

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GREAT PYRAMID

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PART I OF

1914 A.D. AND THE GREAT PYRAMID

IN WHICH IS SHOWN HOW
THE GREAT PYRAMID OF GIZEH
SCIENTIFICALLY CORROBORATES THE
PHILOSOPHY OF THE DIVINE PLAN OF THE AGES
AS CONTAINED IN THE HOLY SCRIPTURES

BY
MORTON EDGAR
Author of "Great Pyramid Passages," etc.

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The Great Pyramid of Gizeh, as viewed from the South-east; showing the Sphinx in the foreground to the right

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1914 A.D. AND THE GREAT PYRAMID

SECTION I

THE GREAT PYRAMID OF GIZEH IN EGYPT

EGYPT is the only country where the perfect pyramid structure is to be found; that is, a stone building having a square base, with four triangular, sloping sides meeting in a point exactly above the centre of the base.

Although there are over thirty of these monuments, erected in several groups along the western bank of the Nile, only one of them is of importance, namely, the *Great Pyramid of Gizeh*. It is the most northern of a group of nine pyramids, built at the very border of the Sahara Desert on a low hill of rock, not far from the city of Cairo.

Because of its antiquity and size, the beauty of its masonry, and exclusiveness of design both externally and internally; but above all because of the inscrutability of its purpose, this great edifice has been from the earliest times universally designated the *first* of the "Seven Wonders" of the world. Owing to its structural durability, the Great Pyramid is the only one of these ancient wonders which now exists.

While the modern world can point with justifiable pride to its achievements in the engineering art, the masterly workmanship of the Great Pyramid's erectors of fully forty centuries ago, the skill everywhere displayed throughout its vast bulk, not only in the preparation and meticulous fitting of the tens of thousands of immense stones, but of its

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whole design, compels thoughtful admiration. And this sole survivor of the Seven Wonders of the ancients, even in the midst of the mechanical triumphs of the present epoch, still maintains its unique distinction of being earth's chief structural marvel. The Rev. Joseph A. Seiss named it "A Miracle in Stone"; and recent research proves that the monument justifies this title even more completely than that gifted author could have known.

It is claimed by many students that the architect who designed the Great Pyramid must have been inspired; for it is inconceivable that the numerous Scriptural and scientific truths which are now known to be embodied in the dimensions and angles of the building could have been common knowledge at that early period. By laborious research, and careful accumulation of records taken at intervals during centuries, man has at last ascertained to a near approximation the size of the earth on which he lives, the distance separating the sun and earth, the durations in days of the solar tropical year, and lunar month, and the number of years in the precessional cycle of the equinoxes, along with many other related facts. With man such knowledge is progressive; and what is accepted as truth today may tomorrow require correction as learning and understanding increases.

But with God: surely He knows it altogether. If for some wise purpose, therefore, it was his intention to convince his intelligent and enquiring creatures on earth that He is an unerring Law-giver, and that all things are known to Him and are working harmoniously toward a grand consummation, it is not unreasonable to claim that in the *Great Pyramid* he monumentalised these very truths which our scientists have all along so eagerly sought to unravel. This is our claim.

Built nearly five and a half centuries before the Tabernacle of Moses was erected in the wilderness, and twice as long before the Temple of David and Solomon appeared in Jerusalem (and both of these edifices were designed under Divine inspiration), the Great Pyramid has withstood the ravages of all the centuries till now, and will probably continue to stand for many more, testifying to earth's inhabitants the omnipotence of Jehovah. Completed two decades before

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Abraham was born, it held hidden within its measures and angles a prophetic history of the world, not decipherable until history had run its course.

In addition it contains, by means of its design and proportionate dimensions, important scientific facts, which never could be appreciated until precise knowledge of the laws which govern movement in the universe had sufficiently increased, to prepare the mind of man to unlock them.

A Scriptural Declaration; and Historical Notice

Although the Lord of heaven and earth caused his great stone Witness to be constructed over forty centuries ago, it has pleased him to reserve the understanding of its message to the Millennial Day, which we are now entered upon; as we read: "In that day there shall be an altar to the Lord in the midst of the land of Egypt, even a pillar at the border thereof to the Lord. And it shall be for [shall serve for] a sign, and for a witness, unto the Lord of hosts in the land of Egypt: for they shall cry unto the Lord because of the oppressors, and he shall send them a saviour, and a great one, and he shall deliver them" (Isaiah 19: 19, 20).

It is, of course, the popular belief that the Great Pyramid is a tomb; for there is no doubt that the other pyramids were intended by their builders for this purpose, as mummies have been found in some of them. And yet it is now a well known fact that the accredited builder of the Great Pyramid, Cheops, whose name has been found on some of the masonry blocks, roughly painted in red by the ancient quarrymen, was not buried inside his great monument.

His tomb, where he was buried, has been identified by Egyptologists with a deep, and elaborately-cut sepulchral pit, which is situated about a thousand feet away from the Pyramid. Cheops (usually pronounced Keops), therefore, did not intend the Great Pyramid to serve as a tomb; nor, indeed, if we are to believe the reasonable deductions which are based upon historical accounts, did he or his Egyptian subjects know what purpose this immense edifice was intended to serve!

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When we piece together the fragmentary historical records of this pyramid-building period, preserved to us in the writings of Herodotus and Manetho, it appears that Egypt was at that time invaded by a nation who came from the East, and who easily subdued the Egyptians by their power "without a battle," and compelled them to close their idolatrous temples and engage in the work of building the Great Pyramid. When the work was completed the invaders, who were called "Shepherd Kings," vacated Egypt, and, according to Manetho, went East to Palestine, where they built the city of Jerusalem.

The fact that these Shepherd King's easily subdued the Egyptians without resorting to warfare, and were able to compel them to stop idolatrous worship and exert their energies in constructing the Great Pyramid, proves that they were endowed with a mentality immeasurably higher than that of the Egyptians.

It is believed by some scholars, notably by Professor C. Piazzi Smyth, Astronomer Royal for Scotland, that the leader of the Shepherd Kings was none other than Melchisedec, king of Salem, priest of the most high God. Certain statements by Herodotus, read in conjunction with some historical records in the Bible, support the opinion that the Shepherd Philition, or Philitis, referred to by Herodotus, and Melchisedec were one and the same; and that he was the real architect of the Great Pyramid, being inspired of God. But Cheops, named Khufu by modern Egyptologists, who was the reigning king in Egypt at the time of the extraordinary invasion, was merely enlisted along with his subjects in the actual work of construction.

The historical notice of the builders of the Great, as well as of the Second, Pyramid of Gizeh, as given by Herodotus, shows that the later Egyptians had conceived intense hatred of the two kings associated with that pyramid-building period. It is thought, however, by a number of authorities, such as Professor Rawlinson, that this hatred was engendered by a much later invasion of "Shepherd Kings," who had nothing in common with the earlier Shepherd Kings of the 4th Dynasty (For the other Shepherd Kings were of the 15th to 17th Dynasties, long after the building of the Great and Second Pyramids).

The fact, however, that the original Shepherd Kings of the 4th Dynasty compelled the Egyptians to close their idolatrous temples, may have seemed to the Egyptians of later times to have been an insult to their country; and idolatry being rife in these later Dynasties, priests and people alike could not then understand the godly motives that dictated the suppression of false gods, and hated that "ignoble race," as Manetho named them, who "had the confidence to invade our country," and so easily subdue it without even requiring to fight for it! In any case, both Sir G. Wilkinson and Professor Rawlinson, and others, make it evident that the recorders of Egyptian history had thoroughly mixed up the sequence of events, and named successive kings out of their proper order. But the builder of the Great Pyramid is identified by one named Philition, or Philitis, who at the time the building was being erected "fed his flocks about the place," as Herodotus states; and this item of history is accepted by all critical authorities as being correct.

The Great Pyramid the First Stone Building

In his valuable book, *The Antiquity of Intellectual Man,* Professor C. Piazzi Smyth brings forward a mass of literary material which establishes the priority of the Great Pyramid as a stone building, proving that this monument must have been reared before any other edifice of importance. He also shows that none of the subsequent stone erections can vie with their great forerunner in fineness of workmanship; and points out that this fact demonstrates a sudden uprise in excellency of masonic construction.

Professor Smyth comments upon the closeness of the masonry-joints of the building, especially in the walls of the interior Queen's Chamber: "The joints are so close, that the edges of the two surfaces of worked stone, and the filling of cement between, are comprisable often within the thickness of a hair." The famous Egyptologist, Professor (now knighted) W. M. Flinders Petrie, adds: "To merely place such stones in exact contact at the sides would be careful work [because the stones are so large and heavy], but to do so with cement in the joints

seems almost impossible." In another place Professor Petrie again refers to the marvellous skill of the workmen who built the Great Pyramid: "Their skill in cementing joints is hard to understand. How, in the casing of the Great Pyramid, they could fill with cement a vertical joint about 5 feet by 7 feet in area, and only averaging one-fiftieth part of an inch thick is a mystery; more especially as the joint could not be thinned by rubbing, owing to its being a vertical joint, and the block weighing about 16 tons. Yet this was the usual work over 13 acres of surface, with tens of thousands of casing-stones, none less than a ton in weight."

The celebrated architectural authority, Mr. James Fergusson, also, gives his testimony as to the excellency of the workmanship displayed in the Great Pyramid: "No one can possibly examine the interior of the Great Pyramid without being struck with astonishment at the wonderful mechanical skill displayed in its construction. Nothing more perfect mechanically has ever been erected since that time."

SECTION II

THE DISCOVERY OF THE SCIENTIFIC NATURE OF THE GREAT PYRAMID

JOHN TAYLOR of London, to whom Professor C. Piazzi Smyth dedicated all his works on the Great Pyramid, has the honour of being the first to suggest that the Great Pyramid was intended by its builders to monumentalise important scientific truths. He published a book entitled: *The Great Pyramid: Why was it built? Who built it?* This book appeared as early as 1859, and has commanded the attention of all thoughtful students of the Pyramid.

After drawing attention to the precise angle at which the sloping sides of the Pyramid rise from the rock to the apex of the building, as calculated from the base-side length and vertical height of the whole monument, John Taylor wrote: "What reason, it may be asked, can be assigned for the founders of the Great Pyramid giving it this precise angle, and not rather making each face an equilateral triangle? The only one we can suggest is, that they knew the Earth was a sphere; and they had measured off a portion of one of its great circles; and by observing the motion of the heavenly bodies over the earth's surface, had ascertained its circumference, and were now desirous of leaving behind them a record of that circumference as correct and imperishable as it was possible for them to construct.

"They assumed that the earth was a perfect sphere; and as they knew the radius of a circle must bear a certain proportion to its circumference, they then built a pyramid of such a height in proportion to its base, that its perpendicular would be equal to the radius of a circle equal in circumference to the perimeter of the base.

"To effect this they would make each face of the Pyramid

present a certain ascertained angle with reference to its base (supposing a vertical section made of it), which angle would be that of 51° 51′ 14″, if modern science were employed in determining it. . . . How the thought occurred to them we cannot tell; but a more proper monument for this purpose could not have been devised than a vast Pyramid with a square base, the vertical height of which Pyramid should be the radius of a sphere in its circumference equal to the perimeter of that base.
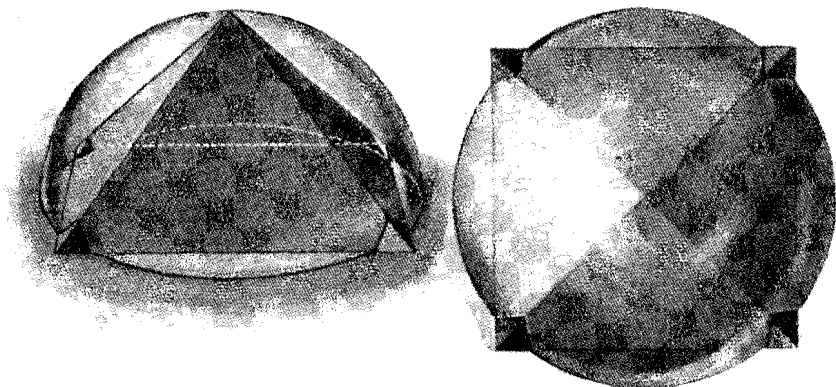
"It was impossible to build a hemisphere of so large a size. In the form of a Pyramid, all these truths might be declared which they had taken so much pains to learn; and in that form the structure would be less liable to injury from time, neglect, or wantonness, than in any other."

At the period when John Taylor wrote these words (1859), the dimensions of the Great Pyramid were not known to such exactness as they now are. His actual figures can now, therefore, be improved upon; but his suggestion as to the reason why the builders of the ancient Great Pyramid chose the precise angle for the rise of the sides of their edifice, which gives to its vertical height the same proportion to its square base, as the radius of a circle has to its circumference, remains substantially the same. His deductive reasoning has received much confirmation during the years which have passed since

his day; but with this necessary correction, namely, that whatever the actual working-builders may have understood about the shape of the earth, the inspired architect was caused to embody in the monument those dimensions which prove a knowledge by *someone* of the true shape and size of the earth.

It is Professor C. Piazzi Smyth to whom we are indebted for fuller knowledge of the scientific features monumentalised in the Great Pyramid, as well as to the beginnings of our understanding of the monument's religious teaching. The religious teaching is, in reality, more essential to us than the scientific aspect of the building, for it is a corroboration of the Plan of Salvation contained in the Bible. The value of the purely scientific features, however, is that they prove the correctness of all the measures of the Pyramid, and demonstrate a oneness of design which is too wonderful to be credited to human beings unaided by a higher intelligence. They prove, therefore, that God Himself must have been the true Architect; and proving this establish at once the claim that the Great Pyramid is His "Sign" and "Witness" for the great Day now begun.

John Taylor's work, therefore, laid the foundation for the researches of Professor Smyth and all later students. Not only did he point out the precise mathematical relationship that the Pyramid's vertical height bears to its square base (which mathematicians denote by the symbol of the Greek letter " π " [Pi], *i.e.*, the proportionate ratio between the lengths of the diameter, and the circumference, of a circle), but he also drew attention to the remarkable fact that the unit of linear measure employed in the Great Pyramid is earth-commensurable. That is, this unit is based upon the actual size of the earth. He named it the "Sacred Cubit," believing that it was the cubit communicated by Jehovah to the people of Israel; but it is now more popularly known as the Pyramid cubit. Additionally, John Taylor demonstrated that the inside capacity of the "Coffer," or granite chest which lies in the King's Chamber of the Great Pyramid, was meant by the Architect to serve as the Standard Capacity Measure for all nations of earth. We shall examine some of these matters in detail as we proceed.

SECTION III

Earth's Standard Unit of Length

THE remarkable discovery of John Taylor is this: The polar diameter of the earth, the axis of earth's rotation, is the best possible reference-line upon which to base the standard unit of Long Measure for the daily use of mankind. The even 500-millionth part of this long straight line is the precise length of the Standard Unit, and is named The Inch; and 25 of these inches is named The Cubit. As there are 500-millions of inches in the full length of the polar axis of earth, and 25 of these in the cubit, there is therefore an exact, round, 10-million cubits in earth's semi-axis of rotation.

And because this inch-length, and cubit-length, are everywhere evident in the dimensions of the Great Pyramid of Gizeh, they have been appropriately named The Pyramid Inch, and The Pyramid Cubit. For this reason it is, properly, claimed that the linear unit of measure employed in the construction of the Great Pyramid is earth-commensurable, and thus the most scientific unit that ever could be devised for the use of man, whose everlasting habitation is Earth.

It was in the attempt to create a system of measures which should be regarded as pre-eminently scientific, that the French scientists of the time of the Revolution, discarding the system previously in use, introduced their earth-commensurable metric system, the linear unit of which, they claimed, is the exact, round, 10-millionth part of the quadrant of the earth's circle passing through the poles, that is, the 10-millionth part of the curved line from the north pole, through Paris, to the equator. This linear unit, the French metre, has since been found to be in error; for the French savants did not know what was the precise size of the earth. Their metre is slightly

too short; and instead of being as at present equal to 39·370789916, ought, rather, to be 39·3741576608+, British inches in length, according to the more accurate estimate for the entire quadrant. (This value is about 855½ metres of the present, inaccurate, length, more than the round 10-millions for earth's quadrant.)

Diagram illustrating the length of the Earth's Axis of Rotation, 500,000,000 Pyramid Inches; and its Semi-axis of 10,000,000 Pyramid Cubits

But not only did they err in their estimate of the dimensions of the earth, but they erred in judgment too. For it is much more scientific to base the Standard Unit of length upon the straight line of earth's axis of rotation, than upon a curved line, especially as that curve is not a true quarter circle owing to the flattening of the figure of the earth at the poles.

Furthermore, nothing can be more fitting as the grand reference standard for length than earth's polar diameter; for,

unlike the Meridian of Paris upon which the French metre-length is based, this straight line upon which the standard inch and cubit are based is common to all nations; for all revolve around it once in every 24 hours. There is an appropriateness in this connection which characterises it as of Divine arrangement. John Taylor, therefore, did not hesitate to declare his belief in the Divine origination of the system of measures which had as its basis the grand standard length of earth's polar axis of rotation.

Sir Isaac Newton, in his *Dissertation on Cubits*, proves that the sacred cubit of the nation of Israel was almost exactly 25 British inches in length. Pursuing the investigation as to the origin and length of the sacred cubit, Professor C. Piazzi Smyth came to the conclusion that the cubit used by Moses when Jehovah commanded him to construct the tabernacle, had been used by the builder of the Great Pyramid many centuries before, and earlier still by Noah when making the ark. And as the 25th part of the cubit, namely, the inch, is practically the same as the inch-length in use today by English-speaking peoples, it was his conviction that the British nation had inherited the "Sacred" inch down through the ages from the day when this standard unit was first Divinely communicated to earth.

The fact that there is now a mere one-thousandth part of an inch difference between the length of the present British inch and the original earth-commensurable inch, is explained by the many changes of the official standard-rod used for reference. The present reference rod is the yard of 36 inches; but the yard was not always the length of the reference standard. The now almost forgotten *ell* of 45 inches, proves that the British inch was originally longer than it is at present.

Earth's Grand Reference-Standard for Length

To show how close are the estimates for the polar-axial length, as computed by modern astronomers, to the theoretical requirement of the Great Pyramid's scientific dimensions, we here repeat what we have said on page 242 of Vol. I *Great Pyramid Passages*: In the 9th Edition of the *Encyclopædia*

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Britannica, Vol. II, page 792, Sir John Herschel is noted as having stated the length of the polar axis from the data supplied by Col. A. R. Clarke. (Col. Clarke is the recognised authority on geodesy.) His figure is 41,707,796 British feet.

On the other hand, Sir R. S. Ball, also taking Col. Clarke as his authority, but at a later date, states in his work *Elements of Astronomy*, paragraph 184, that the polar-axial length is 41,708,954 feet.

Col. Clarke's original data are therefore capable of slightly differing conclusions, according to the method of computing them. But if the earlier estimate of Sir J. Herschel was slightly too short, Sir R. S. Ball's later estimate errs on the opposite side of being too long, as evidenced by the Great Pyramid's scientific indication of the true length of earth's polar diameter.

Remarkably enough, the *actual mean* of the two careful estimates given above, both of which are based upon the data supplied by the world's recognised authority on geodesy, namely, 41,708,375 British feet, is the precise polar-axial length required by the Great Pyramid's scientific dimensions; for this number of feet, converted to Pyramid units, yields exactly 500,000,000 Pyramid inches.

The Precise Length of the Pyramid Inch

It is now well established that in a measured length of exactly 1000 British inches, taking these inches at their present value, there are 999 Pyramid inches. Therefore, to convert any known number of British inches into their corresponding value in Pyramid inches, we only require to *deduct* a 1000th part of the British-inch measure from itself; the remaining 999 parts represent the Pyramid-inch measure.

To convert a known Pyramid-inch measure into the corresponding value in British inches, we *divide* the Pyramid-inch measure by ·999.

It is Pyramid units, and not any other units of length, which unlock the symbolic and scientific secrets of the Great Pyramid. Therefore, all measures of the Pyramid must be expressed in Pyramid units.

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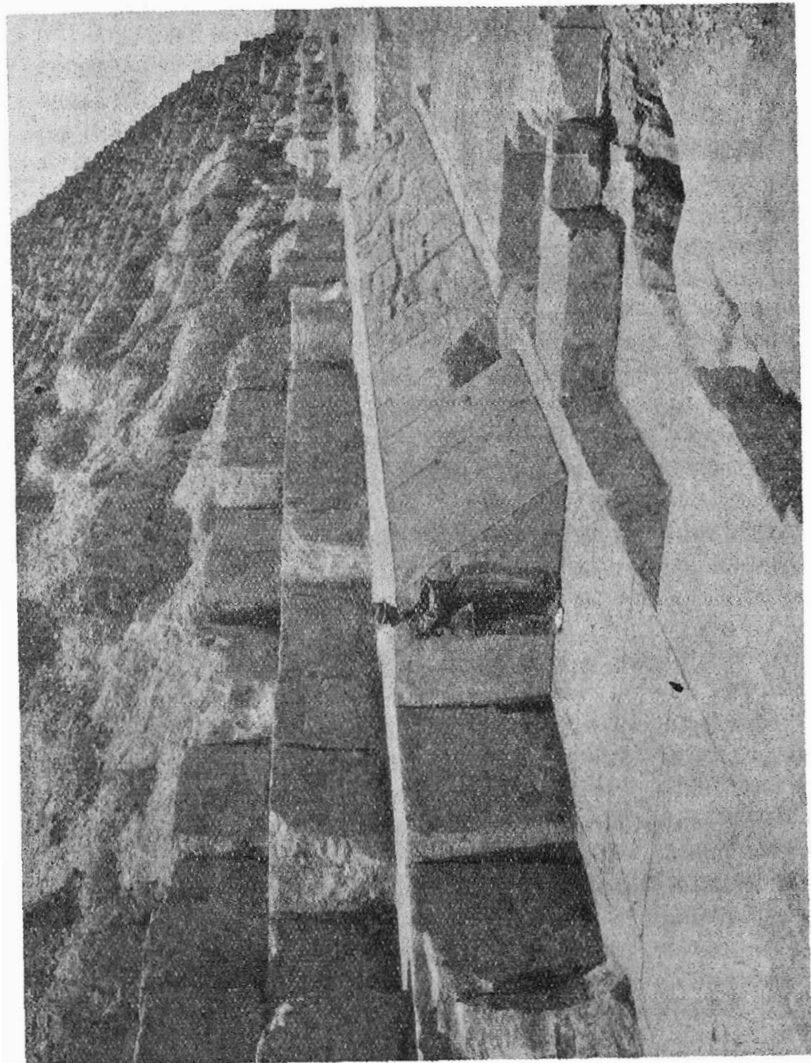
The remnant of the Casing-stones at the Northern base of the Great Pyramid of Gizeh; showing the Platform on which they rest

SECTION IV

THE SOLAR TROPICAL YEAR–LENGTH MONUMENTALISED IN THE GREAT PYRAMID

PROFESSOR C. PIAZZI SMYTH discovered that earth's standard cubit of 25 inch-units, that is, the even 10-millionth part of earth's semi-axis of rotation, divides into the Great Pyramid's base-side length as many times as there are days in the solar tropical year.

He was led to this unique discovery by the presentation to him of one of the building's casing-stones, which a civil engineer, Mr. Waynman Dixon, had rescued from the large mounds of broken stones which lie against the Pyramid on all four sides. This particular casing-stone happened to be exactly one cubit in length; and although the stones originally forming the outside surface of the monument must have varied a great deal in their sizes (as is now known because of the unequal sizes of the long row of nineteen casing-stones laid bare within recent years at the northern foot of the building), the fact of this presentation-stone being one cubit in length suggested the thought that the cubit-length would divide into the entire base-length the exact number of times, to the odd fraction, necessary to agree with the days in the year.

But this was only the beginning. For Professor Smyth himself, and other enthusiastic students of the Pyramid, found, and still continue to find, that this wonderful edifice was constructed in such a way that its dimensions indicate the year-length many times over, and all with mathematical exactitude. What at first, therefore, was put forward as a reasonable suggestion, is now an established certainty, namely, that the great Architect, even in those remote days of over four thousand years ago, had absolute knowledge of the precise day-value of the solar tropical year, to the minutest

fraction. And not only so, but he knew how to monumentalise his wonderful knowledge by methods beyond the origination of man; for not the greatest scientist could have thought of them.

The King's Chamber shows the Year-Length

One of the mathematical methods by which the Great Pyramid was made to show the number of days in the year, is in the size of the King's Chamber. This grand apartment, beautifully constructed with large polished granite stones, was designed to exact geometric proportions. The careful measurings of, first, Professor John Greaves, then of Professor C. Piazzi Smyth, and finally of Professor Flinders Petrie, all of whom published their figures, demonstrate that the ancient Architect arranged that, (1) the length of the chamber should be exactly double its width, and (2) the height of the ceiling above the floor should be exactly one-half the floor-diagonal.

These proportions, quite apart from measures, prove that the builder possessed geometric knowledge of a very high order indeed. For instance, the famous "3, 4, 5" right-angled triangle is built into this chamber, a feature of interest. Proportionally: the end-wall diagonal is 3, the length of the chamber is 4, and the cubic diagonal is 5. These three dimensions represent the perpendicular, base, and hypotenuse, of the right-angled triangle respectively.

It was Mr. James Simpson of Edinburgh, Scotland, who perceived this symmetric arrangement in the size of the King's Chamber, by carefully studying the measures of the apartment previously published by Professor Smyth. He saw that one-half of the chamber's width (quarter of the chamber's length), when taken as a unit of measure, gives the proportionate measures of all parts of the chamber, through the multiplication by square-roots, in this way:—

Half of chamber's width			×square-root of			4		gives the width.
,,	,,	,,	×	,,	,,	5	,,	,, height.
,,	,,	,,	×	,,	,,	9	,,	,, end-diagonal.
,,	,,	,,	×	,,	,,	16	,,	,, length.
,,	,,	,,	×	,,	,,	20	,,	,, floor-diagonal.
,,	,,	,,	×	,,	,,	21	,,	,, side-diagonal.
,,	,,	,,	×	,,	,,	25	,,	,, cubic-diagonal.

And the sum is exactly = 100

As for the actual number of earth-commensurable, Pyramid inches in the full width of this granite chamber, the inspired architect arranged that this number should be just the exact total of such inches, including a very small fraction of an inch, that when multiplied by the square-root of the ratio π, it would agree with the precise day-value of the solar tropical year. (The standard width of the King's Chamber, which is within the limits of the practical measures taken by Professors Greaves, Smyth, and Petrie, is 206·0658+ Pyramid inches. The square-root of the ratio π is 1·7724538509+. The one multiplied by the other equals 365·242198+, the number of days in the solar tropical year.) As all the dimensions of this chamber are proportioned to the width of it, through the medium of square-roots, as shown, it is appropriate that the actual measure of this width should itself be proportioned to the day-value of the year, also through the medium of a square-root, and this square-root the highly scientific one of the ratio of the mathematical π.

And when we remember that the units of measure taken to represent the days in the year are those very units that are based upon the actual size of the earth, a round, even, 500,000,000 of them going to make up the length of earth's polar axis of rotation; and that the earth in revolving once round this axis marks off the duration of the day; and that in completing a circle round its centre the sun it revolves on its axis 365·242198+ times, thus marking off the duration of the solar tropical year, and that all of this is built into the Great Pyramid's principal chamber, we can see clear evidence of intentional design. But no man living four thousand years ago could have of himself known so many scientific

truths, nor known how to monumentalise them in masonry, unless directed by a higher intelligence. And there is no man living even today who knows sufficient to execute a work like this, unless he will acknowledge that the symmetric proportions, and the actual dimensions, of the King's Chamber agree with the polar-axial size of the earth, and the number of days in the year.

Based upon the foregoing proportions, the precise, standard, dimensions of the King's Chamber are these:

Length ..	..	..	..	412·1316879208+*Pyr. ins.*
Width ..	..	..	..	206·0658439604+ ,, ,,
Height ..	..	..	..	230·3886174681+ ,, ,,
Floor-diagonal	..	..	..	460·7772349363+ ,, ,,
Side-diagonal ..	..	..	..	472·1561640467+ ,, ,,
End-diagonal ..	..	..	..	309·0987659406+ ,, ,,
Cubic-diagonal	..	..	..	515·1646099010+ .. ,,

Except that, in the above list, we have extended the decimal fractions, for the sake of greater accuracy in calculations, Pyramid students have now for many years accepted these measures for the King's Chamber as being theoretically correct. They are all, as Professor Smyth has said, contained within the limits of the actual, practical, measures secured by himself and others who have measured this chamber.

The Pyramid's Interior and Exterior Dimensions agree by a recognised proportion

In the scientific features, the Pyramid sometimes indicates a day, or a year, by an inch, or a cubit. Sometimes, also, a day and year are indicated by an even number of inches or cubits. Thus, the length of one base-side of the monument at the mean Socket-level, the full solar year-length is indicated, each day by one cubit. But if we take all four base-sides as representing the complete cycle of the year, each day is then indicated by an even 100 inches. Or we can say instead, that there are as many inches in the perimeter of the Pyramid's Socket-base level, as there are days in 100 solar tropical years, making it, therefore, that each day is represented by one inch.

(In some time-features a Pyramid unit of measure may represent a week, or a month, or any definite and symmetric period.)

Now, the dimensions of the interior King's Chamber were so proportioned that, by a recognised mathematical method peculiar to the Great Pyramid itself, these dimensions agree with the building's exterior measures. We may, for instance, regard the length of the King's Chamber as being the diameter of a circle. When we compute the area of this particular circle, and then make a square of exactly the same area, we shall find that the side-length of this square is as many inches as there are cubits in the side-length of the Pyramid's Socket-level base. Inches in the small square are reproduced by cubits in the large one. Therefore, there are as many inches in the side-length of the small square as there are days in the solar year.

Here, then, we have a very good example of the Pyramid's proportionate dimensions. That is, while the size of the King's Chamber does not agree in a direct way with the outside size of the building, yet we can see that the agreement is absolutely exact in their mathematical proportions, and according to the Pyramid's own scale of a cubit to an inch, or other even numbers of Pyramid units.

It is by means of these proportions, that the Great Pyramid was made to prove its own dimensions.

The Pyramid's Passage-Angle shows the Day-value of the Solar Tropical Year

Professor C. Piazzi Smyth observed the angle of the Pyramid's interior passage-ways very carefully. He found that the ascending angle of the Grand Gallery is more nearly correct, according to the indicated theory, than the angle of the other passages. This he explained from the fact that the builders bestowed more care in constructing the Grand Gallery, because the angle of this passage was intended by them to be representative. The theory demands that the precise passage-angle should be 26° 18′ 9″·7; and the Grand Gallery angle is only about half a minute of arc from this requirement.

Commenting upon his observed angles of the other two passages, the First Ascending, and Descending, Professor Smyth says: "One of them is more, and the other less, than the theoretical quantity; their mean, or 26° 16′ 30″, being within 2′ distance therefrom; and looking like a case of probable error of construction on the part of honest workmen, who knew the right theoretical angle, and wished to hit, but had practical difficulty in hitting, it exactly." The observations of Professor Flinders Petrie confirmed those of Professor Smyth.

The claim of Professor Smyth, namely, that the theoretical angle of 26° 18′ 9″·7 is the one clearly intended by the Architect, is abundantly supported by the scientific features of the Great Pyramid. We have therefore no hesitation in accepting this theoretical angle for both ascending and descending passageways.

One of the first of these scientific confirmations of the angle of the Pyramid's passages to be revealed, is connected with the length of the King's Chamber and the day-value of the solar year. When we measure off on the floor-line of, say, the Grand Gallery a section equal to exactly twice the length of the King's Chamber, and regard this measured-off section as the hypotenuse of a right-angled triangle, we shall find that the length of the perpendicular of the triangle is as many inches as there are days in the solar tropical year, Q.E.D. It is manifest that if the angle at which the passage-floor rises had been more or less than the exact 26° 18′ 9″·7, or if the length of the King's Chamber were different from that which it is found to be, the precise day-value of the year could not have been monumentalised in the Great Pyramid by this unique method.

SECTION V

THE KING'S CHAMBER AND THE GRAND GALLERY
ARE RELATED PROPORTIONATELY

STILL another method by which the Great Pyramid was made to monumentalise the duration in days of the solar tropical year, is in the length of the Grand Gallery. The calculation requires the recognition of the dimensions of the King's Chamber. The longest straight measured line of the King's Chamber, the cubic diagonal, when multiplied by the number of days in the solar tropical year, yields a number which is exactly an even, round, 100 times the floor-length of the Grand Gallery in inches. (When we multiply 515·1646+ by 365·2421+, and divide the result by 100, we get 1881·5985+ Pyramid inches. This is the theoretical, standard, length of the Grand Gallery. But as in all the dimensions of the Great Pyramid, slightly varying measures are permissible, and, indeed, were purposely arranged for by the inspired architect, within limits. A measurement of a passage along the east side is found to be slightly longer or shorter along the west side. This was intended, that a little variation might be provided for in measures of the passage. The standard measure, founded upon a definite scientific calculation, and supported by other calculations, is always, of course, within the limits of the practical measures.)

The Vertical Height of the Grand Gallery

As the practical, measured, floor-length of the Grand Gallery is confirmed by the scientific dimensions of the King's Chamber, through the medium of the day-value of the solar year, so we find that the precise vertical height of this passage is also shown by the measures of the King's Chamber.

Every marked section of the ascending and descending passage-ways has its corresponding vertical and horizontal measures; that is, the perpendicular, and the base-line, measures. For the floor-lines in each of these marked-off sections of the inclined passages can be considered as being the hypotenuse of a right-angled triangle; and hence the perpendicular and base are the vertical height, and horizontal length, of such section.
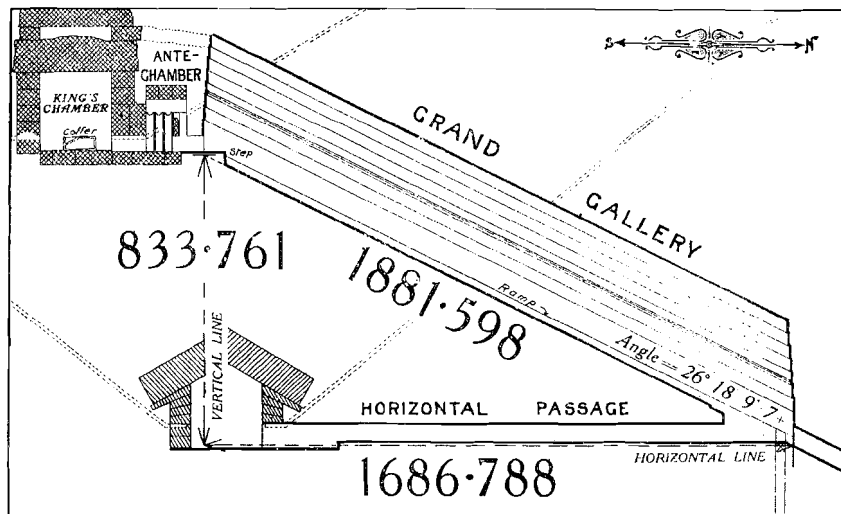
If we regard the cubic diagonal of the King's Chamber as being the side-length of a square, the vertical height of the Grand Gallery is proportionate to it in this way: Multiply the area of this exact square by the ratio π. The result is equal to precisely 1000 times the Grand Gallery's vertical height. (The square of the King's Chamber's cubic diagonal multiplied by 3·1415926535+, which is the value of π, equals 833761·6480+ Pyramid inches. When we divide this by an even 1000 we get the standard vertical height of the Grand Gallery. But when we multiply it by an even 100, we get the precise area of the Great Pyramid's Socket-level square base in square Pyramid inches. Both of these calculations

are Q.E.D., that is, absolutely exact. They serve as good examples of the proportionate way in which all parts of the Pyramid are related to each other; and also of the decimal system of the whole building's scientific design.)

The Horizontal Length of the Grand Gallery

By still another proportion connected with the length of the King's Chamber, and with the angle at which the floor of the Grand Gallery rises, we get the horizontal length of the Grand Gallery.

Mark off on the inclined floor of the Grand Gallery a section equal to the length of the King's Chamber, and let this be the hypotenuse of a right-angled triangle. The area of this triangle is exactly 20 times the horizontal length of the Grand Gallery. (At the precise angle at which the floor-line of the Grand Gallery is inclined, we can find the area of any right-angled triangle, such as this, by first squaring the length of the hypotenuse, and then multiplying this square by the ratio ·1986179741+. Thus, the square of the King's Chamber's length multiplied by this ratio, and the result divided by 20, gives us the standard horizontal length of the Grand Gallery, 1686·7882+ Pyramid inches, Q.E.D.)
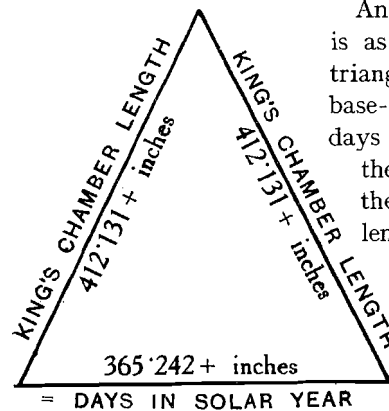
Another way of stating this feature is as follows: Construct an isosceles triangle. Make the length of its base-line as many inches as there are days in the solar tropical year. Make the length of its two equal sides the same number of inches as the length of the King's Chamber. It will be found that the *area* of the triangle equals precisely 40 times the Grand Gallery's horizontal length.
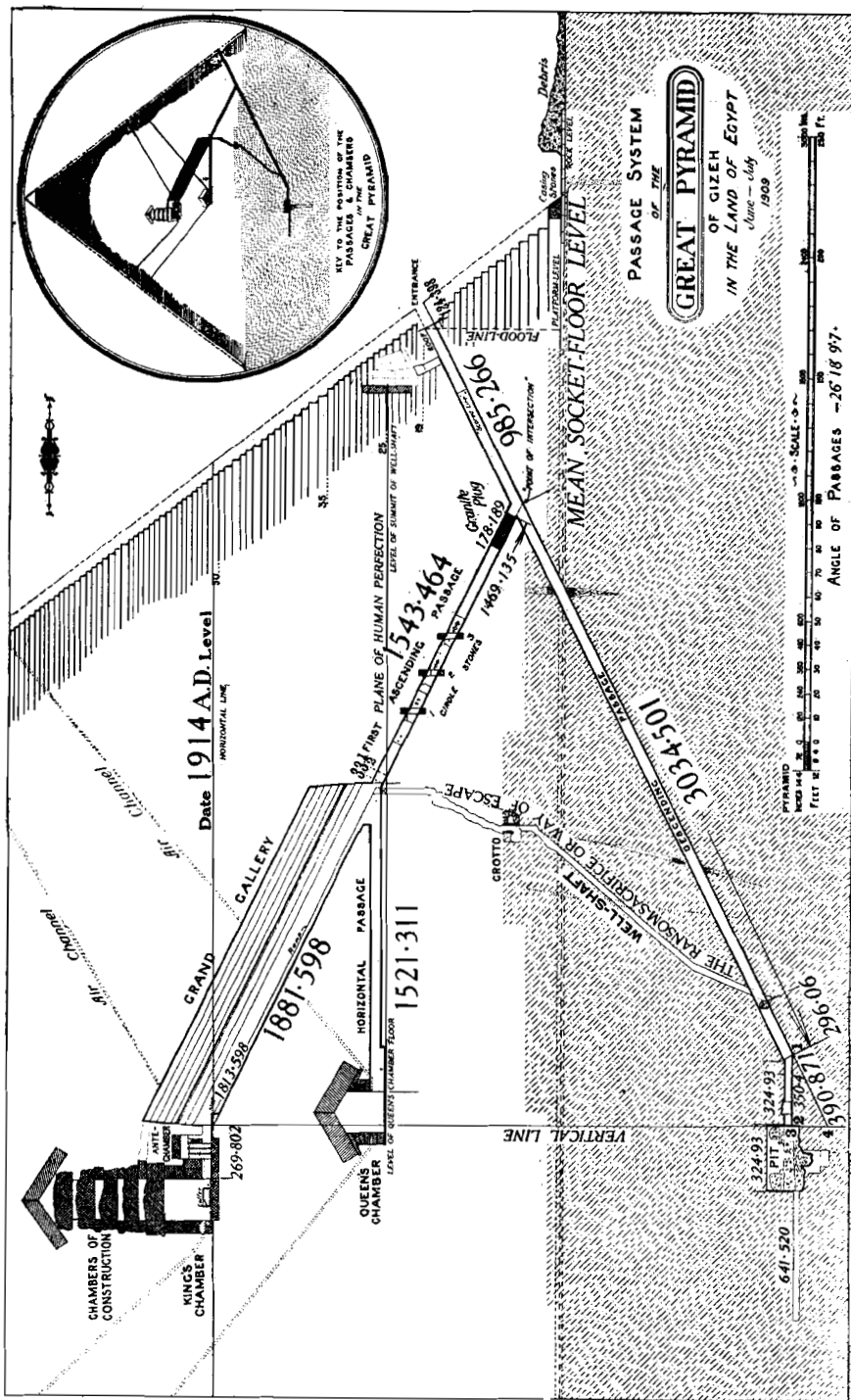
THE SYNODIC MONTH DURATION MONUMENTALISED IN THE GREAT PYRAMID

ONE important scientific feature now found to be embodied in the structural proportions of the Great Pyramid (drawn attention to for the first time in Vol. I of *Great Pyramid Passages*, 2nd Edition), is the exact duration in days of the Synodic, or Lunar, Month, or that period which the moon apparently takes to complete one revolution round the earth. Professor C. Piazzi Smyth was not aware of this feature; and had he known of it, it must have encouraged him in his well-nigh life-long work of making known to the world the Divine origination of the building of the Great Pyramid. As with all subjects that are worth while, the truth regarding the Great Pyramid has expanded, and has become more convincing, as year by year it has been carefully studied, and further light brought to bear upon it.

The First Ascending Passage and the Synodic Month

The section of the Great Pyramid where the synodic month duration in days was first found to be monumentalised, is in the length of the First Ascending Passage. (We are indebted to a clever student of the Great Pyramid, Hugo Karlén of Stockholm, Sweden, for this feature.) Just as the length of the Grand Gallery is proportionate to the dimensions of the King's Chamber to which it leads, through the medium of the day-value of the solar tropical year, so, by a proportion, the length of the First Ascending Passage is related to the dimensions of the Grand Gallery to which it leads, through the medium of the day-value of the synodic month.

And this relationship of dimensions is, in each case,

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appropriate to each part of the building; for, in the religious symbolisms of the Pyramid, the King's Chamber represents the heavenly inheritance and Kingdom to which the overcoming saints of the Gospel Age laboriously ascend, the Gospel Age itself being well symbolised by the Grand Gallery, while the
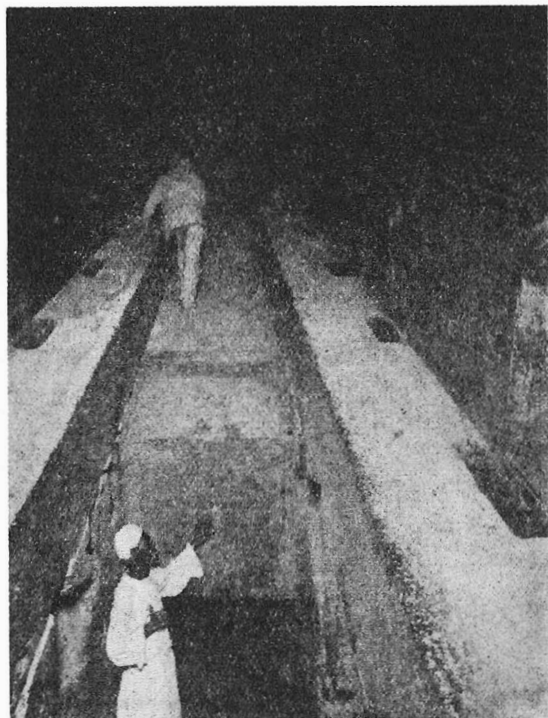
Ascending, by the aid of the side Ramps, the Grand Gallery in the Great Pyramid of Gizeh; showing, also, the low doorway of the Horizontal Passage leading to the Queen's Chamber

First Ascending Passage represents the Age during which the people of Israel were led under the Law "Schoolmaster" to Christ. And Jesus Christ himself is represented as standing, as it were, at the upper terminal of the First Ascending Passage, ready to aid those who were "Israelites indeed" to escape

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from under the exacting requirements of the Law, illustrated so graphically by the steep, slippery, low-roofed First Ascending Passage, and usher them into the glorious liberty of faith in the Age of Grace, pictured by the lofty Grand Gallery with its side-ramps (See the first of this series of books entitled: *The Great Pyramid: Its Spiritual Symbolism*).

For these "Ramps," or low stone benches, run up the whole length of the Grand Gallery on each side of the floor. By means of them one is enabled to ascend the slippery floor of the passage safely, and with some degree of comfort. These ramps represent, in the symbolism of the Pyramid, the "exceeding great and precious promises" of God, by means of which the spirit-begotten called-out ones of the Gospel Age may gain the Divine spirit nature represented by the King's Chamber.

This is in marked contrast to the First Ascending Passage, in which no such aid in ascending is found, so that if one should slip and fall here there is nothing to hold on to, and thus nothing to prevent a rapid descent backward along the steeply inclined floor. There was no hope held out under the old Law Covenant of Moses; for during that Age even a single offence against the perfect Law of God meant condemnation to death.

But the Law of Moses served as a schoolmaster to lead the people of Israel to Christ; and a remnant, we read, received Jesus as the Christ, and therefore were accorded the privileges of the Gospel Age. The rest of the nation were blinded in part, the Apostle explains, until God makes with them the New Covenant, through the operation of which they, as well as all mankind in due time, will attain perfect life on the human plane of being. They will become as father Adam was before the entrance of sin, but with greatly added experience and knowledge. By rightly exercising their experience and knowledge, restored mankind may continue to live into the Ages of Glory to follow; for all the former things, sin, sickness, pain and death, will by then have passed away, and God will make all things new.

As the Old Law Covenant is symbolised by the First Ascending Passage, so the New (Law) Covenant, in operation

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during the Millennial Age when Christ and his joint-heirs will reign in righteousness, is symbolised by the Horizontal Passage leading to the Queen's Chamber. The Queen's Chamber, in its turn, symbolises the perfect human nature to which all the repentant and willingly righteous of mankind will ultimately attain, and maintain everlastingly.

In the figures of the Scriptures, the sun represents the Gospel Age, while the moon represents the Law Age of Moses. Therefore, in the proportionate dimensions of the Great Pyramid, the length of the Grand Gallery, which symbolises the Gospel Age, is appropriately connected with the solar tropical year, the duration in days of earth's circuit of the sun. And the length of the First Ascending Passage, which symbolises the Law Age, is fittingly connected with the synodic month, the duration in days of the moon's apparent circuit of earth.

For when we multiply the length of the Grand Gallery to which the First Ascending Passage leads, by the number of days in the synodic month, and divide the result by 36, a special Grand-Gallery number, we get a figure equal to the exact floor-length of the First Ascending Passage. (The precise number of days in the synodic, or lunar, month, that is, the mean period of days between one new moon and the appearing of the next new moon, is given to no less than nine places of decimals by Sir J. Norman Lockyer, the eminent astronomer. His figure is $29 \cdot 530588715+$ solar days. The standard length of the Grand Gallery floor-line is $1881 \cdot 5985+$ Pyramid inches, as already determined. The one figure multiplied by the other, and the result divided by 36, gives us the standard length of the First Ascending Passage, namely, $1543 \cdot 4642+$ Pyramid inches. This is the floor-length, beginning from the "Point of Intersection" on the floor of the Descending Passage, and terminating at the north wall of the Grand Gallery. This standard length is within the limits of the actual, practical, measures of Professors Smyth and Petrie.)

The Horizontal Passage leading to the Queen's Chamber and the Synodic Month

The full floor-length of the Horizontal Passage leading to the Queen's Chamber, like that of the First Ascending Passage, is also regulated by the duration in days of the synodic month. But this time it is not through the medium of the Grand Gallery length, but through the medium of the dimensions of the King's Chamber. And this fact, namely, that the Horizontal Passage length is proportionate to the dimensions of the King's Chamber, and to the number of days in the synodic month, is in keeping with the symbolical meaning of this passage. For, as we have explained, the Horizontal Passage represents the New (Law) Covenant of the Millennial Age; and it is under the righteous rulership of the Kingdom of Christ, as symbolised by the King's Chamber, that the perfect arrangements of that New Covenant will be administered, that restored mankind may reach the Queen's-Chamber condition of human perfection. Hence the Scriptural figure of the Law, namely, the moon, and the dimensions of the King's Chamber (which dimensions, as we have seen, depend directly upon the earth's dimensions, and upon the duration of the solar year), are both recognised in the length of this Horizontal Passage to the Queen's Chamber.

We recall that the floor-length of the Grand Gallery is standardised by the dimensions of the King's Chamber, and the days in the solar year; that is, by the multiplication of the cubic diagonal of the King's Chamber by the number of days in the solar year, and dividing the result by an even 100. So, by the same method of proportions, the floor-length of the Horizontal passage to the Queen's Chamber is standardised by the King's Chamber's dimensions, and the days in the synodic month, as follows: Multiply the cubic diagonal of the King's Chamber by the number of days in the synodic month, and divide the result by 10, and we get $1521 \cdot 3114+$ Pyramid inches as the standard length of the Horizontal Passage. This floor-length is within the limits of Professor Smyth's, Professor Petrie's, and our own, practical measures for this passage.

SECTION VII

THE FOUR FOUNDATION CORNER "SOCKETS" OF THE GREAT PYRAMID

ANOTHER important truth to be first expounded by John Taylor is the identification of a text in the book of Job with the Great Pyramid of Gizeh. And this identification is so pointed, that it establishes the Great Pyramid, to the exclusion of all the other pyramids of Egypt, as the particular altar and pillar, sign and witness, to the Lord of hosts, spoken of by the Prophet Isaiah.

The text in Job reads: "Where wast thou when I laid the foundations of the earth? declare, if thou hast understanding. Who hath laid the measures thereof, if thou knowest? or who hath stretched the line upon it? Whereupon are the sockets thereof made to sink? or who laid the corner stone thereof; when the morning stars sang together, and all the sons of God shouted for joy?"—Job 38: 4-7, marginal reading.

The Lord here first refers to the foundations and measures of the earth; and then to the socket-foundations and corner stone of a building, clearly of the form of a square-based pyramid capped with a corner-stone. It was the discovery of four rectangular, flat-bottomed, sinkings into the rock at the four foundational corners of the Great Pyramid, that proves that this Pyramid is the one referred to in the 38th chapter of Job; for none of the other pyramids possesses such socket-foundations. It was in 1799 that the French savants, under Napoleon, discovered two of the sockets; and in 1865 all four were uncovered by Messrs. Aiton and Inglis, civil engineers of Glasgow, Scotland, with the assistance of Professor C. Piazzi Smyth.

And as the Great Pyramid of Gizeh is thus pointedly indicated by the Lord, in connection with a primary reference to the earth

and its measures, we note a still further significance in the fact that the dimensions of the Great Pyramid agree proportionately with the actual dimensions of the earth. And this agreement is very exact, as we have already seen, and as we shall note by other features yet to be considered.

The Levels of the Four Corner Socket-Foundations

Careful measuring has revealed that the floors of the four corner sockets of the Great Pyramid, which sockets, or sinkings into the rock originally contained large foundation cornerstones, each a fitting terminal to the long sloping corner arris-lines of the immense building, are not all on one level. Each socket is cut down to a distinct level of its own. The vertical distance between the highest and lowest of these four levels is nearly 17 inches, according to the levellings of Professor Flinders Petrie.

A close mean of all four levels is that which is generally accepted by Pyramid students as the building's reference base-line; and this is called the Mean Socket Level. From this mean Socket-level base the vertical height of the Pyramid is reckoned. The perimeter of the monument's square base at this Socket-level, also, corresponds in inches with the days in an even 100 solar tropical years.

The mean Socket-level base is nearly 9 inches vertically below the level of the natural rock, and nearly $29\frac{3}{4}$ inches vertically below the top surface of the Platform on which the building's outer casing-stones immediately rest.

There are therefore three distinct base-levels of the Great Pyramid, namely, the Platform-level which is the highest, the Rock-level, and the mean Socket-level. Each of these three levels has its own meaning in the scientific and symbolical teachings of the Pyramid, in addition to their architectural use. Also, the four distinct levels of the Socket-floors are required to enable the Pyramid to show further scientific truths.
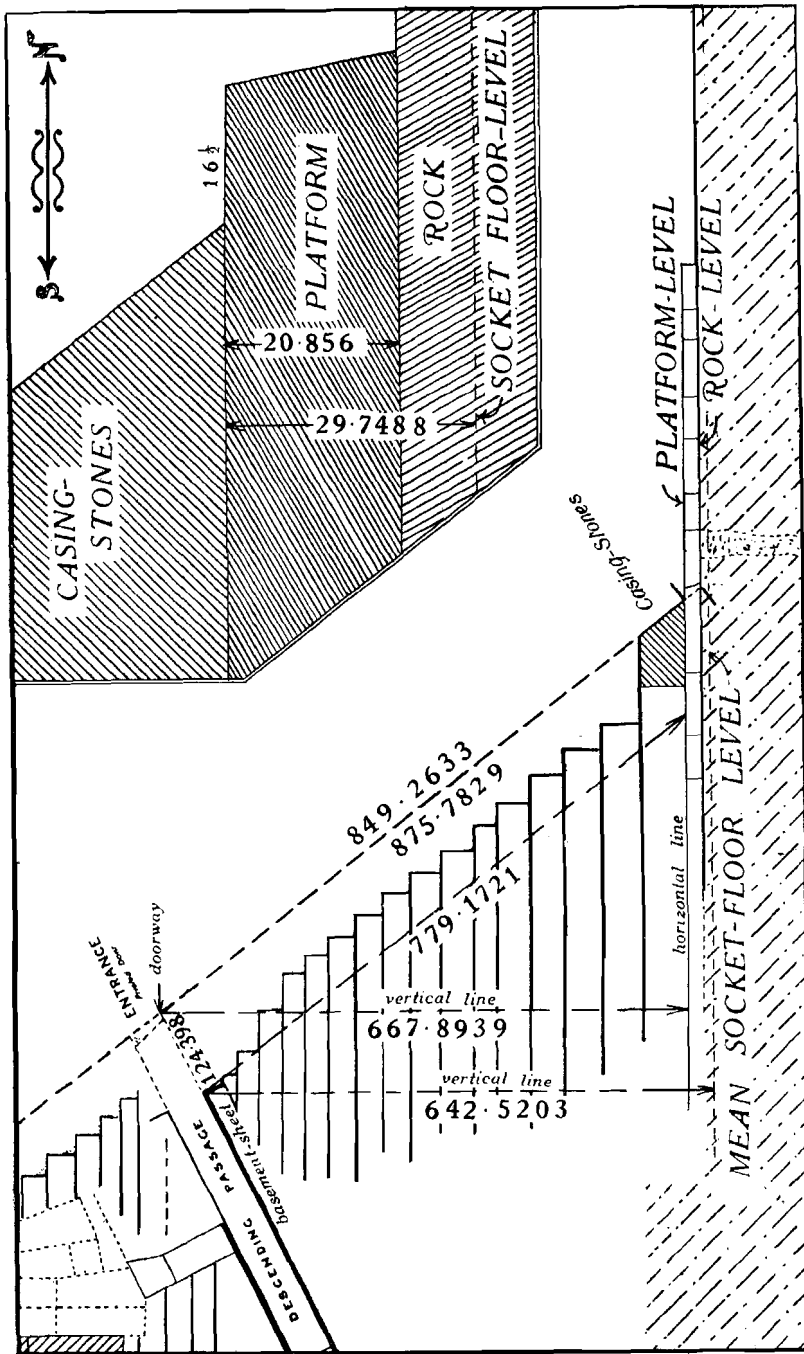
SECTION VIII

IMPORTANT LEVELS IN THE GREAT PYRAMID

L IKE every dimensional feature of the Great Pyramid, the levels at which prominent parts of the structure are placed are most significant. These levels are so carefully fixed with reference to each other, that their distances apart form still another evidence that the whole structural design of the Great Pyramid was not only scientifically intentional, but of an order far above the origination of uninspired man.

The three base levels, that is, the mean Socket-level, the Rock-level, and the Platform-level, we have already spoken of in Section VII, and will refer to it again later. The level indicated by the north edge of the Descending Passage Basement-sheet is one of the prominent levels. It lies at a vertical distance above the mean Socket-level of the building, which agrees with the dimensions of the King's Chamber; for the precise number of inches which separates these two definite levels is equal to the sum of the length, and the height, of the King's Chamber.

The ancient north-beginning of the Descending Passage floor is situated at that level which also recognises the King's Chamber's dimensions, as well as the exact length of the Pyramid cubit. This is shown by the inclined distance between the Platform-level, up the casing-stone surface to the floor-edge of the ancient Entrance. The number of inches in this inclined distance is equal to the sum of twice the length of the King's Chamber, plus one Pyramid cubit of 25 Pyramid inches. This is one of the methods by which the Great Pyramid was made to monumentalise the absolute length of the cubit, the even 10-millionth part of the semi-axis of earth's rotation.

The Queen's Chamber floor-level is very important in the

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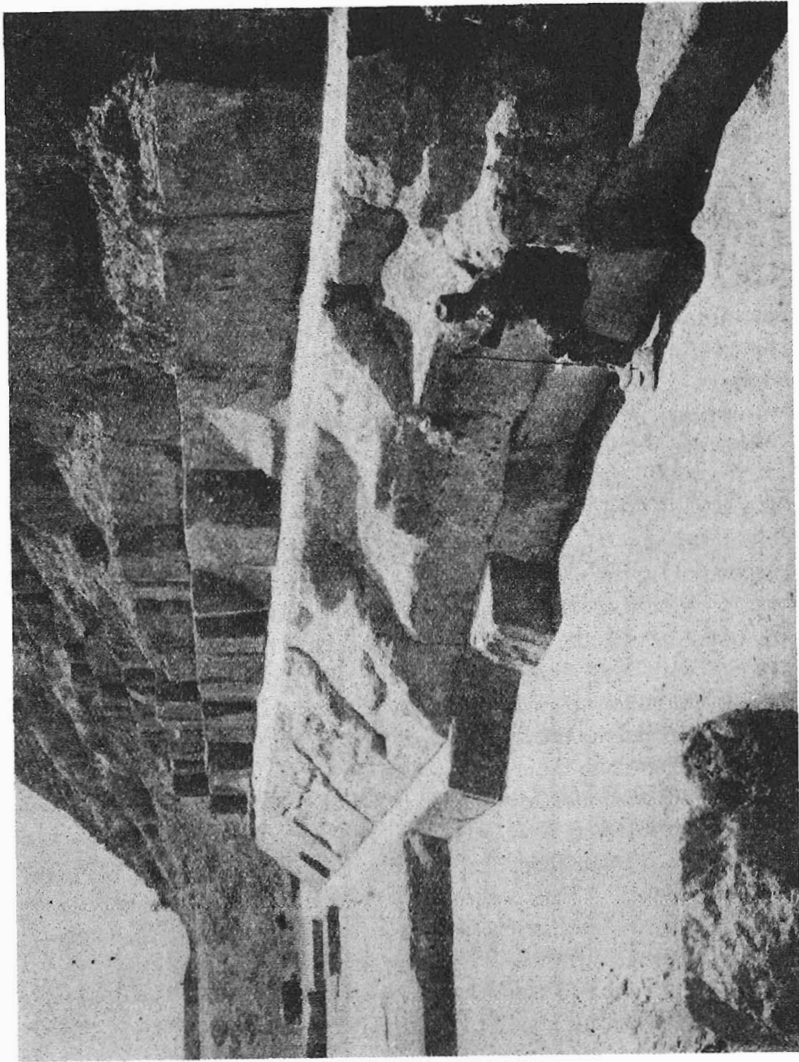
The few ancient Casing-stones at the Northern base of the Great Pyramid of Gizeh; showing the Platform on which they rest; also a section of the levelled natural rock on which the Platform rests

symbolical features of the Pyramid, as well as in the scientific features. Its vertical distance above the level of the north edge of the Basement-sheet of the Descending Passage, is equal to an exact 25th part of the full Socket-to-apex vertical height of the whole Pyramid. Thus there are as many inches in the vertical distance of the Queen's Chamber floor-level above the Basement-sheet north-beginning, as there are cubits in the Pyramid's full vertical height.

Still another very important level in the Pyramid is that level indicated by the upper, virtual, floor-terminal of the Grand Gallery. The "Step" at the head of the Grand Gallery intervenes at this point; but the existence of the Step does not affect the actual length of the passage, which length is determined by the north and south walls. The inclined floor-line of the Grand Gallery is, therefore, produced upward at the same angle, through the Step, to the vertical line of the south wall. The terminal of this produced floor-line, which marks the end of the total floor-length of the Gallery, and called by Professor Flinders Petrie the "virtual floor-end," is situated at a vertical distance above the floor-level of the Queen's Chamber which corresponds to the King's Chamber's dimensions as follows: The total number of inches in this vertical distance is equal to the sum of the length, width, and height, of the King's Chamber.
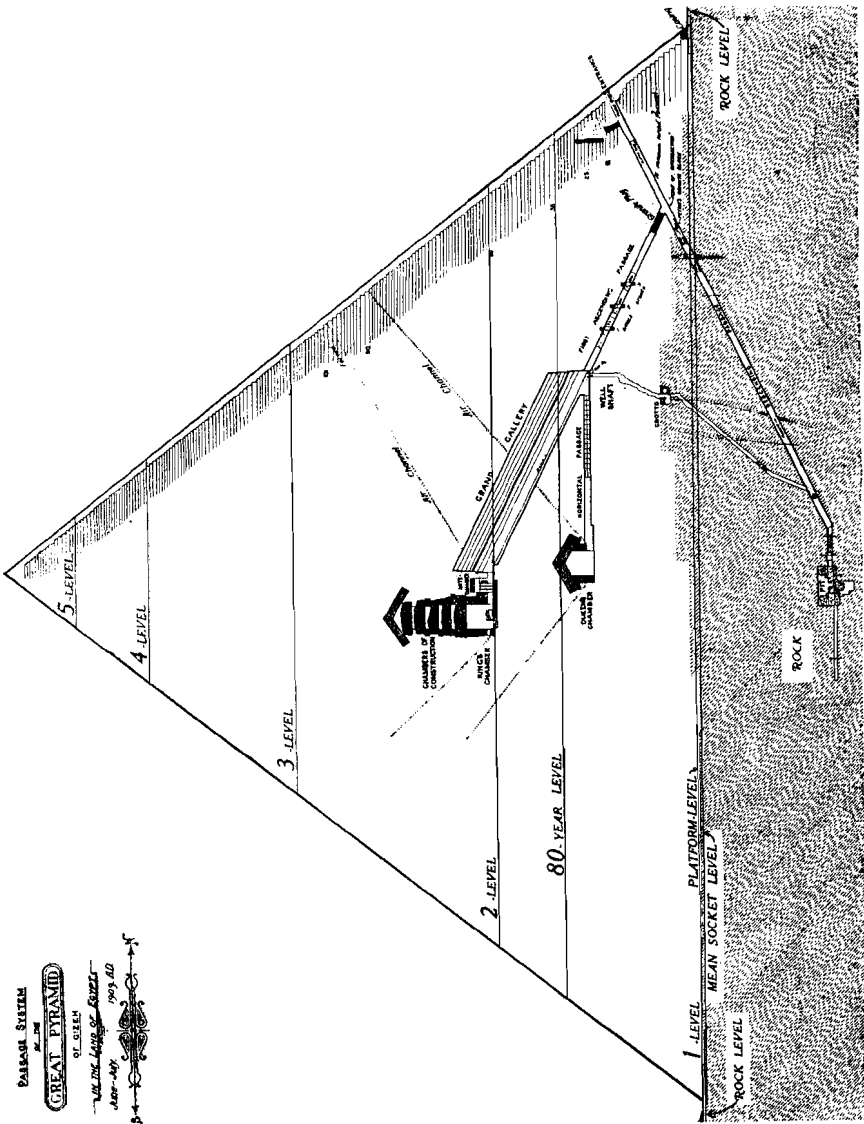
The "Precessional Cycle" levels

SECTION IX

THE PRECESSIONAL CYCLE OF THE EQUINOXES

THE vertical distance between the mean Socket-level, and the level of the upper floor-end of the Grand Gallery, may be stated in another way to that just mentioned in Section VIII. We can say that this vertical height is governed by the dimensions of the King's Chamber. For the sum of (1) the width, (2) twice the length, (3) the floor-diagonal, of the King's Chamber, plus an exact 25th part of the Socket-to-apex vertical height of the whole Pyramid, is equal to the vertical height of the upper end of the Grand Gallery floor above the mean Socket-level base of the building.

And even the 25th part of the Pyramid's vertical height is related to the dimensions of the King's Chamber, through the medium of the angle at which the passages ascend. This relationship is shown by a right-angled triangle, the perpendicular of which is equal to the 25th part of the Pyramid's height, and the hypotenuse being at the same angle as the Pyramid's interior passages. If we regard the length of this hypotenuse as the diameter of a circle, we shall find that the quadrant of this circle is exactly the same as the length of the King's Chamber. (The perpendicular of the right-angled triangle multiplied by the natural cosecant of the passage angle, gives the length of the hypotenuse; *i.e.*, gives the length of that particular section of the ascending floor of the passage. Thus, 232·5204+, multiplied by 2·256758334+ equals 524·7423+, which is the length of the hypotenuse. This hypotenuse regarded as the diameter of a circle, we multiply it by the ratio π for the circumference; and one-quarter of this circle is equal to the King's Chamber's length, Q.E.D.)

Or a simpler way of showing the relationship between the

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vertical distance in question (*i.e.*, from the level of the north edge of the Basement-sheet of the Descending Passage floor, and the level of the Queen's Chamber floor-line), and the King's Chamber's dimensions, is to regard this vertical distance, not as the perpendicular of a right-angled triangle as above, but as the length of the hypotenuse of a right-angled triangle, this hypotenuse rising at the same angle as the passage floors. It will be found that in this case the length of the perpendicular is exactly one-half of the width of the King's Chamber. (The hypotenuse of the right-angled triangle multiplied by the natural sine of the passage angle, gives the length of the perpendicular. Thus, 232·5204+, multiplied by ·4431134627+ equals 103·0329+, which is exactly one-half of the King's Chamber's width. Q.E.D.)

As the level of the upper floor-end of the Grand Gallery is thus very definitely fixed above the Socket-base according to the dimensions of the King's Chamber, we would naturally expect to find that such an important level would indicate some outstanding features in the Great Pyramid's teachings. Nor are we disappointed. For this very level is just at that exact distance above the Socket-base of the building, that the perimeter of the building at this precise level agrees in inches with the number of years in the great precession of the equinoxes, namely, 25,694·35+.

In his *Elements of Astronomy* of 1896, page 365, Sir Robert Stawell Ball states the duration of the precessional cycle as 25,694·8 years. Messrs. Barlow and Bryan, on page 427 of their work *Elementary Astronomy* of 1893, give the figures of the precessional cycle as 25,695 years, which is evidently a round number. It is correct to say, therefore, that the number of years in the precessional cycle lies between 25,694, and 25,695.

Thus we find in the Great Pyramid's proportionate dimensions three periods of time intimately connected with man's well-being upon earth, namely, the period in which the earth revolves once round its primary the sun; the period of the moon's apparent revolution round the earth; and the period of years which the pole of the earth takes to revolve once round the pole of the heavens, that slow constant movement which is connected with the equinoctial precession.

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The year-value of the precessional cycle is monumentalised many times in the Great Pyramid, just as are the day-values of the year and the month. Because of the multiplicity of these indications, and their exactness, we know that they are intentional, and that they were incorporated in the building by the great Master Architect to give us confidence in the other, and in many respects more important, symbolical message of the Lord's stone "Witness."

Not only does the number of inch-units in the perimeter of the Pyramid at the level of the upper floor-terminal of the Grand Gallery agree with the years in the precessional cycle, but the sum of the building's diagonals at the Platform-level base also agrees in inches with the years of the precession. The total of inches at each of these two levels, the perimeter in the one case, and the two diagonals in the other, are absolutely the same, 25,694·35+.

And if we repeat the vertical distance between these two levels to a higher, third, level (thus making the Grand Gallery upper floor-end level midway between the Platform-level and this other, third, level), we shall find that the sum of the perimeter, and of the two diagonals, at this third level is also exactly 25,694·35+ Pyramid inches.

Here, then, we have three distinct levels, equal distant from each other, all yielding in a harmonious manner the exact number of earth-commensurable inches required to agree with the years in the great precession of the equinoxes. But this important astronomical period is shown by the Pyramid's measures an infinite number of times, as follows: Of the three levels spoken of above, that of the upper floor-end of the Grand Gallery is exactly half-way between the other two. If, now, we measure the vertical distance that lies between the upper, third, level and the apex of the building, and fix a fourth level at exactly half-way up this vertical line, there, at this definitely fixed fourth level, the sum of the perimeter and of the two diagonals, when multiplied by 2, is also exactly 25,694·35+ Pyramid inches.

And at a fifth level, exactly half-way between the fourth and the apex of the Pyramid, the sum of the perimeter and two diagonals, when multiplied by 4, is the same total of inches,

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25,694·35+. And so on, *ad infinitum*, each succeeding higher level being always midway between the previous level and the apex, and the multiplying number, by which we multiply the sum of the perimeter and diagonals of the level, being always double that of the previous lower level.

While, as mathematicians will tell us, in so far as the *proportions* govern this feature, namely, lowest level the diagonals, second level the perimeter, third level the diagonals and perimeter together, etc., all true square-based pyramids agree; there is only the one Pyramid in the world in which the measurement itself corresponds with the number of years in the precessional cycle. And it is in this one Pyramid only where the precise number of inches necessary to agree with the precession coincides with the diagonals of the Platform-level base of the building. For none of the other pyramids in Egypt are large enough to enable their base-diagonals to contain so many earth-commensurable inch-units, as the scientific precessional cycle feature requires.

And there is only the one Pyramid in the world, the Lord's Sign and Witness in Egypt, where the perimeter and the second level, agreeing with the sum of the two diagonals of the first level, coincides with the time-measurement that points directly to the date 1914 A.D. For this second level, as already seen, is fixed by the upper floor-end of the Grand Gallery, which floor-end, in the Pyramid's wonderful time-measurements, marks the date 1914 A.D., the most momentous year in modern history, and one, at least, of the most important in the entire history of mankind. It is not by accident that the date 1914 A.D., and the precessional cycle, are found connected with the same level in the Great Pyramid.

SECTION X

THE EARTH'S DISTANCE FROM THE SUN SHOWN BY THE GREAT PYRAMID'S DIMENSIONS

WILLIAM PETRIE, the Father of Professor Flinders Petrie, was the first to suggest that the height of the Great Pyramid should, in some convincing way, indicate the distance of the earth from the sun. He based his suggestion upon the discovery previously made, that the perimeter of the building's square Socket-level base agrees in measure with the number of days in the solar tropical year (each day being represented by an even 100 inches); and also that the vertical height of the monument is equal to the radius of the circle, whose circumference is the same as the perimeter of the square base.

Because of these two facts he came to the conclusion that the Pyramid's topstone might very well represent the sun, and the perimeter of the base represent the orbit of the earth around its centre the sun. The distance of the base from the Pyramid's topstone would, therefore, by some geometric, or mathematical proportion, indicate the mean distance of the earth's orbit round the sun.

This problem, the elder William Petrie found to be very clearly monumentalised in the Great Pyramid in an ingenious, and pre-eminently characteristic Pyramid way. And the figures are so accurate that we know that man alone could not have embodied this scientific feature in any building, except he had been guided by a higher intelligence. For in the days when the Great Pyramid was erected the human race could not have ascertained this important truth by its own efforts.

The learned Greeks reckoned that the distance of the sun was ten miles! Later in the world's history the distance

was thought to be 10,000 miles; and as knowledge increased the sun-distance estimates grew. But even the astronomer Kepler did not guess it to be more than 36-million miles! The extraordinary preparations now made by all the governments of the world to secure accurate observations from various parts of the earth, has resulted in the estimates of the sun-distance being narrowed down to what must be a very close approximation to the actual mean number of miles.

The celebrated astronomer, Richard A. Proctor, estimated the mean distance of the earth from the sun to be about 91,850,000 British statute miles. This very careful estimate is as close as scientific men may hope to reach by their own activities in astronomy. For it is an estimate of the *mean* distance, that is, the mean between the maximum distance called the aphelion, and the minimum distance called the perihelion, and allowing for the fluctuation within limits of these two distances from year to year.

We consider that the estimate of Richard A. Proctor for the mean sun-distance is close to the actual, or true, mean; for it is close to the Pyramid's scientific indication of this distance. For our understanding is that the Great Pyramid furnishes the figures for the true mean distance of the earth from the sun, just as it furnishes the figures of the true mean solar tropical year-duration in days, and of the synodic month, as well as the number of years in the precession of the equinoxes.

The Great Pyramid's indication of the mean sun-distance is 91,837,578 British statute miles. Richard A. Proctor's estimate of 91,850,000 miles is only about 12,000 miles more, a difference which is negligible in such an immense number of miles. It is evident, also, that Proctor's figures are stated in a round number, which is always thought to be sufficiently accurate when dealing with great totals.

The method by which the Great Pyramid indicates the mean sun-distance is very simple, and the calculation is entirely representative of this wonderful monument. The apex topstone represents the sun, and the Socket-level base represents the earth. Therefore, the actual vertical distance between the Pyramid's apex and the Socket base yields the actual figures which express the distance between the sun

and the earth. For when we multiply the Pyramid's Socket-to-apex vertical height by the grand number of a round 1000-millions, we have the required sun-distance.

A round, even, 1000-million times the Pyramid's vertical height is 5,813,010,134,372 Pyramid inches. To convert this Pyramid-inch measure into its corresponding value in British statute miles, for comparison with the estimates of astronomers, we divide the Pyramid inches by ·999 to get the number of British inches. By the usual rule the British inches are converted to British statute miles, the number of which is, as given above, 91,837,578.

SECTION XI

THE GREAT PYRAMID'S ORIENTATION

ORIENTATION, when applied to a building, means the direction of its sides with reference to the cardinal points of the compass. Buildings erected for astronomical purposes are carefully oriented. Professor C. Piazzi Smyth took observations at and around the Great Pyramid, to test if its sides lay due north and south, east and west. These observations demonstrate that the central meridian line north and south of the Pyramid deviate only about 5' (five minutes of arc) west from the direction of the true astronomical north. And Professor Flinders Petrie's later, and more numerous, observations confirm the accuracy of Professor Smyth's result.

Both Professors Smyth and Petrie found that the amount of deviation west of the true north, 5', is also observable in the meridional line of the Second Pyramid, which lies close to the Great Pyramid. As the Second Pyramid was built soon after the Great Pyramid, it is possible that its builders used the original Pyramid as their model in some respects. As the deviation from the true north is exactly the same in both buildings, Professors Smyth and Petrie came to the conclusion that, originally, the orientation of these monuments when constructed over four thousand years ago was absolutely exact, the four sides pointing due north, south, east and west. The small amount of deviation of only 5' now observable they attribute to the slow and progressive change in the crust of the earth.

This change in the crust of the earth (but not in the axis of the earth's rotation, which will never change—Genesis 8: 22; Ecclesiastes 1: 4) is so slow that, if it is maintained constantly in the same direction, it will take nearly 50,000 years to make

one degree (1°) of deviation between the Great Pyramid's meridional line and the true astronomical meridian.

As Professor Smyth points out, no builder could ever orient the sides of a monument with the aid of the magnetic compass; for the magnetic north is many degrees away from the true north. To accurately lay the four sides of the Great Pyramid due north, south, east and west, as they were originally, necessitated either the knowledge of exact scientific astronomy, or the knowledge that can be communicated by Divine inspiration. The Great Pyramid gives many evidences of Divine supervision, both in its dimensions, and in its exact location on earth.

Map showing how The Great Pyramid of Gizeh fulfils ISAIAH XIX·19, being situated at the Border, while marking the CENTRE of the Sector-shaped land of Lower Egypt.

MEDITERRANEAN SEA

LOWER EGYPT

LIBYAN DESERT
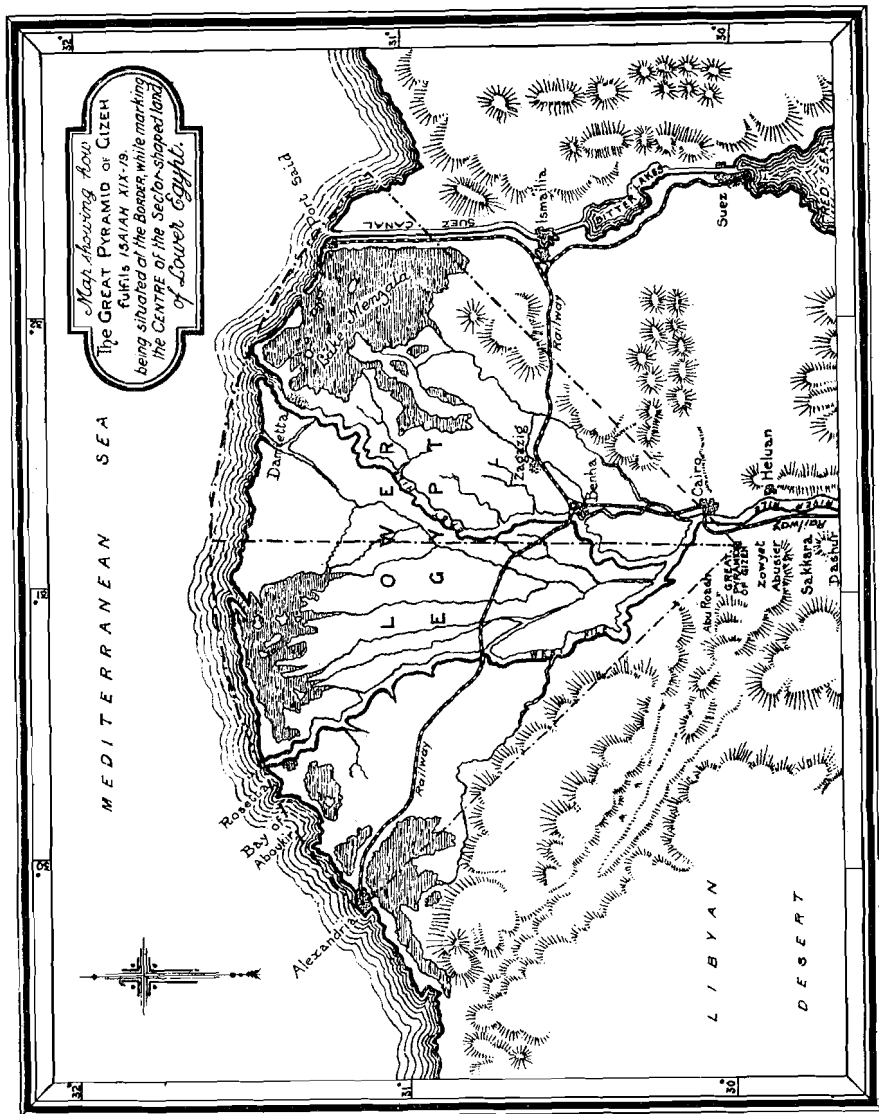
SECTION XII

THE GREAT PYRAMID'S GEOGRAPHICAL POSITION

LOWER EGYPT lies within the confines of the Delta of the Nile. The delta is rather of a sector shape, the coastal line on the Mediterranean Sea forming the curve of a quarter circle.

The chief hydrographer to the United States Coast Survey in 1868, Mr. Henry Mitchell, was impressed with the regularity of the circular coast-line of Lower Egypt, and wondered if he were to complete the circle where the centre of it would fall. With the aid of a good map and a pair of compasses he "tried out" his idea, and was greatly interested to discover that the *centre* of the circle which evenly swept all the prominent coastal points of Egypt's sector-shaped land, coincided with the actual site of the Great Pyramid!

Because thus standing at the sectorial centre of cultivated Lower Egypt, and at the same time on the very edge of the great uncultivated desert which reaches out from it to the south, east and west, the Great Pyramid was seen by Mr. Mitchell to wonderfully fulfil the peculiar requirements of Isaiah's prophecy. For the "altar" and "pillar" spoken of by the prophet was to be at one and the same time both in the midst, or centre, of the land of Egypt, and at the border thereof! (See Isaiah 19: 19, 20).

And not only is the Great Pyramid in the practical governing centre of Lower Egypt's fan-shaped land, it also marks the centre of the land-surface of the whole earth. For, as Professor C. Piazzi Smyth points out, its location on the 30th degree north latitude, and the 31st degree longitude east of Greenwich, places the building in that unique position. There is more land-surface in both its meridian and its latitude than in any other meridian and latitude. Its nether meridian, *i.e.*, the

Map of the World
or Professor C. Piazzi Smyth's
Equal-Surface Projection
of the Earth's Sphere
showing how
The GREAT PYRAMID of GIZEH
in the Land of Egypt
IS SITUATED IN THE
CENTRE OF THE EARTH
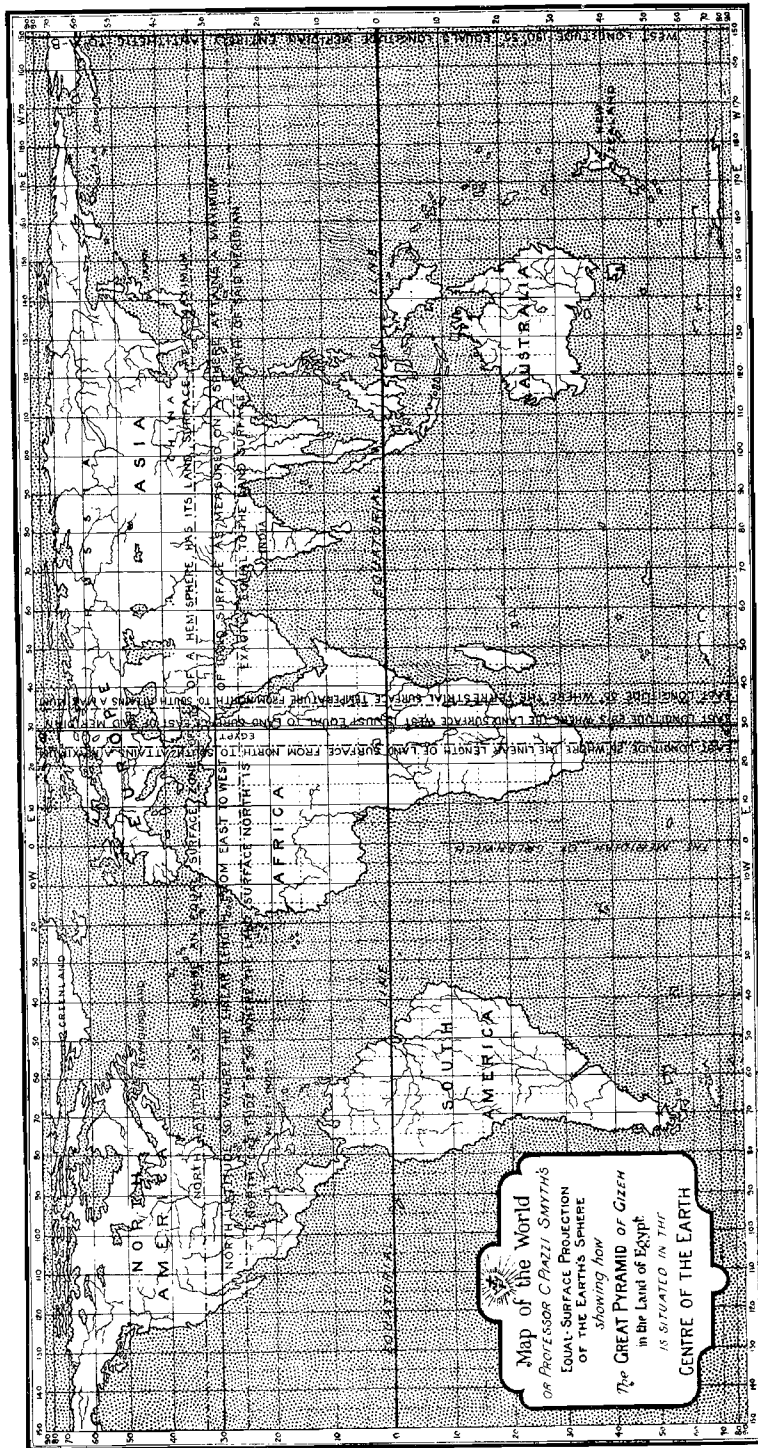
longitude continuous with it on the other side of the earth, has its whole length through water except for a short distance near Behring Straits.

Professor Smyth claimed, therefore, that the Meridian of the Great Pyramid is the natural zero of longitude for all nations, much more suitable than the artificially fixed zeros of either Greenwich or Paris.

But the wonders connected with the geographical position of the Lord's Sign and Witness by no means end here. We are only beginning to have them revealed to us.

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The map shows labels including "Map of LOWER PALESTINE, EGYPT and THE GREAT PYRAMID", "BETHLEHEM", "GREAT PYRAMID", "ALEXANDRIA", "MEDITERRANEAN", "LIBYAN DESERT", "ARABIAN DESERT", "ETHIOPIA", with the line labeled "Distance = 680,546.5 Pyr. cubits = 2662 Pyr. miles = 233.266½ Pyr. miles", "Angle = 26° 18′ 9″·7 +", and the circle labeled "Circumference = 2138 × 1000 Pyr. cubits".
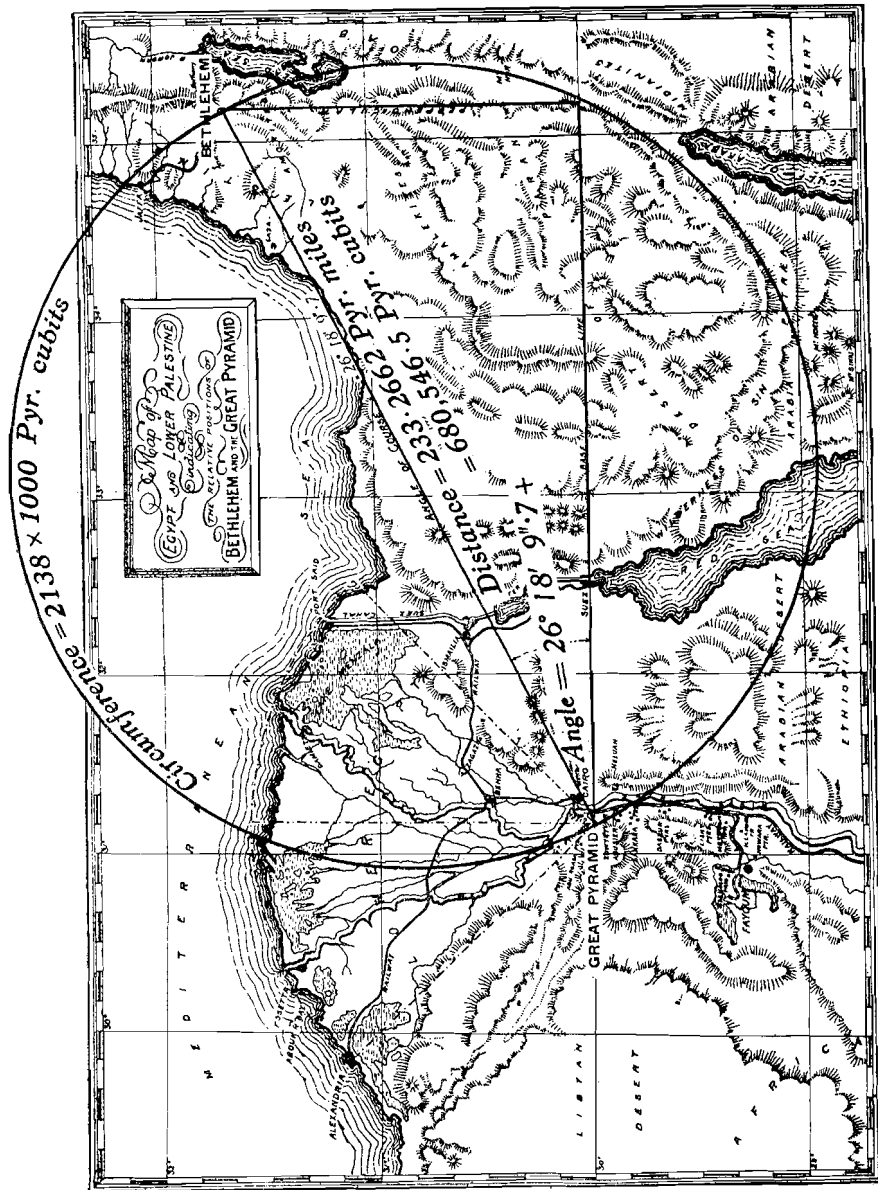
SECTION XIII

THE GREAT PYRAMID'S CONNECTION WITH BETHLEHEM IN THE HOLY LAND

JOSEPH SEISS suggested that, if a straight line were drawn between the Great Pyramid in Egypt, and Jerusalem in Palestine, the angle at which this line would run north-eastward from the Pyramid's latitude would be the same as the angle at which the passages in the Great Pyramid ascend and descend, 26° 18′ 10″.

This suggestion, however, he had no means of putting to accurate mathematical test. We ourselves deemed the ideal to be of sufficient importance to merit careful investigation; and we accordingly enlisted the services of two practical seafaring captains to work out this problem by the most approved method (the late Captain John Mackeague, Ex.M., of Glasgow, Scotland, and Captain William Orr Warden, Ex.M., now for some time Pilot-Master of Glasgow harbour and the river Clyde). Their calculations, since amply confirmed by other competent mathematicians, prove that, not Jerusalem, but more properly Bethlehem, lies in the direct angular course required by the theory. For Professor C. Piazzi Smyth, after careful astronomical observations on the very summit of the Great Pyramid, published the precise geographical position of that monument to be: Latitude 29° 58′ 51″ north of the equator, and Longitude 31° 09′ 00″ east of Greenwich. A straight line drawn north-eastward from the Pyramid at an angle of 26° 18′ 10″ (or, more accurately, 26° 18′ 9″·7) to the above latitude will, therefore, according to Mercator's projection, pass through Bethlehem, about 233 geographical miles distant, at Latitude 31° 42′ 04″ north, and Longitude 35° 12′ 12″ east, or through the south-east boundary of that city, in which part the Church of the Nativity is situated.

The Scriptures Connect Bethlehem with Egypt

This angle-connection of the centre of Egypt's sector-shaped land with Bethlehem we now see is more appropriate than if the line had run to Jerusalem; for in the Great Pyramid's symbolical teaching the Descending Passage represents, not only the downward course of the human race into the death-state
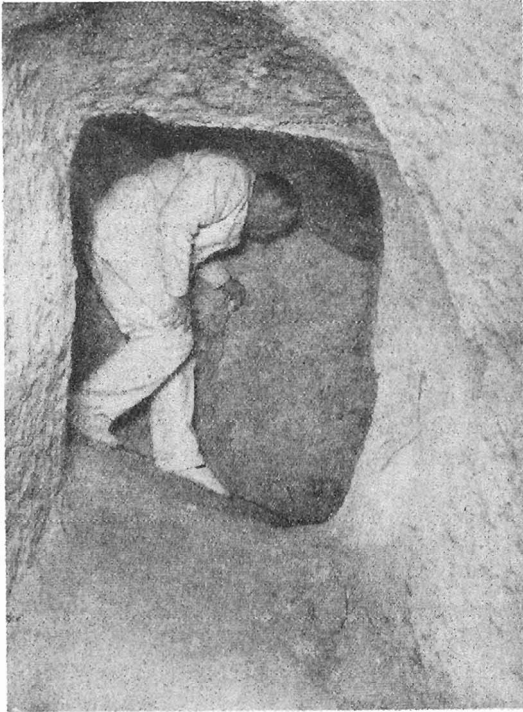
The Descending Passage of the Great Pyramid of Gizeh, as viewed from inside the lower opening of the Well-shaft, looking east : showing its steepness, and its low roof

owing to Adam's original sin of disobedience, but also the descent of Jesus from heaven to earth. And the Ascending Passage, being at the same angle upward as the Descending Passage is downward, represents our Lord's subsequent

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ascension from earth to heaven; as we read: "He that descended, is the same also that ascended up far above all heavens, that he might fulfil all things" (Ephesians 4: 9, 10). When Jesus descended to earth he was born as a Man-child in the city of Bethlehem; and from Bethlehem he was carried by Joseph and his mother Mary into Egypt to escape the fury of Herod. This, the Scriptures declare, was done that it might be fulfilled
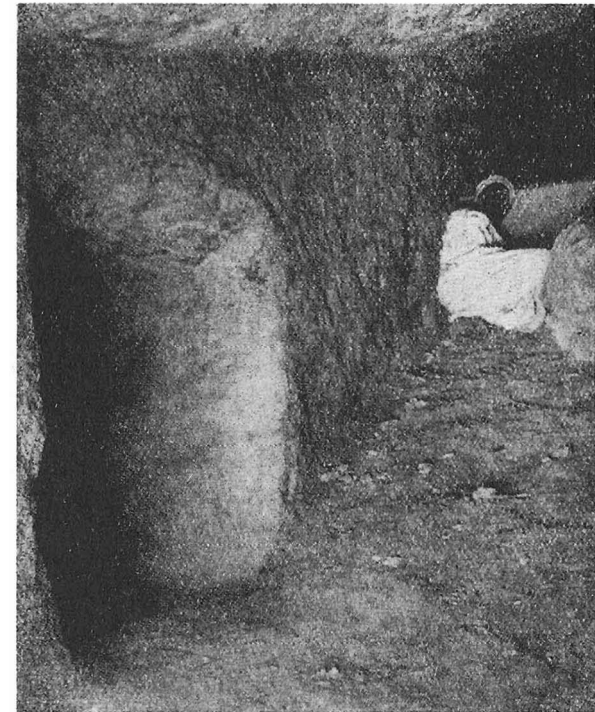
The Descending Passage of the Great Pyramid of Gizeh : showing in the West wall the lower opening of the Well-shaft

which was spoken of the Lord by the prophet Hosea: "Out of Egypt have I called my son" (See Matthew, 2nd chapter).

It is generally acknowledged that in Scriptural usage Canaan symbolises heaven, and Egypt the present evil world. Thus when Jesus was sent from Bethlehem into Egypt, it illustrates

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the heavenly Father sending His beloved Son from the glory of heaven into this world of sin and sorrow to be "perfected through sufferings," and so become qualified to be installed as the Headstone of the Great Antitypical Pyramid of God's glorious Plan of Salvation, of which the stone Pyramid in Egypt is the figure (See Acts 4: 10–12).

The Pyramid-to-Bethlehem Distance and the Period of 2138 Years

Not only does the angle-line connection between Bethlehem and the Great Pyramid, Egypt's centre, agree with the passage-angle of the Pyramid, but the actual distance between these two places on the earth's surface agrees most wonderfully with the period of years which elapsed between the date of the building of the Pyramid in Egypt, and the birth of the Man Christ Jesus in Bethlehem.

This interesting feature was suggested to us by Sir Charles W. F. Craufurd, Bart., of Ayrshire, Scotland. Its actual solution he left to us, believing that with our more complete data, we might be able to convincingly prove the truth of his idea. Nor was he willing to set aside this idea, but over a long period he continued to lay it before us, hoping that ultimately a solution would be found. By the leading of the Lord, we are persuaded, we were enabled to solve the problem to the satisfaction of Sir Charles Craufurd and ourselves; and we are confident that all students will agree, when once they grasp the true significance of this feature, that no better way of indicating the dates of the building of the symbolical Great Pyramid, and the birth of the Man Christ Jesus 2138 years later, could well have been devised. And when later, in the 3rd volume of *Great Pyramid Passages*, we show the still further development of the Pyramid-to-Bethlehem line, proving that it embodies a large number of important scientific features, both connected with the Great Pyramid itself, and also with the earth and its rotation round the sun, etc., every one who can claim to have their eyes open will admit that this line is the most wonderful and most important straight line on, literally, the face of the earth!

In the present small treatise we could not hope to do justice to the various features connected with the Pyramid-Bethlehem distance to which we refer above. We shall here, however, give the explanation of the problem we speak of, as well as an additional one, which is directly related to the subject-matter of this treatise.

The geographical mile-length, indicated in the direct distance between the Great Pyramid and Bethlehem, is found to be monumentalised in the dimensions of the Great Pyramid itself. For, twice the perimeter of the Pyramid's square base at the level of the *levelled natural rock*, is precisely one geographical mile. Because this mile-length is exactly contained in the base-measure of the Great Pyramid (and not in the base-measures of the other pyramids in Egypt, as none of them is large enough to contain it), we shall speak of it as the "Pyramid mile," just as we speak of the Pyramid inch and the Pyramid cubit.

As Bethlehem is a city, and hence covers a greater area than the Pyramid, it follows that more than one straight-lined distance, within limits, connect these two locations. It is the recognition of this self-evident fact that makes it possible for the Pyramid-Bethlehem line to embody a number of different features with exactness. The calculations show that the limits of distance lie approximately between $233\frac{1}{2}$ and $232\frac{1}{4}$ Pyramid miles.

A Pyramid mile contains $2917 \cdot 467+$ Pyramid cubits, or $6084 \cdot 141+$ British feet. This value for the length of the Pyramid mile, as indicated by the Great Pyramid's Rock-level base, practically corroborates the estimated length of the presently accepted Standard Geographical Mile, being barely a foot and a half more. There is every reason to believe that, as in other scientific matters, the Great Pyramid presents the world with the accurate value of earth's geographical mile. (NOTE: It was after our having discovered the Great Pyramid's exact indication of the length of the geographical mile during our studies of the building's various dimensions, that we noted Professor Flinders Petrie's reference to the same feature. Professor Petrie, however, merely draws attention to the close
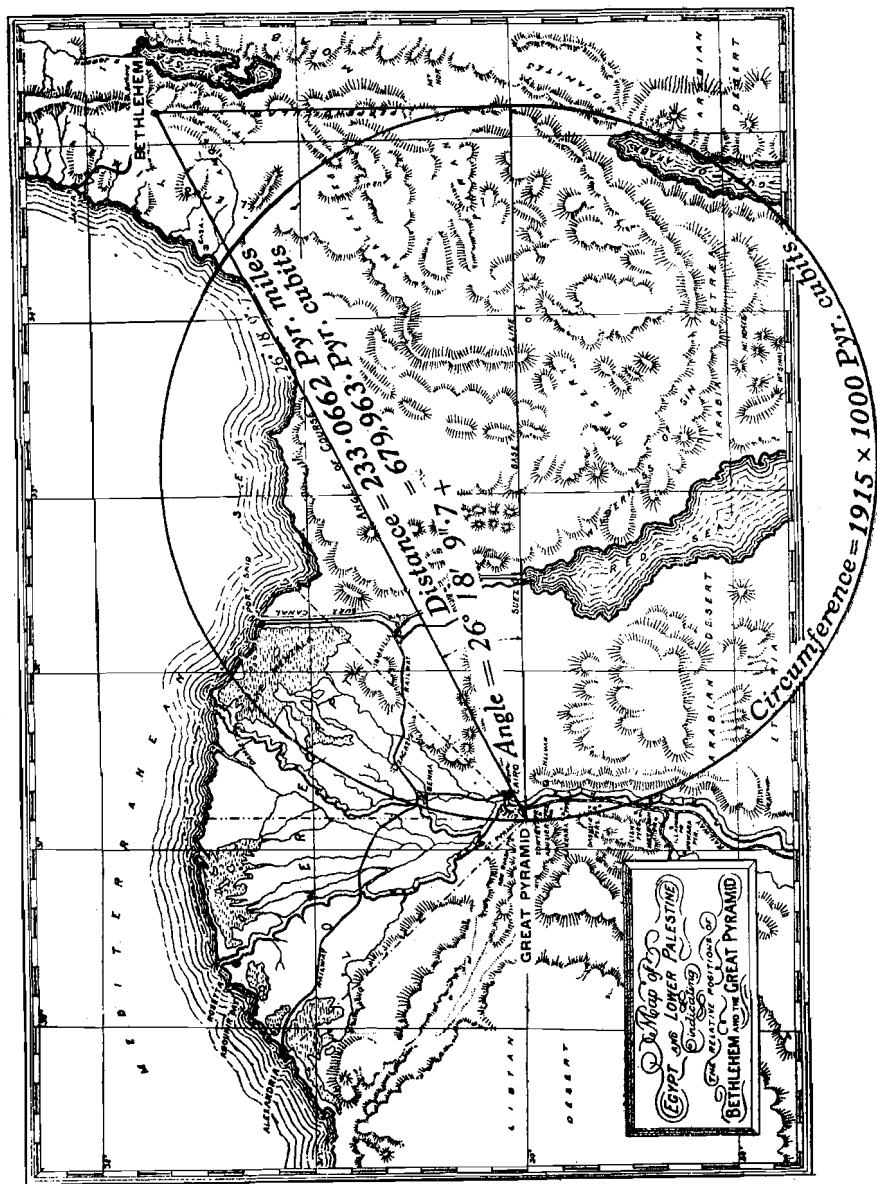
agreement between his own estimated base-side length of the Pyramid to the Standard Geographical Mile, without pressing the investigation further to its logical conclusion. But it is interesting to find that this correspondency did not escape the astute observation of this eminent Egyptologist, even through he apprehended it in an approximate way only.)

The precise period of years intervening between the dates of the erecting of the Great Pyramid, and the birth of the Man Christ Jesus in Bethlehem, Autumn of the year 2140 B.C. in the one case, and Autumn of the year 2 B.C. in the other, is 2138. Taking a direct distance between the Pyramid and Bethlehem of 233·266+ Pyramid miles, which is within the above-noted limits of distance, and converting these miles into Pyramid cubits, we find that the total number of cubits corresponds with the year-period by the following characteristic Pyramid method of calculating:

Regard the direct straight-lined distance as the diameter of a circle, and divide the circumference of the circle by an even, round, 1000. The result of this calculation yields precisely 2138. That is to say, every even 1000 Pyramid cubits measured round the circumference of the circle, of which the straight-line distance between the Pyramid and Bethlehem is the diameter, equals one solar tropical year, and there are precisely 2138 such 1000-cubit divisions of the circle. Or still another way of expressing this feature, is to reckon that a small circle having a circumference of exactly a round 1000 cubits represents one year. If we placed a row of such small 1000-cubit circles side by side in a straight line, it would take exactly 2138 of them to reach from the Great Pyramid to Bethlehem. (The number 10 is the basic number of the Pyramid; and multiples of 10, and divisions of 10, are definite factors in the scientific dimensions of the building. The fact that an even 1000 [or $10 \times 10 \times 10$] cubits represents in this feature one solar tropical year, is thoroughly characteristic of the Pyramid, as is also the very frequent use of the ratio π, the ratio between a circle and its diameter.)

The Pyramid-to-Bethlehem Distance and the
Period of 1915 Years

When the foretold birth of the world's Saviour took place at the foreknown (to God) date, at the close of the first period of 2138 solar tropical years, the other most important period then began to run its course, namely, the 1915 solar tropical years till Autumn of the year 1914 A.D. The three dates which define the durations of these *two exact periods* are all related to each other in a very convincing way; or, rather, the events which occurred at these three dates are related.

Autumn of the year 2140 B.C. saw the completion of the building-operations on the Great Pyramid (and 2170 B.C., 30 years earlier, probably saw the commencement of these operations; for Herodotus informs us that the Pyramid took 30 years to complete). This date, 2140 B.C., is monumentalised in the dimensions of the Pyramid, and is proved to be correct in a number of ways, as we shall see later.

As completed, the Great Pyramid stood a symbol of Jesus Christ, perfect in every particular, for there is no geometric figure which can represent perfection-of-being so well as the pyramid form. And while thus standing complete in the midst of the land of Egypt, and at the border thereof, the Pyramid in its outward perfection symbolised not only Christ Jesus personally, it also symbolised his body-members with him. For the Scriptures that speak of our Lord as the chief Corner-stone, also liken the members of his body, his joint-heirs of the Kingdom, to "living stones" built up to him as their heavenly head-stone. The Great Pyramid, therefore, as it stood complete with top-stone and casing-stones in the year 2140 B.C., was a beautiful symbolical figure of the Christ, head and body, united as one. Internally, also, the completed Pyramid embodied by means of its measures, angles and symbols, every detail of the glorious Plan of God, pointing specially to the Kingdom of Christ as the hope of the world.

And in Autumn 2 B.C., the Man Christ Jesus was duly born into the world, and was proclaimed both Saviour and King, and later was declared to be the head of the Church his body. Then, after he himself had been glorified, the members of his

body began to be separated from the world. And during the whole Gospel Age this work of selection has been carried to completion, until in 1914, at the termination of 1915 years, the second period, He took to Himself his great power and began his reign as earth's invisible King, his joint-heirs being with him, not excepting those who are "alive and remain," the members of the "feet of him" who stand upon the mountains (the kingdoms), publishing the glad tidings, proclaiming salvation, and proclaiming that Christ has indeed begun his reign of righteousness. It is to this mission of the "feet," or last members of the Church in the flesh, who will declare upon the mountains the *reign of Christ begun*, that Isaiah 52: 7 refers. (See Vol. II of *Studies in the Scriptures*, page 142.)

It should not be surprising, therefore, to find that the Pyramid-Bethlehem distance not only indicates the first period of 2138 years, but also the succeeding period of 1915 years. And this it does in a similar way, but along a different, though harmoniously-connected, line; because the second period is shorter than the first (compare the two diagrams on pages 62 and 68).

In this instance the direct line connecting the Pyramid and Bethlehem is to be regarded as the hypotenuse of a right-angled triangle. The angle at which this hypotenuse rises from the base of the triangle is the same as the passage-angle of the Pyramid, namely, 26° 18′ 9″·7, as already proved. The base-line of this right-angled triangle is the parallel of latitude on which the Great Pyramid is built. The perpendicular of the triangle is the parallel of longitude of the city of Bethlehem. The length of the hypotenuse, *i.e.*, the distance between the Pyramid and Bethlehem, is in this feature 233·066+ Pyramid miles, or about a 5th of a mile less than the distance which indicates the 2138-year period.. This shorter length for the hypotenuse is still well within the city's precincts.

As in the former feature, so here also, we convert the Pyramid miles into the corresponding value in cubits. But in this case we do not use the hypotenuse-length directly, but the base-line length of the right-angled triangle connected with this hypotenuse; for, as we said, the period of years to be indicated is shorter. Thus, regarding the base-side length

as the diameter of a circle, it will be found that the circumference of this circle is as many times an even 1000 Pyramid cubits (*i.e.*, 1915 × 1000), as there are years between the birth of the Man Christ •Jesus in Bethlehem, and the date Autumn of the year 1914 A.D., when the great Antitypical Spiritual Pyramid of God, of which the Pyramid of stone in Egypt is the figure, is complete, head and body; or with the "living-stones" in alignment with their heavenly head-stone, even to the feet-members who are yet on earth doing their necessary share in present Kingdom work.

SECTION XIV

THE CAPACITY OF THE KING'S CHAMBER

WE have seen how wonderfully related to each other are the dimensions of the King's Chamber, and the other parts of the Great Pyramid. We have also noted that this chamber's exact size indicates the precise duration in days of the solar tropical year. And we have clearly perceived that all of these proportionate measures must be reckoned in earth-commensurable units, that is, in Pyramid cubits and inches.

It is therefore very stimulating to our faith in the Divine origination of the Great Pyramid to find that, the cubical capacity of this noble granite chamber agrees with the length of earth's axis of rotation in the scale of 25 to 1, or in inches in the King's Chamber, and cubits in earth's polar axis. For as half of the polar axis of rotation measures exactly a round 10-million Pyramid cubits of 25 Pyramid inches each, so the cubical capacity of half of the King's Chamber is almost a round 10-million Pyramid inches.

The amount of cubical inches by which one half of the capacity of the chamber is short of the exact, even, 10-millions, is just that number which enables the dimensions of this chamber to indicate the day-value of the Lunar Year of 12 Synodic months. The method by which this lunar-year indication is calculated is an integral part of the Pyramid's scientific system of proportions; it is proved to be an intended feature in the building's dimensions, because it occurs frequently, as we shall see.

VERTICAL SECTION *(LOOKING WEST)* OF KING'S CHAMBER; ANTE-CHAMBER AND HOWARD VYSE'S 'CHAMBERS OF CONSTRUCTION' SHOWING 'QUARRY MARKS'
SINGLE SHADE LINES INDICATE LIMESTONE   CROSSED LINES INDICATE GRANITE

The Granite Walls of the King's Chamber

The King's Chamber has, in a sense, two distinct heights: (1) the direct floor-to-ceiling height, and (2) the height of the granite walls. .For the four walls of the chamber dip down below the level of the floor to the extent of about 5 inches. At this distance below the floor-level the granite walls rest on limestone; and as the whole of the apartment is constructed of granite, the fact that its walls dip below the floor-level a uniform distance all round, it may be said there is a second, greater, height to the chamber, namely, that of the granite walls alone. Both first and second heights are required in the scientific features of the monument.

The first, or floor-to-ceiling height of the King's Chamber is equal to exactly one-half of the floor-diagonal, as already noted. This first height is an essential dimension of the chamber, and must therefore be regarded as a fixed measure in the Pyramid. The second, or granite-wall, height is 4·8546+ inches more than the first height, or 235·2432+ Pyramid inches in all. Each of the four walls of the chamber is composed of five masonry courses, and each of these courses is of one uniform height. The height of every stone used in the construction of the King's Chamber's four walls, therefore, is an exact fifth-part of the total vertical height of the walls. Each of the five wall-courses is thus 47·0486+ Pyramid inches high.

The Lunar-Year Duration indicated by the King's Chamber

Reckoning with the second, or granite-wall height, the cubical capacity of half of the King's Chamber is, in cubic Pyramid inches, 9,989,165·06348+. (See the length and width of the King's Chamber on page 30. When calculating, allowance must be made for a little extra in the results, as indicated by the plus [+] sign in the dimensions.) Now, this cubical Pyramid-inch capacity of half of the King's Chamber is nearly 11,000 short of the exact 10-million. But the *precise* shortage is just that exact number of inches that

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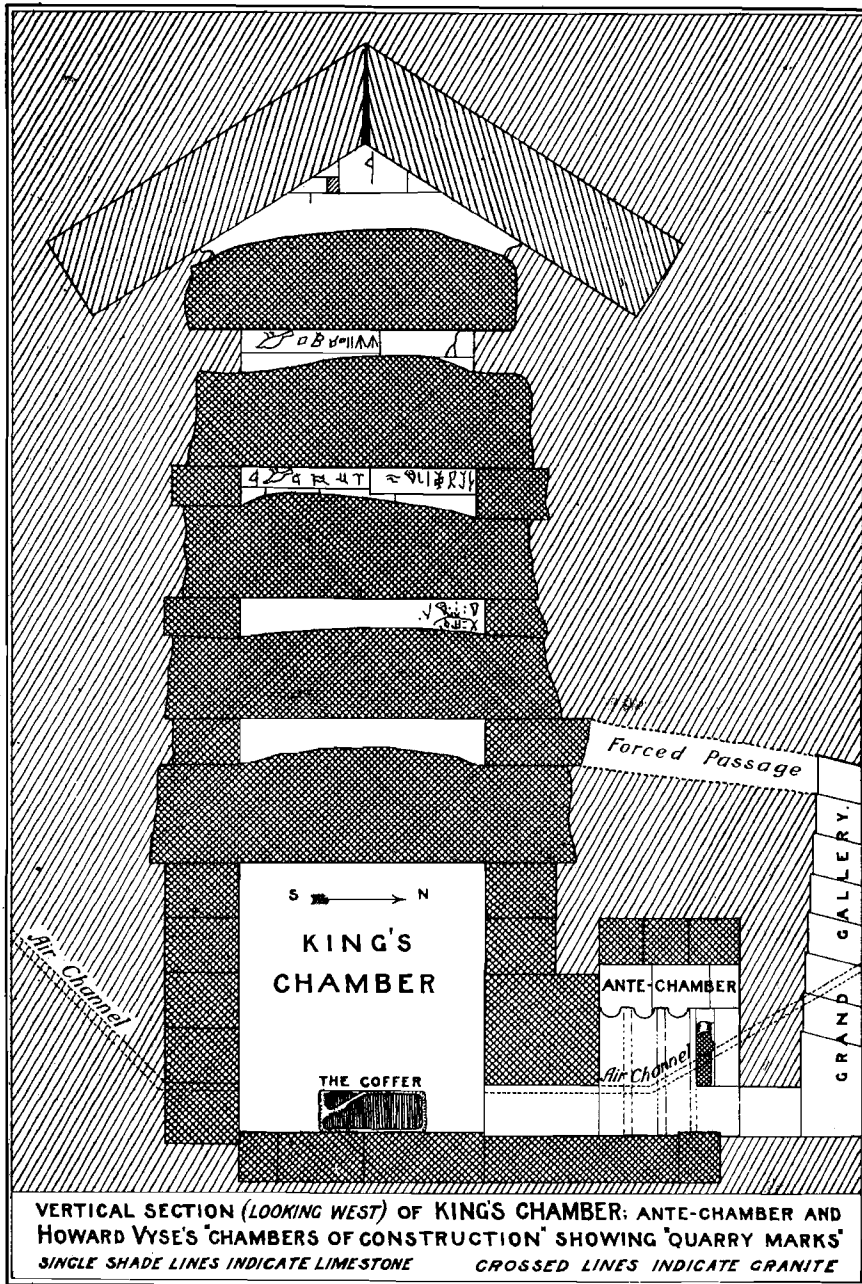
enables the chamber to indicate the day-value of the lunar year of 12 synodic months in the following proportionate way: The shortage under the even 10-million inches is 10,834·93651+. We· divide this shortage by 8, and deduct from the result an even 1000. The remainder is 354·36706+; and this, according to the best astronomical estimates, is the number of days in the lunar year. (The day-value of the synodic month, 12 of which make a lunar year, is noted on page 40.)

Another way of stating this feature of the King's Chamber is: To the cubical capacity of half of the King's Chamber add as many inches as there are days in the lunar year multiplied by 8, and a round 1000 cubic inches multiplied by 8. The resultant sum is exactly 10 millions of cubic Pyramid inches.

The Ratio π in the Dimensions of the King's Chamber

Because of this cubical capacity of the King's Chamber, as detailed above, the length and height of the granite wall on the north, or south, side of the chamber is such, that the complete circuit, or perimeter of this wall bears the same proportion to the length of the chamber, as the circumference of a circle bears to its diameter. Or, in other words, if the complete circuit of the north side wall, reckoning with the second height of the chamber, be divided by the ratio π, we get the length of that wall. (With the dimensions given above, this proportionate feature does not yield the length of the chamber absolutely Q.E.D., but practically so; for the figures come to within less than a 250-thousandth part of an inch of the precise theoretical length, or correct to five places of decimals.)

The Precessional Cycle Duration indicated by the King's Chamber

Another feature shown by the circuit of the King's Chamber's side walls is their indication of the number of years in the great cycle of the precession of the equinoxes. This feature requires the recognition of the Pyramid's basic number 10.

We find that this number 10, which is the complete number, enters very largely as a factor in the Pyramid's scientific and symbolic indications. As Professor C. Piazzi Smyth points out, the etymological meaning of the word "pyramid" is, literally, "division of ten."

The precessional cycle indication is shown thus: From the perimeter of the granite north side wall of the King's Chamber, that is, 1294·74986+ Pyramid inches, deduct 10. Multiply the remainder by 10. As this pertains to the north wall of the chamber, double the result to include the south wall as well. The resultant sum is as many inches as there are years in the precession, namely, 25,694·997+. As hitherto shown, the year-value of the precessional cycle is between 25,694, and 25,695.

The Second Height of the King's Chamber and the Grand Gallery's Floor-length

It will be noticed that in the calculations for the even 10-million feature of the King's Chamber, we used as one of the factors the number 8. The number 8 we find is frequently required in the Scientific features. When we multiply the second, or granite-wall, height of the King's Chamber by 8, we get, to within about a 3rd of an inch, the floor-length of the Grand Gallery. For eight times the second height is 1881·9459+ inches, while the theoretically correct, or standard, length of the Grand Gallery is 1881·5985+ Pyramid inches.

Another Indication of the Solar Year Duration

When we regard the 10th part of the cubic diagonal of the King's Chamber (reckoning this time with the first height of the chamber) as the diameter of a sphere, and calculate the number of cubic Pyramid inches in this sphere, we find that this number agrees with the number of days in 196 solar tropical years. The exact number of cubic inches in the sphere is 71,587·41569+, while the number of days in 196 solar years is 71,587·47093+. The difference is little more than a 20th part of a day in the full 196 years.

The precise number of days in 196 solar tropical years is shown by the total number of inches in twice the perimeter of the Great Pyramid, at that level above the Socket-level base which is equal to the length of the Ante-Chamber (98 × 2 = 196). The standard length of the small Ante-Chamber is 116·2602026+ Pyramid inches; and this is the diameter of the circle, whose circumference is as many inches as there are days in the solar tropical year, 365·2421986+.

Another Indication of the Lunar Year Duration

There are many ways by which the Great Pyramid's dimensions indicate their correspondencies with scientific truths. Some are indirect indications as we have seen, others are direct. But whether direct or indirect, all are in keeping with the Pyramid's own system of proportions, and all are convincingly exact; for where the correspondencies are not absolute (but the most important ones are exact), the differences in the results are barely noticeable.

There is another way in which the King's Chamber's dimensions yield the lunar year duration; and although this indication is by means of a proportion, it is more direct than the one already noted. In this instance we require to recognise the existence of the single inch-unit, the even 500-millionth part of earth's axis of rotation.

Any one dimension of the King's Chamber takes into account all of the chamber's dimensions, as all are dependent upon one another (See top of page 29). The basis for the calculation is in this instance the length of the side diagonal, given on page 30. Regard three times the side diagonal, plus one inch, as the perimeter of a square. The side-length of this square in Pyramid inches is, to within less than a 17-thousandth part of an inch, equal to the number of days in the lunar year of 12 synodic months. Except for the infinitesimal fraction of an inch the agreement is exact, being correct to four places of decimals. (Three times the side diagonal of the King's Chamber, plus one inch, equals 1417·468492+ Pyramid inches. The fourth part of this total is the side-length of the square, namely, 354·367123+; while the days in the lunar year number

354·367064+. The difference is only ·000058+ of an inch, or less than a 17-thousandth part. The side diagonal on which this lunar year indication is based is calculated with the chamber's first, or floor-to-ceiling, height.)

The addition of a single inch to the total of inches in three times the side diagonal, to make the agreement exact, is one of the ways by which the Great Pyramid points to the earth-commensurable inch-unit. In the feature on page 45 we noted how the precise length of the earth-commensurable *cubit* is also pointed to in a similar way. We shall notice other examples as we proceed.

SECTION XV

THE HARMONIOUS PROPORTIONS OF THE GREAT PYRAMID

WHEN it is seen that all the various dimensions of the Great Pyramid were designed to bear harmonious proportions to one another, our confidence in the time-measurements and symbolical features based upon these dimensions is strengthened. These geometric and mathematical proportions prove, at least, that our deductions as to the true meaning and teaching of the Great Pyramid are reasonable.

Some of these harmonies, of which there are many throughout the building, appear at first to be almost accidental; but as our knowledge of the system of measures on which the design of the monument is based increases, we become less and less inclined to believe that there is anything of an accidental nature connected with the Pyramid. We begin to perceive, instead, that these harmonies exist because of the unique design of the entire building. They are the little parts of which the whole grand edifice is composed. Just as there is beauty in the general outward aspect of the monument, so there is beauty in every detail, both in the actual material building itself, but especially in its geometric and mathematical truth, and in its symbolisms.

The King's Chamber and its Dimensions
Govern the whole Pyramid

Professor C. Piazzi Smyth has well said of the noble King's Chamber, with its beautifully squared and levelled blocks of dark polished granite, that it is the chief apartment in the Great Pyramid, the one "to which, and for which, and toward which, the whole edifice was originally built." It is a remarkable fact that the King's Chamber, in its dimensions,

governs the dimensions of all other parts of the building, either directly, or indirectly. Some of these connections we have already noted, and we shall draw attention to others as we develop our subject.

The basic number of the Pyramid, as we know, is 10. This is the complete number, for when we have counted up to 10 we must begin again. The number 8 enters very often into the Pyramid's scientific proportions, and so also does 7, the perfect number. Besides denoting perfection the number 7 is, in the Scriptures, specially connected with time.

The understanding of the Great Pyramid, in its geometric and mathematical aspect, is largely an understanding of numbers. So far as we are able, we prefer to know the reason for the frequent use of certain numbers in the proportionate features of the Pyramid. The use of some of them, as, for instance, 10, and 7, seem obvious, but the use of some others are not so clear at first. It is only as our comprehension of the whole teaching of the Pyramid comes through study, that we perceive meaning in all of the numerical features of the building. We have noticed the use of the number 3, in that feature in the King's Chamber which indicates the day-value of the lunar year (See page 78). Whatever other meaning may attach to this number, we can call it the triangular number, representing the three equal sides of an equilateral triangle. 4 may be considered to be the square number; and 5 is proved to be the "sacred" number of the Great Pyramid. But as we deal with the particular features where such numbers enter as factors, we shall speak of them more fully.

With the dimensions of the King's Chamber as we have used them in all the features referred to so far (See page 30 for these dimensions), we find that the cubical capacity of the lowest, first-wall-course section of the chamber, is 3,583,380·4698+ cubic Pyramid inches. The height of the first wall-course, measuring from the floor-level, is less than the height of the other four wall-courses above, because this first course dips down below the floor-level 4·8546+ inches, as mentioned on page 75. The cubical capacity of the lower section of the chamber, therefore, between the level of the floor and the level of the top of the first wall-course (for the

masonry joint between the first and second courses runs along the chamber's four walls at a uniform level), is less than it would have been had the walls rested directly on the floor, instead of dipping down below the floor in the manner described. The level of the floor has been so adjusted with reference to the top of the lowest wall-course, that the number of cubic inches contained within the confines of these two levels is equal to, first, one half of a round 7-millions, and, second, an even 100 times the vertical height of the approaching Grand Gallery, to within about a 25th part of an inch of the theoretical standard vertical height. We do not consider this correspondency to be of itself of great importance, but it is an example of those harmonious details of which we speak.

If we take the length of the King's Chamber as being the side-length of a perfect *cube*, the number of cubical inches in this cube is almost an exact, round, 70-millions. (The contents of the cube is about 1609 inches more than the exact 70-millions. A length for the chamber of less than a 300th part of an inch short of the precise standard length, would make the contents of the cube the exact 70,000,000 cubic inches.)

The Floor-Level of the King's Chamber

The floor of the King's Chamber is on a higher level in the building than the level touched by the upper terminal of the Grand Gallery. It was an earnest Bible student of Glasgow, Scotland, Mr. Adam Rutherford, who first directed our attention to the fact that the perimeter of the Great Pyramid at the level of the King's Chamber's floor could not agree in inches with the years in the precessional cycle. In our earlier editions of the volumes of *Great Pyramid Passages*, to which he referred, we had merely quoted the words of Professor C. Piazzi Smyth in this connection, without at that time testing his calculations. But we see now that the calculations of Professor Smyth are wrong as applied to the King's Chamber floor-level, and the mean Socket-level diagonals; but are right, as Mr. Rutherford showed, when applied to the level of the upper floor-end of the Grand Gallery, and the Platform-level

diagonals. The beauty of the Great Pyramid's indications is always more apparent when we can ascertain the true measurements, or the correct method of applying the measurements.

There is an appropriate. proportionate, harmony between the two levels (*i.e.*, the King's Chamber floor-level, and the upper floor-end of the Grand Gallery), as shown by the following calculation, in which the perfect number 7 is the prominent factor. The upper terminal of the Grand Gallery floor marks the end of the 1915-inch time-measurement, and the dimensions of the King's Chamber also indicate this 1915 period of years (See the companion brochure of this series entitled: *The Great Pyramid: Its Time Features*). It is appropriate, therefore, that the difference between the two levels in question should yield an indication of the 1915 years.

This 1915-year indication is contained in the number of cubic inches which lie within the limits of the two levels, the vertical distance between which is 6·6171+ inches. The proportion is: Take an even 1-millionth part of the number of cubic inches in the masonry of the building between the level of the upper floor-end of the Grand Gallery, and the floor-level of the King's Chamber. Multiply this millionth part by 7, and add 7. The result is 1915·189+. (The total number of cubic inches between the two levels is 272,598,502·5526+, according to the standard measures of every part of the Pyramid.)

The top-surface level of the Step

By still another proportion the level of the King's Chamber's floor indicates the 1915-year period, thus again pointing to the momentous year 1914 A.D., the date of the King's entry into his Kingdom. This indication is connected with the size of the "Step" at the head of the Grand Gallery.

The top surface of the Step is on a lower level than the floor of the King's Chamber, to the extent of about ¾ of an inch, or, more particularly, ·76579+ of an inch. This Step-level is geometrically related to the vertical height of the Grand Gallery, and to the area of the Socket-level square base of the

SOUTHERN END OF GRAND GALLERY
(LOOKING WEST)

1st Overlap

2nd Overlap

1914 A.D. DATE-LEVEL
HORIZONTAL LINE

Angle = 26° 18′ 9·7″

WEST WALL

WEST RAMP

INCLINED FLOOR-LINE

TO NORTH WALL OF GRAND GALLERY

1813·5987

36·7487

35·9829

30·1316

Vertical to the Apex of the Pyramid 4083·5319

476267

STEP

1723·6268 Vertical to the Mean Socket-level base-line of the Pyramid

74·3466

72·7973

60·9594

67·9997

81·2048

82·9330

1881·5985 TO NORTH WALL OF GRAND GALLERY

Virtual Floor-end of Grand Gallery Marking the Date 1914 A.D.

SOUTH WALL

VERTICAL LINE

43·6753

ROOF-LINE

First Low Passage

51·9792

LEVEL OF KING'S CHAMBER FLOOR

126·1660

NORTH WALL

ANTE-CHAMBER

FIRST GRANITE FLOOR-STONE

GRANITE LEAF

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whole Pyramid. For the vertical distance between the top surface of the Step, and the apex of the building, is equal to the side-length of a square, the area of which square is precisely one-fifth of the area of the Pyramid's Socket-level square base.

Another way of expressing the geometric position of the
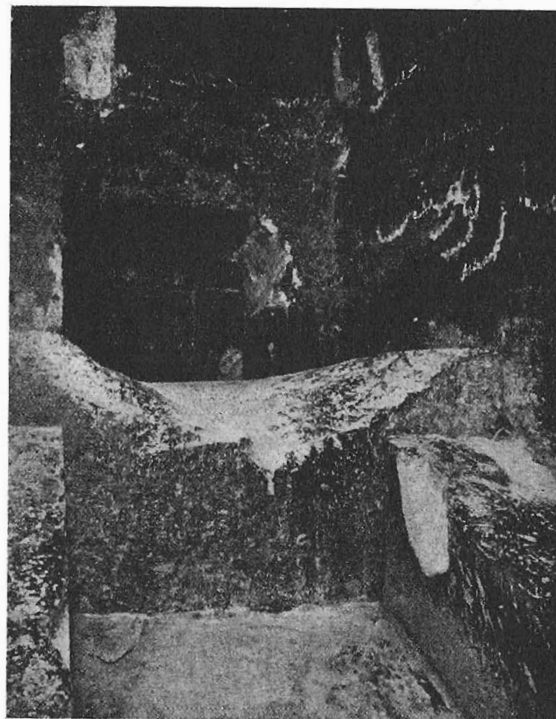
The great Step at the head of the Grand Gallery of the Great Pyramid of Gizeh; showing the two side Ramps terminating against the Northern face of the Step; and the low passage leading to the Ante and King's Chambers

Step-level is: Twice the vertical height of the Grand Gallery, multiplied by an even 10-thousand, equals the area of a square, the side-length of which is equal to the vertical height of the Pyramid's apex above the top surface of the Step at the head of the Grand Gallery. And the area of this particular square, also, is as many inches as there are days in the square of the

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solar tropical year, multiplied by 125. (All of these correspondencies are, of course, mathematically exact, and are related to one another.)

The actual vertical distance, then, from the upper surface of the Step to the building's apex, is 4083·53192+ Pyramid inches. And as the vertical distance between the level of the Grand Gallery's upper floor-end and the apex is 4089·38327+ inches (being equal to the radius of the precessional cycle), it follows that the vertical distance between the upper floor-end of the Grand Gallery, and the top of the Step, is 5·85135+ Pyramid inches.

Now, the dates 1874 and 1914 A.D. are both indicated in a connected way by the Step-height, and by the higher level of the King's Chamber floor-line. The Step projects into the Grand Gallery 61 inches, as all Pyramid students know, and its front-riser height is 36 inches. As has been pointed out by many writers on the Pyramid, the 36-inch riser represents the yard-length, while the length of the top surface of this Step, from north to south, is equal to the sum of the yard, and the cubit, 36+25 =61 inches. These measures are correct as expressing the dimensions of the Step in round figures. The accurate *Pyramid–inch* measures are: Length, from north edge of Step to the south wall of the Gallery, 60·95946+, and front-riser height, 35·98297+. Or up to the level produced floor-line of the King's Chamber, the front-riser height is 36·74877+ Pyramid inches. These measures are correct according to the mean of the careful practical measures of Professor Flinders Petrie.

The front-riser of the Step may be said to form the perpendicular of a right-angled triangle, if we produce the inclined floor-line of the Grand Gallery upward through the masonry of the Step, till it reaches the level of the top surface of the Step. The top level of the Step will then be the base-line of the triangle, and the produced floor-line of the Grand Gallery (with its upward angle of 26° 18′ 9″·7) is the hypotenuse. This right-angled triangle indicates the 1874 A.D. date by the following proportion: Multiply the sum of the three sides of the triangle by the square of the ratio π, and we get 1875·0789+ Pyramid inches. And if we take the front-riser

of the Step up to the produced level of the King's Chamber floor as the length of the perpendicular of the right-angled triangle, the sum of the three sides of this slightly greater triangle, when multiplied by the square of the ratio π, yields 1914·9849+ Pyramid inches.

These two results are, practically, 1875, and 1915, inches respectively. They represent the two period of years from the birth of earth's King in Bethlehem in Autumn 2 B.C., to, first, Autumn of the year 1874 A.D. when Christ came again in his Second Advent preparatory to setting up his Kingdom in power; and, second, to the date Autumn of the year 1914 A.D. when this Kingdom began to exercise its power. The first outward manifestation of this power was the precipitation of the great world-war in 1914 A.D., the first clear evidence that the "kingdoms of this world" are now due to give place to the Kingdom of Christ and his joint-heirs. The Scriptures, and the corroborative "Witness" in Egypt, unite in showing that the transition period from the old order to the new was due to begin in 1914 A.D. The social conditions in the world today manifest that the change is in progress. Every thinking man perceives, and numbers of the world's prominent men say, that we are now in a transition period, and all recognise that the year 1914 A.D. was the turning-point. But only those who are instructed by the Lord's Word understand why this change is taking place; and while men's hearts are "failing them for fear" because of the trouble they see upon the earth, the instructed people of the Lord rejoice, not because of the anguish upon poor humanity, but because they know the Lord now reigns, and that righteousness and everlasting peace are now assured. But troublous times attend the inauguration of the Kingdom of Peace, because before peace can be established the old evil order, of which Satan is the instigator, must be destroyed.

Speaking about the Kingdom-work which the "feet" members of the body of earth's new Ruler, the Christ, who are "alive and remain" during the troublous period of the change from the old to the new conditions, the late Charles T. Russell, who first drew our attention to these things, wrote: "All this is in harmony with the Scriptural declaration that the Kingdom

of God must first be set up before its influence and work will result in the complete destruction of 'the powers that be' of 'this present evil world,' political, financial, ecclesiastical, by [beginning with] the close of the 'Times of the Gentiles,' October A.D. 1914." (See Vol. IV of *Studies in the Scriptures*, page 622.)
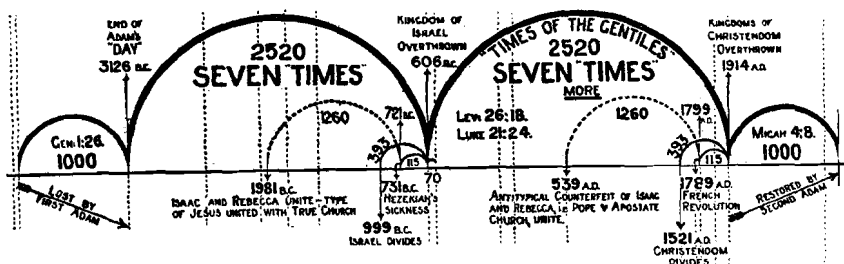
It is appropriate to the symbolical meaning of the upper end of the Grand Gallery, and of the King's Chamber, as well as of the Pyramid as a whole, that the two prominent Biblical dates, 1874 and 1914 A.D., should be thus geometrically and mathematically indicated by the symbolical Step. There is symmetry in all this arrangement which cannot be ignored; for we see in it the hand of the Master Designer. The "presence" of earth's invisible King, according to the Scriptural time-features, dates from 1874 A.D. And according to the Scriptures the "sleeping saints" or those who "fell asleep in Christ" during the Gospel Age, were raised from their sleep in death in Spring of the year 1878 A.D., the date which is parallel to the year 33 A.D. when Christ rode into Jerusalem and was proclaimed King of Israel. From 1878 A.D. all who "die in the Lord" are immediately changed to their spiritual condition, for the "chief resurrection" began from that date. In 1914 A.D. the Christ began to reign over mankind; and the manifestation of this reign will become more evident as time passes; and it will last for a 1000 years. All of this is corroborated many times over by the symbolism and mathematical dimensions of the Great Pyramid. As we now see, the ratio π, and its square, and square-root, are constantly required in the Pyramid's dimensional proportions.

The Subterranean Chamber Indicates the Dates 1874 and 1914

Proportionate measurements in the Great Pyramid, though exact and of interest, would be nothing of value unless they taught, or supported, vital truths. The most vital truth of all pertains to the world's Saviour, the Son of God; for without Him we could have no life. We constantly keep before us this
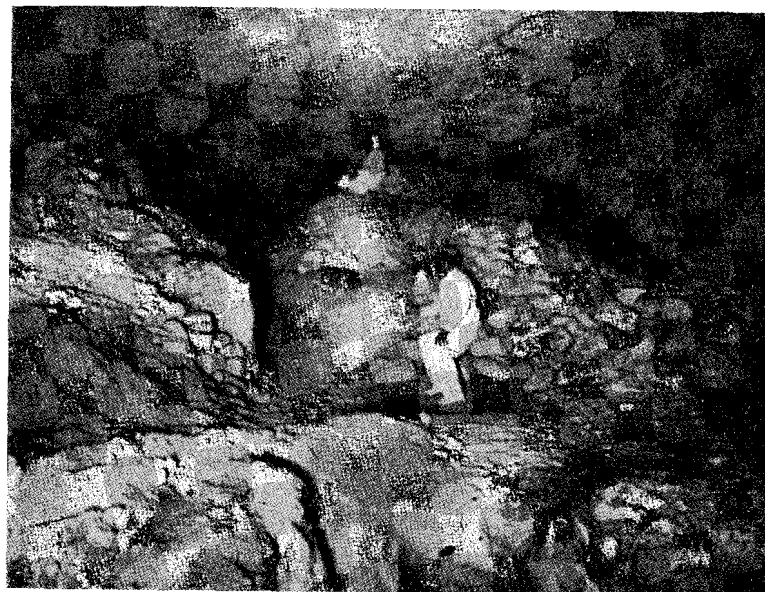
The Subterranean Chamber, or Pit, hewn in the rock a hundred feet below the base-level of the Great Pyramid of Gizeh; showing its very uneven floor (looking West)

necessary phase of the Pyramid-subject, remembering that the building's scientific features are a means to an end, namely, to give us strong confidence in the Lord and His work of salvation, and in the times and seasons which measure off the various phases of that work. It is a fact not to be lost sight of that the only ones who have had revealed to them any matters of true interest regarding the Lord's Sign and Witness in the

land of Egypt, have been earnest believers in Jehovah and His Word.

The Scriptures are consistent in declaring that the first part of the work of Christ as King over all the earth, is to bind Satan, the "god of this world," and destroy the evil kingdoms of this world which have for so many weary centuries oppressed
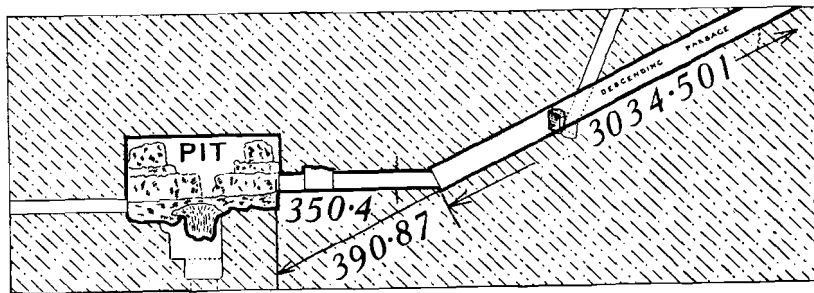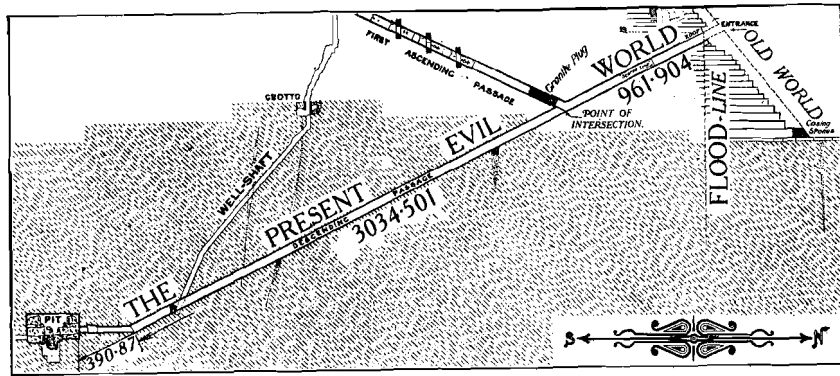
humanity. The thought of this necessary destroying-work which is to bring to a close the "present evil world," is particularly symbolised by the Subterranean Chamber in the Great Pyramid. The extremely rough floor of the large, dark Pit is illustrative of the utterly chaotic condition into which the "kingdoms of this world" are plunged, when Jesus Christ begins to break them in pieces like a potter's vessel when struck with an iron rod, as we read: "Thou shalt break them with a

rod of iron: thou shalt dash them in pieces like a potter's vessel" (Psalm 2: 9).

The two dates which witnessed, first, the presence, and, second, the assumption of Kingly power, of Christ, namely, 1874 and 1914 A.D., are connectedly marked by the Subterranean Chamber. We show in the companion brochure entitled: *The Great Pyramid: Its Time Features*, that the length of the Descending Passage agrees in inches with the
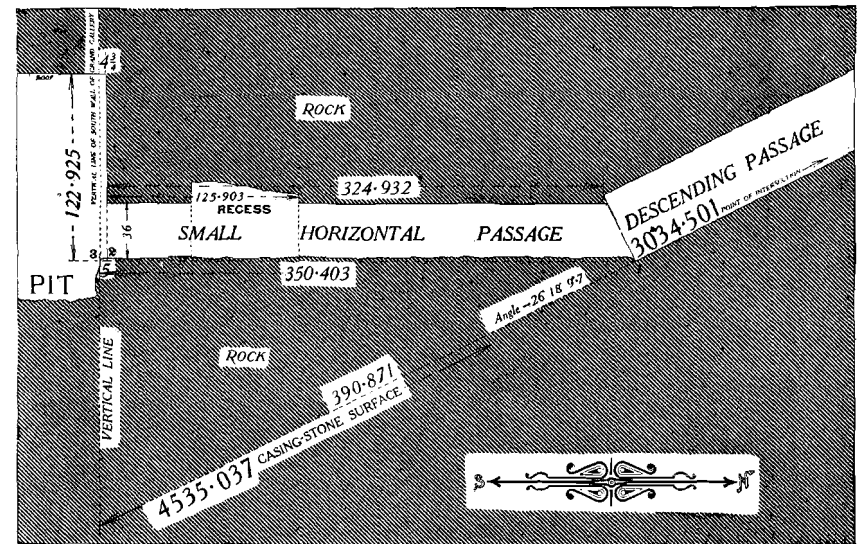
number of years in the duration of the "present evil world." The point on the floor of the passage at the upper north end which is vertically under the roof-commencement marks the date of the drying-up of the Flood, when the present evil world began. The date 1914 A.D., when the permitted rule of the kingdoms of this world legally ended, is marked by the end of the produced floor-line of the passage. This produced line of the inclined floor of the Descending Passage ends in vertical alignment with the floor-terminal of the Small Horizontal Passage. We have called it No. 4 terminal in the "Time Feature" book. If instead of continuing the downward

measurement of the Descending Passage to this No. 4 terminal, we turn at the junction of the Small Horizontal Passage, and measure along this horizontal floor to its terminal 5 inches beyond the Pit's north wall (*i.e.*, No. 3 terminal), the date marked by this floor-end is 1874 A.D. For the difference in the lengths of the horizontal floor, and the produced line, is in a round number 40 inches; and between 1874 and 1914 is 40 years. (The full length of the Small Horizontal Passage,
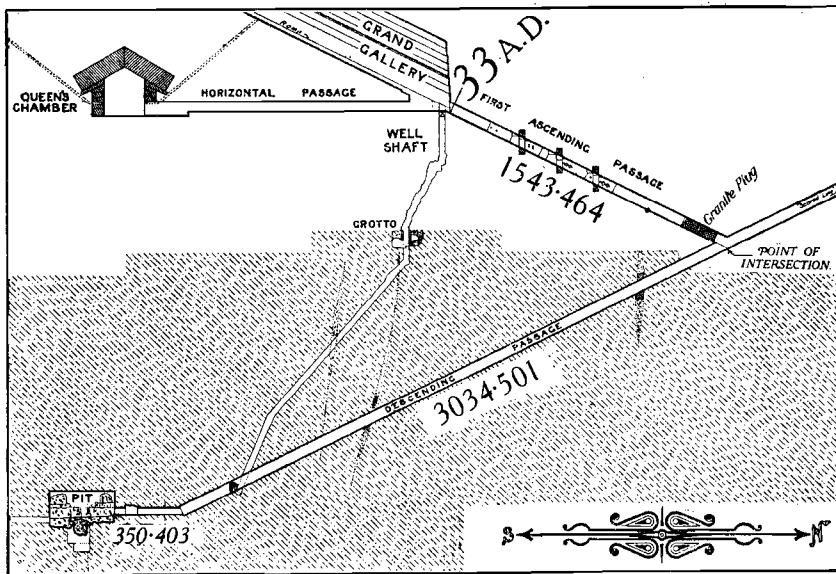
to its floor-terminal, is 350·4031+ Pyramid inches. The length of the corresponding produced inclined floor-line of the Descending Passage is 390·8718+ inches, the precise difference being 40·4687+.)

Another Method of Measuring to the Pit

These two points at the Subterranean Chamber mark the same dates, 1874 and 1914, by another method of measuring in the passages; and this additional method is corroborative

of the one considered above. It is already proved that the line of demarkation between the First Ascending Passage and the Grand Gallery marks the date of our Lord's death and resurrection, 33 A.D. Measuring up along the floor of the Grand Gallery from this line of demarkation, at the scale of
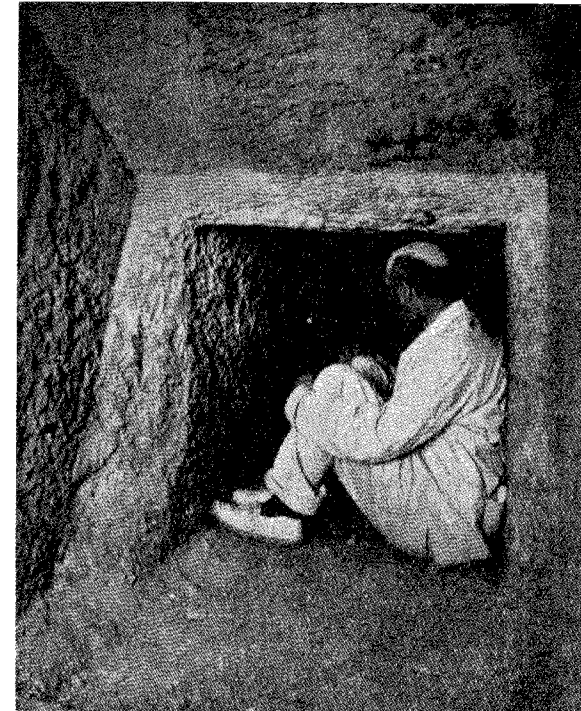
The lower square terminal of the Descending Passage of the Great Pyramid of Gizeh; showing the entrance of the very low Small Horizontal Passage which leads Southward to the Pit

an inch to a year, shows that the upper floor-end of the Grand Gallery marks the date 1914 A.D., as already noted.

If we now measure backward from the line of demarkation, down the floor-line of the First Ascending Passage till we reach the "Point of Intersection," this point will mark a date B.C. Having now secured a B.C. date at a definite point on

the floor of the Descending Passage, which is directly connected with the date-marks in the Grand Gallery, we may measure downward to the Subterranean Chamber. When we do this we find that the measures again prove that the two terminals (called for convenience Nos. 3 and 4) mark the dates 1874 and 1914 A.D. respectively. This method of showing the dates 1874 and 1914 A.D. at the Subterranean Chamber is quite independent of the other method of measuring directly down the Descending Passage from its north-beginning. The one method, therefore, is confirmatory of the other.
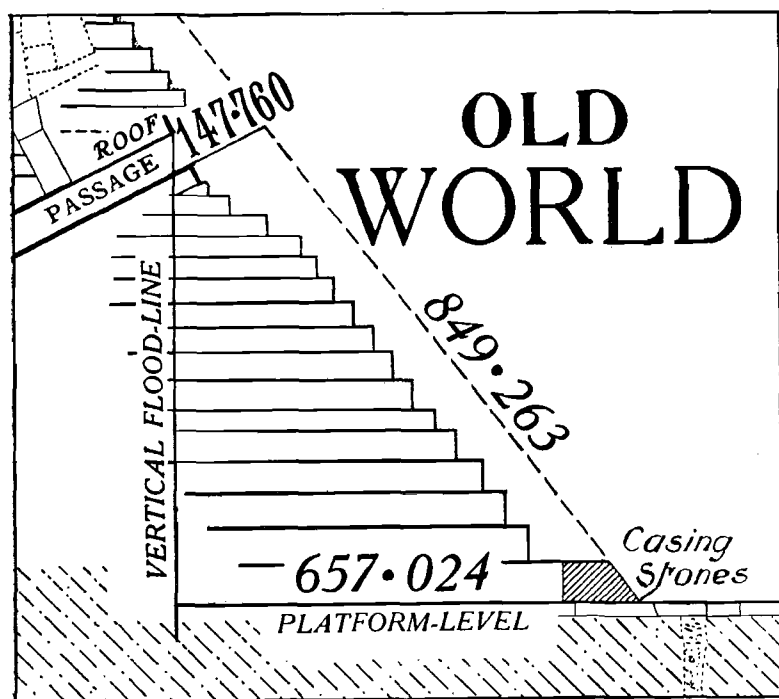
The Duration of the "World that Was" and the Date of the Flood

That the roof-commencement of the Descending Passage marks the date of the flood is corroborated by a number of distinct time-measurements. This roof-commencement is that point of the roof which is at right-angles to the north-commencement of the Descending Passage "Basement-sheet,"
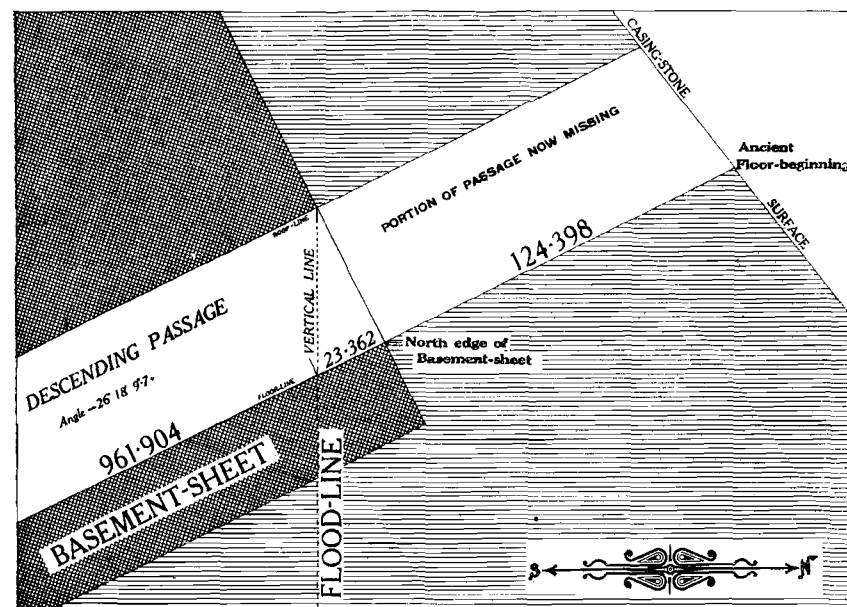
that is, at right-angles to the present floor-beginning of the Descending Passage.

Dropping a vertical line from the roof-commencement, we find that it intersects the floor of the passage about $23\frac{1}{2}$ inches down from the floor-commencement. It is this point on the floor of the Descending Passage which marks the date of the flood, which ended the "world that was," and began the "present evil world."

The period of the "world that was" before the flood, from the

time that evil entered through the disobedience of father Adam, namely, 1654 years in all, is corroborated by the Great Pyramid in a unique, yet, when we understand the Pyramid's methods of recording time, convincing way. Continuing the roof-commencement vertical line down to the Platform-level base, we have what we may call the "vertical flood-line." All of the Pyramid to the north of this vertical line pertains to the "world that was" before the flood; and all to the south of this line to the "present evil world," and the time beyond. The 1654 years of the "world that was," dating from the time that sin entered two years after the creation of Adam, are indicated by a measurement of 1654 Pyramid inches as follows: Measuring from the point where the vertical flood-line intersects the Platform-level, along this Platform surface to the bottom edge of the Pyramid's casing (the casing-stones rest immediately on the Platform), then upward along the casing-stone surface to the ancient Entrance floor-beginning, and, finally, down the floor of the Descending Passage to the vertical flood-line, the total number of inches in these three connected straight lines is 1654. (The precise sum is 1654·048+ Pyramid inches.)

According to the Bible Chronology, a complete period of six millenniums, that is, 6000 years, dating from the fall of Adam two years after his creation, ended in Autumn of the year 1874 A.D. The fall of Adam was in 4127 B.C. in the Autumn. 1654 years from the fall of Adam, therefore, gives the date of the drying-up of the flood, namely, Autumn of the year 2473 B.C., or 2472¼ years before the 1st of January A.D. 1. (The date of the flood is usually stated as being 2472 B.C., which is sufficiently accurate.) The Great Pyramid corroborates this date for the flood, as well as the dates for the creation and the fall of Adam. The whole tenor of the Biblical times and seasons show that there was a period of two years of innocence in the Garden of Eden, before evil entered through the disobedience of Adam; and the Great Pyramid's time-measurements are in harmony with this time-arrangement of the Scriptures. (See further details connected with the Pyramid's corroboration of the Scriptural times and seasons in: *The Great Pyramid: Its Time Features*.)

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The Geometric Harmony of the Vertical "Flood-Line"

The vertical line dropped from the north-commencement of the *roof* of the Descending Passage (or from where the roof would commence, at the point in transverse alignment with the north-edge of the passage's floor "Basement-sheet," if the missing roof-stones at this part were restored), and continued vertically down through the floor of the passage to the building's Platform-level base, is, as explained above, the "Flood-line," marking the Biblical date of the deluge, 2472 B.C. According
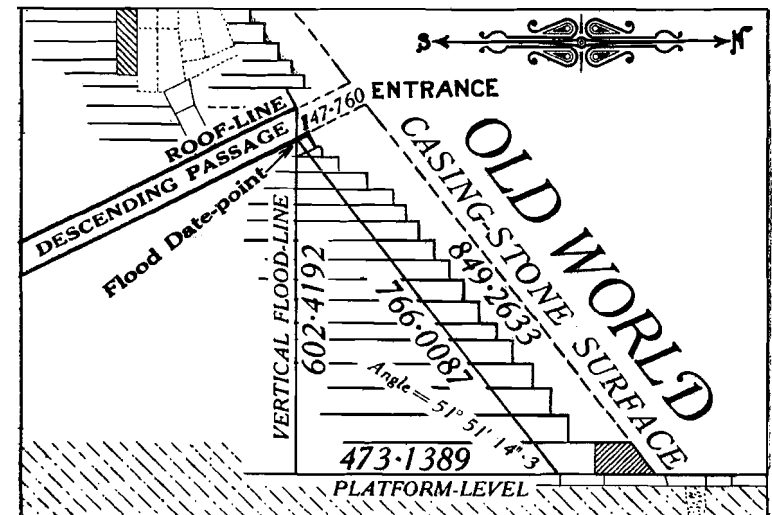
to the measurements, the length (or the height) of this vertical line, between the top surface level of the Platform, and the point where it passes through the floor of the Descending Passage, is 602·4192+ Pyramid inches.

If we regard this vertical line of 602·4192+ inches as being the perpendicular of a right-angled triangle, the Platform level being the base, and the hypotenuse being a line *parallel* to the casing-stone surface of the Pyramid, we find that the exact area of this definitely fixed right-angled triangle, when

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divided by 2, agrees with the Coffer capacity, and the perfect number 7. (As the incline of the hypotenuse of this right-angled triangle is the same as the casing-stone angle, 51° 51′ 14″·3, and as the length of the vertical "Flood-line" up to the floor of the Descending Passage is 602·4192+ inches, we can find, by the rules of trigonometry, that the hypotenuse-length is 766·0087+, and the base-length along the Platform-surface is 473·1389+, Pyramid inches. The *area* of the triangle formed by these three lines, when divided by 2, equals the sum of the Coffer's interior capacity, 71,250, plus the perfect number 7.)

According to the words of our Lord, as recorded in Matthew's Gospel (24: 37–39) the time when He, the Son of Man, is *present*, establishing his Kingdom while the kingdoms of this world are being destroyed, is like the days of Noah, and the destruction of the Old World of the ungodly in the flood. The ending of the Old World prefigured the ending of the "Present Evil World," particularly from the date of the ending of Gentile Times, 1914 A.D.; for Christ himself must be present as earth's New Ruler, setting up his own righteous Kingdom on the ruins of the old. It is appropriate, therefore, that the measurements connected with the vertical "Flood-line" in the Great Pyramid, which marks the year of the flood when the Old World was destroyed, should contain within their proportions the figures that point to the ending of the Present Evil World, beginning at the date 1914 A.D. when Christ took to himself his great power as earth's invisible King.

As in many of the Pyramid's time-indications, so here also, the date of Christ's second coming as King, 1914 A.D., with the overthrow of the present evil order which attends his advent, is connected with the date of his first coming as the Man Christ Jesus, when he was born in the city of Bethlehem and proclaimed to be the future King of Israel and the world. These two advents are made prominent by the 1915-inch measurements in the Pyramid, representing the 1915 years between 2 B.C. and 1914 A.D.

By a proportion, therefore, the vertical "Flood-line" not only marks the date of the ending of the "World that was," but also the date 1914 A.D., when the destruction of the "Present

Evil World" was due to begin, as prefigured by the destroying flood. This further indication is contained in the length of the hypotenuse of the right-angled triangle just referred to above, and by the following proportionate means: If we take an even 10 times the length of this hypotenuse, and consider the total of inches as the perimeter of a square, we shall find that the side-length of this square equals 1915 Pyramid inches. (The precise side-length of the square is 1915·0218+.)

Then, if we take one-half of the base-length of the above mentioned right-angled triangle, and multiply this half-length by the perfect number 7, we get, practically, the same number of inches as there are years in the complete period of the Old World, counting this time from the creation of Adam, to the drying up of the flood, 1656 years in all, according to the Bible chronology. (The length of the base of the right-angled triangle, which runs along the surface of the Platform of the Pyramid, is, as already stated, 473·1389+ inches. Half of this multiplied by 7, or the whole base-length multiplied by 3½, is equal to 1655·9863+ inches, which is not a 70th part of an inch short of the exact 1656.)

The fact that the capacity of the Coffer, 71,250 inches, in conjunction with the perfect number 7, is contained in the measures connected with the vertical "Flood-line," and with the duration of the Old World, may be regarded not only as one of those proportionate correspondencies which help to convince us that the measures are an intended feature in the Pyramid's design, but also as a quiet reminder to us that, even in those days that were before the flood, when, as the Scriptures declare, "the wickedness of man was great in the earth, and every imagination of the thoughts of his heart was only evil continually," yet was the Lord still there, over-ruling the affairs of mankind for his ultimate reclamation and benefit.

For the Coffer in the King's Chamber, in one of its symbolical aspects, stands in the same relationship to the Pyramid as the "Ark of the Covenant" did to the whole tabernacle arrangement. The Ark in the Most Holy of the tabernacle represented the presence of the Lord, overruling the affairs of the people of Israel; and that nation was, in God's dealings

with it, representative of the whole world; for the Scriptures speak of Jehovah as "the Lord of Hosts."

We read that "His tender mercies are over all His works," and that, ultimately, "the wrath of man will praise Him." The world will yet realise, just as the Lord's people now do, that Jehovah, the Father of Mercies, has during the whole 7 millenniums since the fall of Adam, worked mightily to reclaim the world of mankind from sin and death. All who have died in the past will return from the death-state, and all flesh shall see the salvation of the Lord (Isaiah 35: 10; 40: 5).

SECTION XVI

THE COFFER IN THE KING'S CHAMBER

THE only movable article in the Great Pyramid is the Coffer in the King's Chamber. Professor Flinders Petrie proves, by his measurements, that this granite box must have been placed in the chamber before the roof of that apartment was built over, because the entrance into the chamber is too small to allow the Coffer to pass through. It is movable within the confines of the King's Chamber only, therefore. Incidentally, also, when the builders set the Coffer in the King's Chamber, they put it there to stay for all time; for if it could not have been carried in through the entrance, neither can it be carried out.

The Coffer is the Standard Capacity Measure for all Nations

It was John Taylor's remarkable suggestion that the Coffer was placed in the King's Chamber, and built in permanently, that it might serve as the standard for the capacity measure suitable for the use of all nations. He pointed out that the standard quarter measure for wheat in use by the British people from the earliest times is, actually, a quarter of the total capacity of the Great Pyramid's Coffer.

John Taylor based his deductions on the wonderfully accurate measures of the Coffer secured by Professor John Greaves many years before. The independent measures of Col. Howard Vyse, and of the French savants, did in the main agree with those of Professor Greaves. Professor Smyth, however, secured measures which are more accurate, both for the interior and exterior of the vessel; and the later, more numerous measures of Professor Petrie, corroborate those of Professor Smyth.

Both Professors Smyth and Petrie show that, within narrow limits, it is possible to obtain more than one set of measures for the Coffer. But within these narrow limits it is possible to obtain *one* for each dimension, that is, for the length, width, and depth, both exterior and interior, which can be consistently used in a great many proportionate features. This one measure for each separate dimension is the mean of the careful practical measures, and may be named the *standard* for reference.

The standard measures of the Coffer which we adopt are primarily based upon the theory that the interior capacity of the vessel is exactly 71,250 cubic Pyramid inches. The limits of the exterior and interior measures of the Coffer, as published by Professor C. Piazzi Smyth, and the standard measures which lie within these limits, we present here:

EXTERIOR MEASURES IN PYRAMID INCHES:

Prof. Smyth's Limits:

Length $\begin{cases} 89 \cdot 92 \\ 89 \cdot 62 \end{cases}$ Breadth $\begin{cases} 38 \cdot 68 \\ 38 \cdot 61 \end{cases}$ Height $\begin{cases} 41 \cdot 23 \\ 41 \cdot 13 \end{cases}$

Standard:

Length $=89 \cdot 7839756+$ Breadth $=38 \cdot 6876101+$ Height $=41 \cdot 2131687+$

The interior dimensions of the Coffer, as given by Professor Smyth, are said by him to be "true within half a tenth of an inch," meaning, apparently, that the figures he gives may be added to, or deducted from, to the extent of ·05 of an inch in each case. Below Professor Smyth's figures we also give the standard dimensions which we use in our calculations:

INTERIOR MEASURES IN PYRAMID INCHES:

Prof. Smyth:

Length $=77 \cdot 85$ Width $=26 \cdot 70$ Depth $=34 \cdot 31$

Standard:

Length $=77 \cdot 8013897+$ Width $=26 \cdot 7050242+$ Depth $=34 \cdot 2929256+$

As to the thicknesses of the Coffer's four sides and bottom, we give Professor Smyth's figures, with which we compare the standards:

Prof. Smyth:

Side thickness $=5 \cdot 99$ Bottom thickness $=6 \cdot 92$

Standard:

Side thickness $=5 \cdot 9912929+$ Bottom thickness $=6 \cdot 9202431+$

The Coffer, in the King's Chamber,

South — North
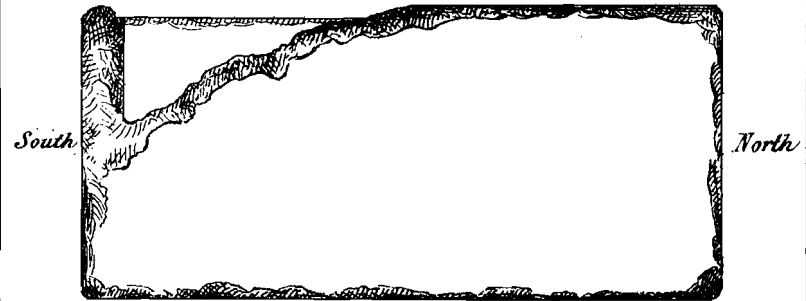
Elevation, looking West.

West

South — North

East
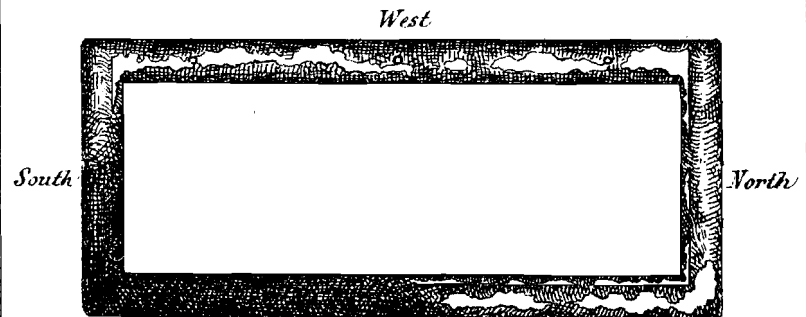
*Plan, looking from above;
the shading in proportion to the deviation
from a horizontal plane.*

10 5 0   10   20   30   40   50   60   70   80   90
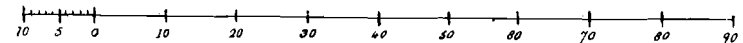
Scale of Inches.

Because it is possible to get more than, say, one exterior length for the Coffer, some might hastily assume that the workers erred through carelessness when shaping the vessel. But this by no means follows, for the master builder who designed the dimensions of the Coffer clearly intended that there should be more than one exterior length, and had the workers made the Coffer to one exterior length only, they would have been careless of their instructions, and have erred. What at first seems to be lack of finish is, indeed, proved to be of set purpose. The designer intended that there should be a limited range of exterior and interior measures of the Coffer, because no one set of measures could show all of the scientific features connected with this Coffer with absolute exactness.

It will be seen that in all of the foregoing dimensions the *standards* which we make use of in our calculations agree very closely with Professor C. Piazzi Smyth's practical measures. Professor Smyth conducted his measuring-operations in the King's Chamber and its containing Coffer with great care, and thus any later measurer, using the same carefulness, could only confirm the figures of Professor Smyth.

Following John Taylor's hypothesis that the Coffer was intended by the Pyramid's Architect to serve as a standard for capacity measure, Professor Smyth contended that, theoretically, the interior cubical contents is exactly 71,250 cubic Pyramid inches.

Writing on this Professor Smyth says: "The grand standard of capacity in the Great Pyramid, as already stated, is given by the internal cubical measure, tested by theory, of the granite Coffer near the further, or western, end of the King's Chamber; and that, the final and crowning apartment of the whole of the interior of our earth's earliest and most gigantic monument of stone. . . .

"Though the Coffer as a capacity measure is larger now than anything on the British Statute-book, being indeed four times the size of the *quarter* which is at the head there, yet one single Coffer-measure is a very small thing to set before the whole world, and ask all nations to accept it as a standard

in preference to any other box or cylinder, or other-shaped or differently-sized measure which they might have already made, or be thinking of making, for themselves.

"But all this difficulty seems to have been perfectly foreseen by the inspired architect, and therefore it was that he identified the Coffer by certain rather abstruse, yet positively identifiable, scientific features with the King's Chamber in which it is placed. And that chamber, with the enormous mass of the Great Pyramid itself. That building, too, with the sector-shaped land of Lower Egypt. And Lower Egypt with the centre of the inhabited land surface of the whole world. So that, small though the Coffer may be in itself, there cannot be another vessel of such central and cosmically indicated importance as this to the whole of mankind, when explained."

The Coffer Presents a Standard for Mean Density and Weight

Professor C. Piazzi Smyth, after reviewing all the available data on the subject, was of the opinion that the mean density of the whole earth is 5·7 times heavier than a mass of distilled water of the same size, such water being at the temperature of 68° Fahr., and the barometric pressure being 30·000 Pyramid inches. The barometrical pressure of 30·000 Pyramid inches is that which naturally obtains in the ventilated King's Chamber, by the law of the atmosphere over all the region of the Great Pyramid. And the temperature of 68° Fahr. is, at that barometric pressure, exactly one-fifth above the freezing point of water, and four-fifths below the boiling point of water. The temperature of 68° Fahr. is therefore, under these conditions, an appropriate one to the King's Chamber; for the "sacred" number of this chamber has long been known by students of the Pyramid to be the number 5. (In Section XXIV we detail more fully this matter of the Great Pyramid's scientific indication of earth's mean temperature, and barometric pressure.)

Professor Smyth draws attention to certain architectural features in the King's Chamber which, in that numerical way peculiarly characteristic of the Great Pyramid, points to the

very figures that express the mean density of earth, 5·7. For the Great Pyramid must be allowed to interpret its own scientific features, even if its method of doing so is not observable in any other material edifice. And when we find that any such interpretation is consistently sustained, not only in the Pyramid's dimensions, but also in the dimensions of the earth, we can have every confidence in it.

The architectural detail in the King's Chamber which points to earth's mean density is connected with that chamber's walls. That this scientific feature should be connected with the walls of this apartment is clearly consistent, for, as we have already shown, it is because of the lengths of these walls, and their height, that the polar-axial length of earth is indicated by the capacity of the King's Chamber, a cubit in the one being represented by an inch in the other.

Professor Smyth shows, then, that the large granite stones of which the four walls of the King's Chamber are constructed are an even 100 in number. They are built up in 5 even courses, the joints between each masonry-course running round the chamber at the same level. But the strange thing is that, while the number of stones in the four first, or lowest, wall-courses average a quarter over 23 for each course, and hence total to 93 in all, the fifth and topmost course has but 7 stones. This is a conspicuous architectural detail; for to have only 7 stones distributed over four long walls means that the stones must be very large in comparison to the others in the four courses below.

The fact that there are 5 masonry-courses in the King's Chamber's walls, and that the topmost contains 7 stones, suggests the number 5·7, and also suggests that this number is related to a pre-eminently scientific system of capacity measures and weights, because of the approved agreement, by proportion, between the size of the earth, and the size of the King's Chamber. Additionally, the number of stones in the *lowest* course of the east and west, north and south, walls are 5, 5, 7, and 10, respectively. As we have said, other features which uphold this interpretation of the numerical meaning of the walls of the King's Chamber, give us confidence that it was intended by the great Architect.

According to this mean density of earth (that is, taking earth as a whole, and not any one material in it alone), 5·7 cubic Pyramid inches of pure, distilled water, at the temperature and barometric pressure spoken of, would equal exactly one cubic Pyramid inch of earth's mean density material.

Professor Smyth explained that 5 cubic Pyramid inches of earth's mean density material is equal to one Pyramid pound weight.

As there are 5·7 cubic inches of pure water to each one cubic inch of earth's mean density material, then one Pyramid pound weight (being equal to 5 cubic inches of earth's density) would be equal to 28·5 cubic inches of pure water (for 5 times 5·7 is 28·5). In other words, 28·5 cubic Pyramid inches of pure water weighs exactly one Pyramid pound.

The interior cubical capacity of the Coffer is 71,250 cubic Pyramid inches. If we divide this Coffer-capacity by 28·5, we shall get the exact weight of water that the Coffer will hold. 71,250 divided by 28·5 equals 2500. Thus, a Coffer-measure of pure water, *i.e.*, 71,250 cubic Pyramid inches of pure water, weighs 2500 Pyramid pounds; and 2500 Pyramid pounds equal one Pyramid ton.

The Coffer, therefore, can hold one Pyramid ton of pure water, if this water be at the temperature of one-fifth above freezing point, or 68° Fahr., and the barometric pressure at 30·000 Pyramid inches.

The Pyramid Pint-measure, Scientifically accurate, the origin of the Ancient Saxon Pint

A Pyramid pound-weight of water is equal to a Pyramid pint-measure. A pint, therefore, according to this Pyramid system of measure, is equal to 28·5 cubic Pyramid inches of pure water. This value for the Pyramid pint, Professor Smyth shows, is very close to the value of the ancient Anglo-Saxon pint and pound, just as the ancient inch-unit of linear measure is practically identical with the Pyramid inch.

It is because of this near approach of the early measures of the Anglo-Saxon people to the Pyramid measures, that

Professor Smyth and many other students are persuaded that English-speaking nations of the present day have inherited the true earth-commensurable weights and measures, first Divinely communicated to the Hebrew nation. We know that the God of Israel gave strict injunctions through his servant Moses that the chosen nation were to observe just weights and measures. These weights and measures, thus strictly enjoined upon Israel, must therefore have been of God's own choosing, and be, naturally, based upon the grand standard of earth itself, the creation of God.

And why not? If every environment of man, the air he breathes, the food he eats, the water he drinks, his very stature and weight, are all adjusted absolutely to his place of habitation, as they are, it is not too much to claim that the standards for his weights and measures were adjusted for him too, and by the same Creator who made him.

Speaking of the now-altered value of the imperial pint, and contrasting it with the ancient Anglo-Saxon pint, Professor Smyth writes: "But the chief unit of the imperial capacity system is a pint; and it is, moreover, the very important centre of connection between that system for large ordinary quantities, and the apothecaries' system of scientific and medical small quantities. The pint occupies, therefore, the position of all others on the scale which should be round and complete, testable also at a moment's notice by an equally round, well-known, and frequently employed standard of weight. So it was, too, in the days of the wisdom, wherever that was derived from, of our Anglo-Saxon forefathers. But under the reign of George IV, the pint, from having been measured by one pound's weight of water, was expanded into the odd quantity of 1 and $\frac{1}{4}$ pounds. And the change was attempted to be electroplated with brilliant proverbial mail, by giving out this jingling rhyme, to be learned by all good subjects: 'A pint of pure water weighs a pound and a quarter.'

"But we may well venture to doubt whether every peasant does not rather still ruminate in his family circle and about the old hearthstone, over the far more ancient and pithier rhyme: 'A pint's a pound, all the world round.' An expression, too, in which there may be vastly more than

immediately meets the eye; seeing that the Pyramid system appears to restore that principle. And, what with the United States of North America (true, except in the persons of a few ultra professors, to their ancient hereditary covenant), and all the existing British colonies, these form, as prophesied of old, the measuring line of Israel round the whole world" (*Our Inheritance in the Great Pyramid*, 5th Ed., pages 189, 190).

The Pyramid's System of Weights and Measures better than the French Metric System

That the ancient, God-given, system of weights and measures should be claimed to be based directly upon the weight and size of the earth, is not by any means to claim something that is unscientific. On the contrary, identification with sacred things must constitute that which is truly scientific; for the literal meaning of the word "science" is "truth."

It was in their endeavour to be ultra scientific that the savants of the French Revolution, overthrowing the long-established system of weights and measures, seeking at the same time to overthrow the sacred authority of the Bible, instituted their supposedly earth-commensurable metric system. The French savants recognised that, to be "scientific" in the highest degree necessitated their basing their system of measures upon the size of the earth; but they unfortunately neither adopted the correct method of doing this, nor did they rightly estimate the dimensions of the earth.

It is because this is so well understood, that Sir John Herschel and Professor C. Piazzi Smyth, and very many competent authorities have, and do, oppose the adoption into Britain and the United States of America, and all their colonies and possessions, of the French metric system. It is not because these authorities object to the *decimal* system, which has much to commend it, but to the faulty methods, and erroneous measures, of the *French metric* system. As the basic number of the Great Pyramid is 10, the whole system of measures in, and connected with, the Great Pyramid, is essentially a *decimal* system.

Writing with reference to the steady rejection of the French

metric system by the authorities in America, in spite of the efforts of some to make this system compulsory on the nation, Professor Smyth says: "The same almost unexplainable activities of a particular class of revolutionary agitators have of late been troubling the people of the United States, as well as those in England; and trying to induce them, in an unguarded moment, to throw away their, as well as our, birthright of ages, in their hereditary and traditional weights and measures; and to adopt the newly-invented measures of France instead. But now, at last, the people there are getting their eyes open to the real nature of the change which it was proposed they should make; and how do they express themselves upon it? Following a pamphlet recently published in Cleveland, Ohio, by Mr. Charles Latimer, Chief Engineer of the railway there:

"'If we look abroad we can see no evidence of decay in our civilization, or prosperity, or diminution of our business, because we have not adopted these French measures. Certainly our Centennial exhibited a most wonderful spectacle; and did we notice that the French were in advance of us? Is their flag seen in every port on the face of the globe, because of the superiority of their measures? Is not the Anglo-Saxon world (the United States and Great Britain) in advance today? What superiority or advantage can the French point to on account of their system?'

"Then seizing happily the *religious* thread of the matter, Mr. Latimer exclaims, to the Boston Society of Engineers he was then addressing, and who had very nearly been inveigled a few days before into petitioning Congress to make the adoption of French measures compulsory over the whole United States,

You may rely upon it that these Pilgrim ancestors of yours are not resting easily in their graves on account of your action. They were sticklers for Magna Charta; they loved just weights and measures.'

"'Think for a moment. This French system came out of the "Bottomless Pit" [See comment on Revelation 11: 7 in Vol. VII of *Studies in the Scriptures*]. At that time, and in the place whence this system sprang, it was hell on earth. The people defied the God who made them; they worshipped the Goddess of Reason. . . . Can you, the children of the Pilgrim

Fathers, consent to worship at such a shrine. . . . It is true indeed that our weights and measures in the present day require some remodelling; but how shall it be done? Not by uprooting all our traditions, cutting ourselves loose from the past. No, we must come back to the perfection of olden sacred history, and of that religion which proves that our race is not the result of a spontaneous natural development, but that man came from his Maker a living soul.'

"'But where shall we find such perfection? I answer, in the Great Pyramid of Gizeh. For within that grand primeval pillar of stone have been found the standards of weights and measures, so earth and heaven commensurable, and so assimilated to our own ancient and hereditary system, that it does seem as if the Almighty Himself had given to us an inheritance, to be kept precisely for the emergency of the present day and hour.'

"'And I beg that our American fellow-citizens will most carefully examine into this subject, deeply worthy of their attention. . . . Shall we indeed find our units, as well as standards, of weights and measures there? I can confidently answer that they are there. The inch is there; the yard is there; our Sabbath is there; Christ is there; our past, our present, yea, perhaps our future. But let no man judge for you in this matter. The subject is too deeply important, indeed too vital to our nationality. Let every citizen study for himself.'" (See *Our Inheritance in the Great Pyramid*, 5th Ed., pages 175–177.)

The Pyramid Capacity Measure Contrasted with the Present Imperial British One

In contrasting the scientific system of measures presented by the Great Pyramid, with the present unsatisfactory system of imperial measures, Professor C. Piazzi Smyth shows that, in the imperial system there is no provision made for any smaller quantity than the pint-measure. The gill-measure, he points out, is merely an addition to that system, tolerated to suit special wants. Apothecaries and druggists, who must deal with very small measures, have had to manufacture a

capacity measure for themselves; and this they did by beginning with the pint-measure and working down by stages, the wine-glass, teaspoon, etc., to the smallest quantity, the drop, which they name the "minim." Speaking of this, Professor Smyth says: "This apothecaries' fluid measure was established only in 1836; and we may assume, with Lord Brougham's *Penny Cyclopædia*, that its fluid ounce, when it is an ounce, is an ounce avoirdupois; although it is stated elsewhere that medical men are never to use anything but troy weight.

"This incongruity renders the break between imperial, *i.e.*, the present British capacity, and apothecaries' capacity, measures peculiarly trying; followed as it is by a break of connection between apothecaries' capacity, and apothecaries' weight, measure also.

"In the Pyramid arrangement, however, there is no halting half-way. When it is a question of capacity, the scheme goes right through from the biggest bulks ever dealt with in commerce, and through all the measures required by the people further in dealing with coal, corn, wool, potatoes, beer, wine, peas, meal, oil, medicines, photographicals, and chemicals, down to the smallest quantity ever judged of by capacity measures of specified name."

In putting the system of measures presented by the scientific Great Pyramid into practice, Professor Smyth begins with the Coffer-capacity as the largest quantity, "a vessel measuring, as its architect originally intended that it should, 71,250 cubic Pyramid inches," and subdividing that exact earth-commensurable quantity into approved lesser quantities, down to the smallest of all, the "Drop." The numbers by which the Coffer-capacity is subdivided to give the various smaller quantities are derived from the Pyramid itself, beginning by a division by 4, the square number, as represented primarily by the four sides of the Pyramid's square base. This division by 4 gives the useful "Quarter" measure, very near to the value of the ancient Saxon Quarter.

The next even division of the Coffer-capacity is by the Pyramid's basic number 10, which yields the "Sack" measure, also not far removed from the ancient measure of that name

in the English language; and approached also very closely by similar measures used by other nationalities, according to the list of measures given in Dr. Kelly's *Universal Cambist*, published in 1821.

The next subdivision of the full capacity of the standard Coffer is by the characteristic Pyramid number 25, the number of inches in the Pyramid cubit, the even 10-millionth part of earth's semi-axis of rotation. This appropriate division by 25 yields the "Bushel" measure, 2850 cubic Pyramid inches in capacity; which measure is likewise coincided with very closely by similar measures used in commerce throughout the world, as shown in Dr. Kelly's work for the guidance of those who deal in international notes or bills of exchange.

From this 25th part of the Coffer-capacity, further smaller divisions come naturally and symmetrically by the use of the Pyramid's decimal system. Thus, the 10th part of the Bushel is the "Gallon"; and the 10th part of the Gallon is the "Pint"; the 10th part of the Pint the "Wine-glass" or "Fluid Ounce." The "Teaspoon," or "Fluid Dram" is the 10th part of the Ounce; the "Drop," or "Minim" the 100th part of the Dram. There are, therefore, 25-million Drops, or Minims in the entire cubical capacity of the Coffer (But see further in Section XXIV). This drop is the cubical space occupied by a drop of water falling freely in air at the given Pyramid temperature and pressure.

TABLE OF PYRAMID MEASURES

DIVISION OF COFFER	CAPACITY IN PYRAMID INCHES	WEIGHT IN PYRAMID POUNDS	NAME OF MEASURE
1	71,250·	2500·	Coffer
4	17,615·	625·	Quarter
10	7,125·	250·	Sack
25	2,850·	100·	Bushel
250	285·	10·	Gallon
2500	28·5	1·	Pint
25,000	2·85	·1	Ounce
250,000	·285	·01	Dram
25,000,000	·00285	·0001	Drop

SECTION XVII

The Proportions of the Coffer

AFTER giving a list of measures of the Coffer that practically agree in yielding the same number of cubic Pyramid inches for the interior capacity, Professor C. Piazzi Smyth comments: "Here, then, we have a vessel whose cubic contents *are* not only something, on the whole, excessively near to 71,250 cubic Pyramid inches, but it was pretty evidently *intended*, by enabling us so nearly to bring out that number in several different ways."

"And we must now strive to ascertain, on methods both absolutely new to Egyptology, and which must have been totally unknown to all the Pharaonic serfs of old Egypt, what the Great Pyramid itself may have to add to this; viz.: its own preliminary setting forth of some very high science reason why this vessel before us, the Coffer in the King's Chamber, is not only a symbolical sarcophagus, but one adapted likewise to something further, and more·expressively connected, with *capacity* measure."

Professor Smyth then goes on to draw attention to the very numerous admeasurements of the Coffer by Professor Flinders Petrie, and shows that, in the main, they are confirmatory of the capacity-theory advocated by himself. Professor Smyth adds: "I am rather inclined, notwithstanding the mere number of his measures, to fall back on my own mensurations, which realise in the Coffer the same principle of limits which has been already accepted in the case of the linear dimensions of other portions of Great Pyramid work. For there is a graduated difference of dimensions in length and breadth between the top and bottom of the Coffer, such, that while a length at the top is absolutely too great, and one near the bottom as absolutely too small, yet there must be, at a certain height between them,

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where the length, breadth, and depth give the exact cubic contents required by theory, viz.: 71,250 Pyramid inches. There are plenty of granite sarcophagi, of the Pyramid-building age too, and smooth-sided as well, but none with, or in any way pointing to, the 71,250 cubical inches measure."

"I am strongly impressed there is an *intentional* high and low limit in the Coffer measures," writes Mr. Frederick Gass in the 1889 volume of the *Banner of Israel*. "Its *slight* inequalities of shape favour this, as there can be no doubt the workers could have finished it better had they wished to do so, as was done with the Coffer of the Second Pyramid, a building that does not, in the whole, show by any means such good workmanship as the Great Pyramid."

While it is acceded to by Pyramid students that there is intention in the limited range of measures for the Coffer, it must be understood that the "slight inequalities of shape," to quote Mr. Frederick Gass, are not at all externally visible to visitors who examine the Coffer personally; for to all appearances it is perfectly rectilinear in shape, and its exterior and interior sides and bottom quite smooth. Even the broken corner, clearly seen in photographs, and the chipped arris edges, do not materially detract from the vessel's general symmetry of form, and polished-like finish. It is by careful and minute measuring only, that the very slightly differing lengths and breadths at top and bottom are known to exist.

By taking advantage of these small differences in measures, both Mr. St. John Vincent Day, of Glasgow, Scotland, and Professor Hamilton L. Smith, of New York, U.S.A., as well as other well known students of the Great Pyramid, have shown that the Coffer's proportions contain many remarkable commensurabilities between it, and other important parts of the Pyramid, and also some natural data, such as the number of days in the year.

We shall here repeat some of the Coffer's proportionate features as presented by these calculators, with the reminder that they did not, in their calculations, adhere to any one set of exterior and interior dimensions. They took advantage, as we say, of the slight range of measures, always, of course, within the limits of the practical measures of Professors Smyth

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and Petrie. Thus, one feature will require a high limit of length, say, while another will require a low limit, etc.

The proportionate feature connected with the Coffer, that is generally given prominence, is its bulk, as follows:

The exterior cubic size, is equal to the interior contents (nearly).

The cubic bulk of the four sides, is double that of the bottom (nearly).

It is well to notice, however, that both of these proportions are stated as being approximate only, and not absolute. They are sufficiently close to be interesting, and are not without significance. Further on we shall present other proportions connected with the Coffer's bulk, based upon one set of dimensions only (*i.e.*, the standard set given on page 102).

The chief line of the whole King's Chamber is geometrically its cubic diagonal, now well known to be 515·1646+ Pyramid inches (See page 30). Using this as a basis, we get the following proportions:

515·1646 ×10 equals the side of a square, the area of which square is exactly the same as the area of the triangle formed by the Pyramid's right vertical section, Q.E.D.

515·1646 is equal to twice the exterior horizontal circuit of the Coffer, nearly.

515·1646, divided by 10, equals (1) the mean length of all the Coffer's arris edges. (2) Diameter of a circle, whose area is equal to the Coffer's inside floor area. (3) The side-length of a square, whose area equals the mean area of the four exterior sides of the Coffer. (4) The diameter of a sphere, whose cubical bulk (71,587·4+) comes near to that of the Coffer's interior contents, and does, in a sense, exist there [Note: When we deal with the more exact proportionate features of the Coffer, as indicated by the standard dimensions given on page 102, we shall further refer to this Sphere capacity]. (5) The radius of a circle in which the natural tangent of *Alpha Draconis* (the Polar star at the date of the Pyramid's erection, pointed to by the Pyramid's Descending Passage) was at its higher culmination, viz.: 33° 41′ 20″ =34·344 Pyramid inches =Coffer's interior depth [This depth is an extreme one].

The exterior height is simply equal to a 10th part of the length of the King's Chamber which contains the Coffer.

While the exterior breadth of the Coffer is given thus: In a circle whose circumference is as many inches as there are days in the solar tropical year, the natural tangent of 33° 41′ 20″ mentioned above equals 38·753 Pyramid inches, the exterior breadth of the Coffer. This is also equal to the Ante-Chamber length divided by 3.

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The square of the interior depth of the Coffer, bears the same proportion to the square of the exterior height, as the area of one exterior side bears to the combined areas of an exterior side and end.

We have noticed that one half of the width of the King's Chamber is an important measure [See page 29], as it is the basis of all the dimensions of the chamber. We find that this measure is also related to the Coffer's dimensions: (1) The square of this measure equals, to a close approximation, the sum of the areas of the two exterior sides and two exterior ends of the Coffer. (2) The square of this measure, divided by the double of the ratio π, equals the square of the exterior height of the Coffer, approximately. (3) This measure divided by 3 equals the interior depth of the Coffer, using the extreme depth.

Continuing with his list of the proportionate measures of the Coffer, Professor Smyth shows that Mr. St. John Vincent Day drew attention to the existence of the ratio π as a prominent factor in the calculations of these proportions. Professor Smyth writes: "Profiting by small inequalities between the sides of the Coffer, as shown to exist by my measures of them, it can be proved that the height of the Coffer is to the length of two adjacent sides (viz.: a side and an end), as 1 to π. And now to that good beginning, Mr. Simpson adds:"

The Coffer's interior floor has a boundary whose length is equal to the circumference of a circle, the area of which circle is equal to the area of the exterior bottom.

The square of the exterior height of the Coffer, equals the sum of the side and end areas divided by the ratio π.

The area of a circle, the diameter of which is equal to the exterior breadth of the Coffer, is equal to the area of an exterior side divided by the ratio π.

The area of a square, the side-length of which is equal to the interior depth of the Coffer, is also equal to the area of an exterior side divided by the ratio π.

If two vertical, right, sections be made through the middle of the Coffer, then such are the proportions of lengths, breadths, and thicknesses, that (1) the area of the sections of the walls, is to the area of the whole section included, as 1 to the ratio π. And (2) the area of sectional walls, equals the square of the Coffer's exterior height.

The Coffer's length and breadth added, equals the height multiplied by the ratio π.

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SECTION XVIII

PROPORTIONATE FEATURES CONNECTED WITH THE COFFER BASED UPON THE SET OF STANDARD MEASURES PRESENTED ON PAGE 102

THE intrinsic value of the proportionate features connected with the Coffer's dimensions is this: They prove conclusively that the granite chest in the King's Chamber is an integral part of the whole design of the Great Pyramid, and was not merely deposited in the building as a haphazard piece of furniture. And having proved by these many proportionate correspondencies between the dimensions of the Coffer on the one hand, and the whole Great Pyramid on the other, that the Architect who designed the monument also designed the Coffer, we can place the greatest confidence in the high purposes of this wonderful granite box, namely, that it is indeed the world's standard for capacity measure, and for weight. And in addition to these purely scientific purposes, it still further establishes the spiritual, religious teaching of Holy Scriptures, as seen to be symbolised elsewhere throughout the Pyramid.

In every one of the following features we base the calculations on the one set of measures for the Coffer's exterior and interior dimensions, which we believe may be called the standard measures, as they not only express a fair mean of the limits of practical measures secured by Professors Smyth and Petrie, but because they recognise the Standard Capacity theory of the Coffer, which demands that the cubical contents of the interior be precisely **71,250** cubic Pyramid inches, as hitherto explained. Students of the Pyramid theory are agreed that there is every reason for accepting this figure for the Coffer's interior contents as being the intention of the inspired architect.

The Area of the Socket-level Base of the Great Pyramid indicated by the Coffer

Taking, therefore, the standard set of measures for the Coffer given on page 102, we find that the interior length and depth of the vessel have been so proportioned, that the area of one interior side corresponds with the area of the Pyramid's Socket-level square base by the following method: Multiply the interior side area by 50, remembering that this number 50 is the King's Chamber's special number, as is drawn attention to by most writers on the Pyramid, and we get as many square Pyramid inches as there are square Pyramid cubits in the Socket-level base of the building. This feature, of course, shows that the interior length and depth of the Coffer are proportioned according to the duration in days of the solar tropical year; because 50 times the interior side area yields as many inches as there are days in the *square* of the solar year.

Or another way of expressing this feature is to compare the interior side area of the oblong Coffer, with the area of a square: The side-length of the square is in inches equal to the days in the solar year; and the area of this square, when divided by 50, is equal to the area of the Coffer's interior side. (Note: When calculating with the standard set of Coffer measures given on page 102, allowance must be made in the results of every such calculation for the little extra implied by the plus sign after the decimal fractions.)

The Grand Gallery Floor-Length

The interior depth of the Coffer is proportioned to the floor-length of the Grand Gallery: When we take 4 times this interior depth as representing the side-length of a square, we find that a 10th part of the area of the square is as many square inches, as there are linear inches in the Grand Gallery's total floor-length, to within less than a 100th part of an inch of the Gallery's standard length. (This proportion of the Coffer yields 1881·6076+, while the standard length of the Gallery is 1881·5985+, Pyramid inches. The correspondency is therefore practically exact.)

The two features mentioned above, even if they were only approximately indicated in the Coffer's dimensions, are sufficiently wonderful to establish the claim that the Coffer was designed, as to its interior size, to correspond with the dimensions of the building which holds it. For the interior length and depth might quite easily have been any odd measures, not in the least agreeing by any method of proportions with the entire building; just as, for instance, the dimensions of the Second Pyramid's coffer, or sarcophagus, does not bear proportionate relationship to that building's base, or passage, lengths.

But we are only beginning to show the convincing corroborations of the opinion held by Mr. John Taylor; Professor C. Piazzi Smyth, and others, that the Great Pyramid's "Coffer" is the most important stone chest in the world.

The First Ascending Passage Floor-Length

Not only is the interior depth of the Coffer proportioned to the length of the Grand Gallery, but to the length of the First Ascending Passage also. And yet, so far as length of floors is concerned, these two passages are totally dissimilar; although, as we have seen, they are harmoniously connected through the medium of the day-value of the synodic month (See page 40).

The interior depth of the Coffer, then, when multiplied by the King's Chamber's special number, 50, gives a total of inches which, when reduced by an even 10th part, agrees with the floor-length of the First Ascending Passage, to within about a $\frac{1}{4}$ of an inch of the standard length for that passage. (The Coffer's interior depth multiplied by 50 equals 1714·6462+ inches. Reduce this by a 10th part; the remaining 9/10ths are 1543·1816+. The standard length of the First Ascending Passage is 1543·4642+ Pyramid inches.)

This proportion of 9/10ths of any given number, is frequently recognised in the Pyramid's proportionate features. And there is, in the Pyramid, at least one concrete example of the 10th and 9/10ths proportion; and this example is in the King's Chamber itself, and must, consciously or unconsciously, be

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acknowledged by all who enter that granite apartment. For the total length of the north wall of the King's Chamber is so divided: On the extreme east end of this north wall is the low entrance-doorway, the width from east to west of which is a 10th part of the whole wall's length. Thus, the length
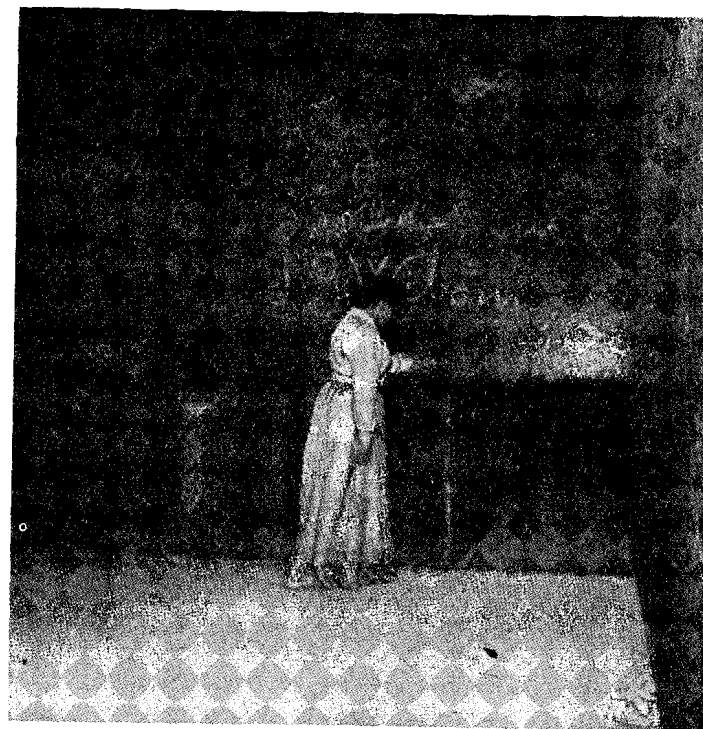
The King's Chamber of the Great Pyramid of Gizeh; showing the doorway of the low passage which leads from the Ante-chamber; also, on the left, the opening of the Air-channel in the North wall

of the north wall, along the floor, is divided into a 10th, and 9/10ths; seeming to accord to us "King's-Chamber" authority for using this particular proportion in other dimensions of the Pyramid. We find, indeed, that we require to use it very often; and the next feature connected with the Coffer is another instance of its use.

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Another Grand Gallery length indication

This indication in the Coffer's dimensions of the floor-length of the Grand Gallery is quite distinct from the one already detailed. When we take 10 times the interior-floor circuit, or perimeter, of the Coffer, and reduce the total of inches by a 10th part, the remaining 9/10ths equal to the floor-length of the Grand Gallery, to within less than half an inch of the standard length of the Gallery. (Nine-tenths of the circuit of the Coffer's inside floor—that is, the sum of twice the interior length, and twice the interior width, reduced by a 10th part—when multiplied by 10, is equal to $1881 \cdot 1154+$ inches; while the Gallery's standard length, as given above, is not half an inch longer than this, *i.e.*, $1881 \cdot 5985+$.)

We repeat again, however, that all of the Pyramid's passage-ways have more than one floor-length, within limits, depending on whether the measurement be taken along the east, or the west, sides; but for easier comparison we think it better to, as a rule, cite the standard lengths.

Still another Grand Gallery length indication

Another method by which the dimensions of the Coffer agree with the length of the Grand Gallery, is by a calculation employing the prominent ratio π; and in this indication also the perfect number 7 is recognised. Thus, take the sum of the areas of the two interior ends of the Coffer, plus the interior-floor area, and the area of a supposed ceiling corresponding to the floor-area (or, double the sum of the floor and one end-area). Regard this sum as the length of the diameter of a circle; and multiply it by the ratio π to obtain the circumference of this circle. To this circumference add the perfect number 7, and we shall find that a 10th part of the sum is equal to the floor-length of the Grand Gallery, to within less than a 25th part of an inch of the standard length. This feature is also distinct from the other indications. (The sum of the four areas formed by the two interior end-walls, and the floor and assumed corresponding ceiling, is $5986 \cdot 9628+$ square Pyramid inches. Multiply this figure by the ratio π,

and to the result add 7; and we shall find that an even 10th part of the sum is $1881 \cdot 5598+$, or not quite a 25th part of an inch difference from the standard length of the Grand Gallery, which is $1881 \cdot 5985+$ Pyramid inches.)

The Exterior Dimensions of the Coffer agree with the King's Chamber's Dimensions

The exterior height of the Coffer is already accepted to be equal to exactly a 10th part of the length of the King's Chamber. There are other connections between the Coffer's dimensions and the dimensions of the chamber.

The "sacred" number of the King's Chamber is known to be the number 5, as primarily represented by the 5 equal wall-courses of that chamber. This number may also be looked upon as representative of the Pyramid as a whole; for the perfect square-based Pyramid has five exterior plane surfaces, counting the base as one, and it has five corner-stones, the one at the apex being the "chief corner-stone."

There is close agreement between the exterior dimensions of the Coffer, and the dimensions of the chamber which contains it, through the medium of the number 5. For 5 times the sum of the exterior length, breadth, and height of the Coffer, is equal to the sum of the length, width and height of the King's Chamber. The agreement is true to within less than a 6th part of an inch. (The sum of the Coffer's three exterior dimensions, when multiplied by 5, is equal to $848 \cdot 4237+$, and the sum of the three principal dimensions of the King's Chamber is $848 \cdot 5861+$ Pyramid inches. See the lists of dimensions on pages 30 and 102.)

The Coffer's indication of the Precessional Cycle

The Coffer's exterior measures agree also with the Pyramid's exterior measures, at that most important level touched by the upper floor-end of the Grand Gallery, namely, the 1914 A.D. level. And the agreement is a very direct one, although, like nearly all these features of the Pyramid, a proportionate one.

The proportionate feature is simply this: An even 100 times the exterior horizontal circuit of the Coffer, is equal to the circuit of the Pyramid at the 1914 A.D. level. There is a slight difference between the two totals of inches, but it amounts to only about a 30th part of an inch, and may therefore be considered as negligible.

As the perimeter of the Pyramid at the 1914 A.D. level agrees in inches with the number of years in the precessional cycle, it follows that an even 100 times the exterior horizontal perimeter of the Coffer also agrees with the year-value of the precession. But the Coffer contains, through its proportionate dimensions, a large number of indications of the precessional cycle, although the one just explained is the most direct. (The exterior horizontal perimeter of the Coffer, when multiplied by 100, is 25,694·3171+ Pyramid inches. The perimeter of the Pyramid at the 1914 A.D. level is 25,694·3529+ Pyramid inches. The number of years in the precessional cycle is, as we have said, between 25,694 and 25,695.)

In all of these proportionate features we have used the one set of standard measures for the Coffer, as presented on page 102. If we take advantage of the slight limits of measures which the Coffer was specially made to contain, all of the above-mentioned indications, as well as others we shall speak of, can be shown to be exact. But the advantage of consistently using the one set of dimensions as a *standard* set is that, whatever disagreement there is between any proportion of the Coffer, and the particular feature that that proportion indicates, the student can see at a glance on which side this disagreement lies; whether a slightly smaller dimension for the Coffer would indicate the feature exactly, or one slightly larger.

The disagreements, however, are in most of these features so little, as to be practically negligible. Nevertheless, they show us why the Coffer was, of set purpose, not made perfectly smooth and rectilinear, as it could very easily have been made by such perfect masons as constructed the Pyramid. For in actual working-mathematics and geometry, no one set of dimensions for the Coffer could show so many different proportionate features · with absolute exactness in every case.

We have already referred to one of the methods by which

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the Pyramid indicates some of its proportionate features, namely, the method of deducting, or adding, a specified number peculiar of the Great Pyramid, such as the numbers 5, 7, 10, etc., or, sometimes, a Pyramid cubit or Pyramid inch; as well as also multiplying or dividing by these numbers, in order to bring out the agreement sought. The frequency with which factors like these enter into the calculations, and the accuracy in the results obtained, are sufficient to establish them as intended. In no other way, indeed, could so many different features be indicated.

The Coffer's Exterior Dimensions are proportionate to its Interior Capacity

The following is a good example of the necessity of recognising the Pyramid's basic number 10, in conjunction with the Pyramid cubit, and the single Pyramid inch. By the recognition of these definite Pyramid numbers we can see how the exterior dimensions of the Coffer are harmonious with the interior capacity.

Before the interior hollow was drilled and chiselled out, the rectilinear block of granite forming the Coffer had six exterior sides, that is, the exterior surfaces of the four walls, and the top and bottom. The areas of these six surfaces were so proportioned, that the cubical capacity of the interior hollow afterwards made, agrees with them by the following method:

To the sum of the six exterior areas add 1 Pyramid inch, and 1 Pyramid cubit of 25 inches, and 10 Pyramid cubits. The final sum is equal to the cubical capacity of the "Quarter Measure," and, therefore, 4 times this final sum is equal to the full interior capacity of the Coffer. (The sum of the six exterior areas is 17,536·4971+ square Pyramid inches. Add to this 1 Pyramid inch, 1 Pyramid cubit of 25 inches, and 10 Pyramid cubits of 25 inches each, and we obtain the final sum of 17,812·4971+ Pyramid inches. The cubical capacity of the quarter part of the Coffer's interior hollow, that is, the "Quarter Measure," is 17,812·5 Pyramid inches. The difference is of little account, being little more than a 350th part of an inch.)

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It will be noticed how necessary it is to recognise the existence of the Pyramid inch, and the Pyramid cubit, both earth-commensurable, not only in the above feature, but in all the features connected with the Great Pyramid. The Egyptian cubit, which is, in our present knowledge of it, somewhat mythical, because no one has yet found an absolute length for the Egyptian cubit, is not recognised by the scientific proportions of the Great Pyramid.

The Socket-level Base Side Length

There is still another proportionate feature connected with the Coffer's dimensions where the single Pyramid inch is recognised. In this case the base-side length of the Great Pyramid, at the Socket-level, is indicated by areas in the Coffer, each area being first reduced by one Pyramid inch. Both exterior and interior areas of the Coffer enter into this calculation; and because they are the principal areas the entire dimensional-size, and shape, of the Coffer is seen to be exactly designed to agree with the Pyramid's principal length, namely, the Socket-level base length. This base length is shown by the Coffer's measures by the following method:

From each of the four areas of the Coffer here named, one Pyramid inch is to be deducted, viz.: (1) The area of the interior floor. (2) The area of the exterior bottom. (3) The area of the interior side. And (4) the area of the interior end. After deducting one Pyramid inch from each of these four areas, we add the remainders. The sum of the remainders is as many square inches as there are linear inches in the Pyramid's Socket-level base side, to within less than a 100th part of an inch. (The above-mentioned sum of the remainders is 9131·0461+ Pyramid inches; and the Socket base length of the Pyramid is 9131·0549+.)

The Socket-to-apex Vertical Height

By still another proportion founded upon the Coffer's size, we find a very close approximation of the Pyramid's Socket-to-apex vertical height. This calculation is connected with

the Coffer's exterior breadth; and the Pyramid's basic number 10, and sacred number 5, enter as factors.

Add together: 100 times the Coffer's exterior breadth; and 50 times this breadth; and the basic number 10. The resultant sum is equal to the Socket-to-apex vertical height of the Pyramid, to within less than a 7th part of an inch. (The sum is 5813·1415+, while the vertical height is 5813·0101+ Pyramid inches.)

Thus we perceive that by proportions, all based upon the standard set of measures for the Coffer, this unique stone box in the King's Chamber not only yields the base length of the whole Pyramid, but the vertical height as well, in addition to the length of the perimeter at the 1914 A.D. level.

The Descending Passage Floor-Length

We have noted how the lengths of the Grand Gallery and the First Ascending Passage are both contained in the Coffer's measures. So also is the length of the Descending Passage. The floor-length of the lower reach of the Descending Passage, between the "Point of Intersection" and the junction of the Small Horizontal Passage leading to the Pit, is indicated by a proportion connected with the Coffer's exterior horizontal area, i.e., the bottom area.

Divide the exterior bottom area of the Coffer into 8 equal parts. Deduct from the sum of 7 of these parts the characteristic Pyramid number of 5 inches. The result is equal to the floor-length of the Descending Passage detailed above, to within less than a 6th part of an inch of the standard length. (The sum of 7 of the 8 equal parts of the complete area of the Coffer's exterior horizontal area, minus 5 inches, equals 3034·3365+ square inches; while the Descending Passage standard length for the lower reach is 3034·5010+.)

The Complete Straight-lined Length of the Descending Passage

The longest possible straight-lined length of the Descending Passage, even, is indicated with wonderful exactness by the

Coffer's own peculiar system of proportionate dimensions. And in this feature the perfect number 7 is used, and the Pyramid cubit of 25 inches.

There are so many features in the Pyramid's Coffer, that every symmetrical combination of its measures show how well balanced its dimensions are, not only between themselves, but with all important sections of the Pyramid, interior and exterior. In this proportion, which shows the complete length of the Descending Passage, the calculations evidence that the area of the interior side of the Coffer is symmetrically balanced with the interior cubical contents of 71,250 cubic inches, through the medium of the Pyramid cubit, and the perfect number 7, as follows:

From the Coffer's interior capacity of 71,250 inches deduct the perfect number 7. To 25 times the Coffer's interior side area add 7. (The multiplication of this area by 25 represents the Pyramid cubit.) The difference between the two resultant quantities is equal to the number of linear inches in the Descending Passage's longest possible straight-lined length, *i.e.*, from the north beginning of the ancient Entrance, down to the end of the produced line of the floor (which we call No. 4 terminal in the *"Time Features"* booklet). The agreement is correct to within less than a 30th part of an inch of the standards. (The two quantities, the difference between which yields the longest length for the Descending Passage, are: (1) The Coffer's interior capacity with 7 deducted equals 71,243· inches. (2) 25 times the interior side area with 7 added equals 66,707·9318+ inches. The difference between them is 4535·0681+, while the passage-length referred to is 4535·0306+ Pyramid inches.)

The Horizontal Passage Floor-Length

The dimensions of the wonderful Coffer do not omit to indicate the length of the Horizontal Passage to the Queen's Chamber, although the length of this passage is distinct from that of the other passages, while being at the same time harmonious with them as we have seen. This proportion is based upon the interior depth and width of the Coffer, as represented by the

length of the diagonal of the interior end. As in other features, the distinctive numbers 5, and 7, are required in the calculation, which is as follows:

By the usual rules of mathematics, we can compute from the known interior depth and width the interior end-diagonal of the Coffer. This diagonal is 43·464503+ Pyramid inches, using the standard set of measures given on page 102. The correspondency between the end-diagonal and the Horizontal Passage length is through the medium of 5, and 7. For 5 times this interior end-diagonal, multiplied by 7, equal 1521·2576+ Pyramid inches, which is, to within about a 20th part of an inch, the same as the standard length of the Horizontal Passage, 1521·3114+.

The Coffer's proportionate indications of the various dimensions of the Pyramid, dealt with so far, are only a small section of the many it is known to contain. We shall draw attention to a few others further on. In the meantime we desire to speak of the convincing way by which the interior cubical capacity of this granite chest in the King's Chamber of the Great Pyramid shows the actual cubical bulk of the earth, as well as the weight of the earth.

SECTION XIX

THE COFFER'S STANDARD FOR WEIGHT

AS the Coffer in the Great Pyramid presents the world with the standard for capacity measure, it follows that it also presents the standard for Weight Measure. For the cubical capacity of the Coffer being known, according to the many lines of proof which establish this capacity as 71,250 cubic Pyramid inches, we need, then, merely apply the value of earth's mean density to this capacity and we shall ascertain the best possible standard for Weight for the daily use of man.

Earth's Mean Density

We have noted that the King's Chamber, which holds the standard capacity measure, the granite Coffer, shows, architecturally, by the numbering and arrangement of its masonry blocks, the actual figures that express the mean density of the whole earth, namely, 5·7, representing the over-all weight of the earth as that precise number of times heavier than pure water of the same cubical mass.

This branch of science has not been accorded the minute attention that has been devoted to most others by the nations of the world, and hence we are unable to compare the scientific indication of the Great Pyramid regarding earth's mean density, with more than a few reliable results of practical experimental testings by scientific workers. Sir Isaac Newton judged that the mean density of earth must be between 5 and 6 times heavier than water; but he did not conduct definite research in this matter.

In the year 1855 Captain Ross Clarke, experimenting on behalf of the British Ordnance Survey on the hill of Arthur's

Seat, near Edinburgh, Scotland, brought out the number 5·316 for the earth's mean density. But the number 6·565 was the result of a deep mine experiment conducted by Sir George B. Airy, the British Astronomer Royal of Greenwich. One of these results is less than, and the other more than, the ideal figure required by the theory of the Great Pyramid.

But later on another experiment, with more approved scientific precautions against disturbances, was carried out on behalf of the Royal Astronomical Society of Great Britain by Francis Baily, with the result that a much nearer approach to the theoretical figure was obtained. This figure was published in the *Memoirs* (Vol. XIV) of the Royal Astronomical Society of London, as 5·675, plus or minus ·0038.

Later still, in 1878, the Royal Society of London published the finding of Professor J. H. Poynting, who employed what was considered to be even better and safer methods of experimenting than had before been used in the endeavour to ascertain the true mean density of our earth. This later result is yet closer to the Pyramid's indication, being 5·69. This more approved scientific finding is so close to the Pyramid's ideal 5·7, that Professor C. Piazzi Smyth exclaims: "Who shall attempt to say that 5·7 is not, as these numbers go, the true quantity created by God, and Divinely donated to the earth-ball inhabited by man." We can say that, certainly, all the proportionate features connected with the weight and bulk of the earth, when calculated in terms of the standards for weight and capacity presented to us by the Great Pyramid and its Coffer, go to firmly establish the Pyramid's value of 5·7 for the mean density of the planet Earth; the only planet revolving round our sun which is at present, as we believe, inhabited by God's highest and most wonderful earthly creation, Man.

The Pyramid Ton and its Subdivisions
Indicated by the Coffer's Capacity

Professor C. Piazzi Smyth, after referring to the value of earth's mean density, 5·7, and pointing out that this value is the mean of all the varied materials that go to make up our earth-globe, some of which are much heavier than 5·7, and

others much lighter, goes on to say: "Thus the Coffer's contents of pure water are 71,250 cubical Pyramid inches, which at the temperature of 68° Fahr., and barometric pressure of 30·000 Pyramid inches, would weigh 18,030,100 of our avoirdupois grains" [according to the estimate of the British government].

"But if earth's mean density material is 5·7 times heavier than water, a mass of that said heavy material, but 5·7 times smaller than 71,250 cubical inches, viz.: measuring 12,500 cubical inches only, will also weigh, at the same temperature and pressure, the same 18,030,100 British avoirdupois grains. [For 71,250 divided by 5·7 is equal to 12,500].

"That beginning made, we have next to inquire, what are, may, or should be, the subdivisions of the whole block of 12,500 cubical Pyramid inches of the earth's mean density, on the Pyramid weight system of metrology?...The most characteristic division of all, viz.: that of 50 × 50, which should give us a popular weight-unit to compare with the pint in capacity,...does give us something which is excessively close, in absolute weight, to the old Saxon pound."

Professor Smyth then goes on to show that, this Pyramid pound-weight, which is symmetrically based upon the capacity of the Coffer and on the mean density of the earth, and which is significantly close to the weight of the old Saxon pound, "is equal to the weight of five [5] cubical Pyramid inches of the earth's mean density."

To recapitulate: The mean density of the whole mass of the earth is 5·7 times heavier than an equal mass of pure water, when this water is at the temperature of a 5th between the freezing and boiling points of water (1/5th above freezing, 4/5ths below boiling), or 68° Fahr., and the barometric air pressure is at 30·000 Pyramid inches.

The interior hollow of the Coffer in the King's Chamber of the Great Pyramid can hold 71,250 cubic Pyramid inches of such pure water.

Therefore, a solid block of material, having the same density as the mean density of the earth, would require to be 5·7 times smaller in cubical capacity than the Coffer's capacity, in order that the weight of this block, and the weight of the water in the Coffer, should be equal.

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The entire weight of the pure water in the Coffer, and therefore the entire weight of the earth's density block, is the Great Pyramid's standard of weight-measure, and is appropriately called the "Pyramid Ton."

But as tons are useful in the handling of large quantities only, it is necessary for the convenient handling of small quantities in commerce, to have a small unit of weight, an easy and equal division of the large standard ton. The easiest, and most characteristic Pyramid division of this ton is a division by 50 × 50, that is, by 2500. When we divide the standard ton block of earth's mean density material by 2500, we get the equally characteristic Pyramid number of 5 cubic Pyramid inches. The weight of these 5 cubic inches is one Pyramid Pound.

There are therefore 2500 Pyramid pounds in one Pyramid ton. And this Pyramid pound-weight is very nearly the same weight as the old Saxon pound, so far as we are able to trace that ancient metrology backward through the centuries by the usual methods of literary and historical research. It was during the Georgian era in Britain that the modern "artificial" avoirdupois grain began to be taught in schools, the early more genuine Saxon grain being gradually set aside.

According to Professor Smyth's deductions there are 25,000,000 Pyramid grains in the Pyramid ton. This value of the ton is very closely approached by the number of grains that the old Saxon metrology would have yielded, namely, 24,040,100. And just as the Pyramid linear inch is very near in size to the present-day British statute inch, but nearer still to the old Saxon inch, and the true original length of the inch is this earth-commensurable Pyramid inch, so, Professor Smyth and other competent authorities contend, the value of the grain of ancient Saxon metrology, while known to be nearly identical with the ideal Pyramid grain-weight, was originally derived from this Pyramid grain. It is probable, also, that the true value in weight of the Pyramid grain is even closer to that of the ancient Saxon grain than Professor Smyth was cognisant of, as pointed out by us in Section XXIV, which see.

Therefore, as we have good grounds for believing, the originals

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of the linear inch, and the grain-weight, are preserved in the Great Pyramid, in the granite King's Chamber, and in the granite Coffer within that chamber. They are not only preserved in a wonderful way by the actual measures to be found there in the Pyramid, but are immovably established for all time by the very numerous mathematical and geometrical proportions.

For whatever loss the actual measurements of the Great Pyramid and its Coffer may have suffered through little inaccuracies of workmanship in the first instance, and through the subsequent dilapidations of natural decay, the injuries of vandalism, and shocks of earthquakes, the scientific proportions step in and make good. The scientific features of the Pyramid inform us as to what was the original intention and design of the great Architect, and by them we are enabled to restore to the whole fabric its ideal perfection. All of the theories connected with the Great Pyramid, and approved thus far, are quite matter-of-fact in their reasonableness. There is nothing of a speculative or fanciful nature about them, but are such as will appeal to the thoughtful student. There is a difference between theory and speculation. Few, if any, of the more abstruse *facts* of science would be known to us, had it not been for the previous intelligent application of theories by patient investigators.

In the future, not now far distant we believe, when the teaching of the Lord's stone Witness in Egypt is more widely known and appreciated, and probably still more accurately interpreted, the earth-commensurable standards of linear measure, capacity measure, and weight measure which it presents, will be adopted by the whole human race, that all men may understand one another, speaking the same metrological language.

As with the subdivisions of the Coffer's capacity measure into gallons, bushels, pints, etc., so with its weight, the subdivisions into hundredweights, pounds, ounces, etc., are symmetrical and according to Pyramid numbers and the decimal system of the building. The following is the list of names for these parts of the Coffer's weight standard, the Pyramid ton:

Division of the Pyramid Ton-weight	Pyramid Pounds in each Division	Cubic Inches of Earth's Mean Density	Cubic Inches of Distilled Water	Name
1	2,500·	12,500·	71,250·	Ton
4	625·	3,125·	17,815·	Quarter
10	250·	1,250·	7,125·	Wey
25	100·	500·	2,850·	Cwt.
250	10·	50·	285·	Stone
2,500	1·	5·	28·5	Pound
25,000	·1	·5	2·85	Ounce
250,000	·01	·05	·285	Dram
25,000,000	·0001	·0005	·00285	Grain

The Pyramid System of Specific Gravity

Every separate substance which contributes to the total mass of the earth has its own individual density, or weight. Thus, as we have seen, pure water at the proper temperature and barometric pressure has an individual weight which is 5·7 times lighter than the whole mass of the earth, taking bulk for bulk. On the other hand, a mass of molten lead of the same size as the earth would weigh almost exactly double the total weight of the earth. If of solid gold the contrast in weight would be about 3 and a 3rd for the gold, and 1 for the earth. The total weight of every substance in the earth is, therefore, the mean weight of every substance. This mean, or average, weight is the standard for reference. Each individual substance, taken by itself, has a weight which is proportionate to the mean weight. This proportion is known by the term "Specific Gravity." Thus, earth's mean density material is represented by 1, that is, by Unity. In terms of this unity, the specific gravity of, say, cork, is ·043; of wheat, when loose, ·132; of ice ·163; of pure water, ·175, etc. (The specific gravity number of pure water, by which the unity standard of earth's mean density has to be multiplied for comparison, is ·175+, because this number is the *reciprocal* of 5·7. So, we can either divide

by the number of times that pure water is lighter than the standard, *i.e.*, divide by 5·7, or else multiply this standard by the reciprocal of that number. It is often easier, or more convenient, to multiply than to divide.)

PYRAMID SYSTEM OF SPECIFIC GRAVITIES

Earth's Mean Density =1. Temperature =68° Fahr.
Barometric Pressure =30·000 Pyramid inches

Cork,	·043	Common stone		·442
White pine (American)	·072	Red granite, Peterhead		·464
Oats, loose	·088	Red granite, Gt. Pyramid		.479
Larch (Scotland)	·093	Jasper		·494
Lithium, metal	·100	Diamond		·618
Riga fir	·105	Zinc, compressed		1·26
Barley, loose,	·112	Tin, pure Cornish		1·28
Ether, sulphuric	·129	Iron, cast at Carron		1·28
Wheat, loose	·132	Copper, native		1·37
Sea-water	·180	Steel, hardened		1·37
Blood,	·180	Brass, common cast		1·37
White sugar	·282	Nickel		1·54
Ivory	·321	Mercury, brown cinnabar		1·79
Casing-stone, Gt. Pyramid	·367	Silver, virgin		1·84
Nummulitic limestone ,,	·412	Gold, not hammered		2·76
Glass, crown	·439	Platinum, hammered		3·57

The above are a few examples, prepared by Professor C. Piazzi Smyth, who rightly says that no efficient system of determining weights by linear measure could possibly go unaccompanied by a table of specific gravities. The number of items in the table is not dependent on the system, but on the richness and variety of this globe's natural products. Wherefore, Professor Smyth says in reverent tone: "What thankfulness should it not excite in the mind of man towards the Creator, for all these endless varieties of elementary matter, wherewith he has of old stocked the earthly abode of man; and thereby made a higher existence possible to him!"

SECTION XX

The Cubical Bulk, and Weight, of the Earth agree with the Dimensions of the Great Pyramid

JEHOVAH, when speaking in Job, refers to the earth under the figure of a pyramid-form of building (See verses 1 to 7 of the 38th chapter of Job, with the marginal reading). Because of His reference to "socket" foundations "made to sink," we know that the Great Pyramid in particular is the building which, by his own arrangement, serves as this figure for the earth.

While the actual mass of the Great Pyramid is indeed very small in comparison with the mass of the earth, and while their shapes are totally unlike each other, yet, by a remarkable and thoroughly characteristic method, the measures of the Great Pyramid agree proportionately with the measures of the earth. As we are able to stretch the measuring line upon the Great Pyramid, so, through this means, we are enabled to measure the earth, and even to "perceive the breadth of the earth" (See Job 38: 18).

Professor C. Piazzi Smyth shows how the actual weight in tons of the Great Pyramid, when multipled by 10 to the 15th power, gives the Pyramid-ton weight of the earth. This is similar in computation to the Great Pyramid's indication of the sun-distance; for in that case we multiply the actual vertical height of the monument by 10 to the 9th power.

It is all the more remarkable that this proportion of 10 to the 15th power for the weight of the earth, or even a total which closely approximates to this scale, should be embodied in the Pyramid's structure; for this weight-correspondency implies that the very stone with which the building was made was specially selected as to its specific gravity. Had the Pyramid been built of granite, as it might have been, or had

any large section of it been covered with granite like the Third Pyramid of Gizeh, this heavy stone with its greater specific gravity would have destroyed the "roundness" of the proportion between the Pyramid's total weight, and the earth's weight.

Calculating on the known solid bulk of the Great Pyramid, and of the known specific gravity of its stone-work, and the already determined value for earth's mean density, Professor Smyth computed the actual weight of the Great Pyramid, reckoning from the Socket-level base to the apex, to be, in a round figure, 5,273,000 Pyramid tons. This number of tons, multiplied by 10 to the 15th power, gives the weight of the earth in Pyramid tons, to at least a very close approximation.

The Earth Pyramid

But there is another method, to which we desire to draw attention, by which the Great Pyramid scientifically indicates the weight, and also the cubical bulk, of the earth of which it is the figure. This indication is not a direct one like that propounded by Professor C. Piazzi Smyth, where the actual material weight of the building is shown to be proportionate to the actual weight of the earth. We believe, however, that this other method of indication spoken of below yields, if anything, more accurate and more scientific results.

In this further weight and bulk indication, the actual size of the Great Pyramid in Egypt gives us the scale on which to base our calculations. Other related factors in the calculations are also furnished by the Pyramid, thus proving that the Pyramid is the basis for this feature.

The Great Pyramid is what is known, mathematically, as a "π" pyramid; for the particular angle at which the sloping flanks of the building rise from their base-line to the apex endows that edifice with the π ratio, as already explained. The Great Pyramid, therefore, Scripturally pointed to as we have noted, is the great material model of all pyramids that are, or can be, scientifically constructed on the scale of the π ratio. This is one of the necessary

factors supplied by the Great Pyramid towards the calculations.

Another necessary factor is the precise length of the geographical mile; and this is also contained in the accurate dimensions of the Great Pyramid. As mentioned before, the exact length of the Pyramid Geographical Mile is equal to twice the perimeter of the Great Pyramid at the level of the natural rock base of the building. This particular level, as will be agreed, is the most appropriate one with which to monumentalise the Pyramid mile - length; for it is the natural, solid, surface of earth, a specially-dressed and levelled rock-surface not far above sea-level; with a square indicated upon it, the actual side-length of which is marked by the dimensions of the great building reared upon it. Nothing could be more scientifically accurate; no measured length for a standard mile could be so well preserved as this. The side-length of this square, when multiplied by 8, a special number in the Great Pyramid's proportionate dimensions, is the precise length of the Pyramid geographical mile. This is just another method of expressing the Pyramid's indication of the mile-length; for twice the Rock-level square base perimeter, is the same as 8 times the side-length.

Still another factor in this earth's-weight, and bulk, indication is the precise length of the Pyramid cubit. And the Pyramid's basic number 10, and sacred number 5, which enter so often into the proportionate features of the building, are required in this feature also.

The statement of the feature is this: The Planet Earth, and its measures, is specifically mentioned by the Creator of Earth, who is also the Architect and Designer of the Great Pyramid, in direct connection with a pyramid form of building in the inspired Book of Job, chapter 38, verses 1 to 7. Therefore, a huge π-shaped pyramid, the cubical bulk of which agrees with the cubical bulk of the earth, either bulk for bulk, or by some recognised and harmonious mathematical proportion, can be reasonably accepted as the basis for the calculation.

The dimensions of the huge earth-pyramid (to give it a distinctive name), π-shaped like the Great Pyramid of Gizeh,

should be earth-commensurable, in the sense that the linear units of measure which express these dimensions should be the Pyramid standard units, the cubit and the mile. Also, to be appropriate and convincing, the numbers of such units should, in the first instance as a foundational basis, be an even, round, number; for this is essentially a Pyramid method of calculating.

The "earth-pyramid," therefore, has a base-side length of an even, round, 10-thousand Pyramid miles, each mile being equal in length to twice the Rock-level-base perimeter of the Great Pyramid of Gizeh, plus an even, round, 5 - thousand Pyramid cubits, each cubit being earth-commensurable, or an even 10-millionth part of earth's semi-axis of rotation. Here, then, we have the foundation for the calculations, appropriate, certainly, to the particular indication required, namely the weight of the earth, and its cubical bulk, in terms of the Great Pyramid of Egypt's standards.

The "Earth-Pyramid" Calculations

To ascertain the cubical bulk of this π-shaped pyramid, we need only find the cube of the base-side length, and then multiply this cube by the ratio ·212206590789+ (for this is the correct ratio for a π-shaped pyramid).

For easy calculation, and ready means of comparison, we desire to find the total number of cubical Pyramid cubits in this huge earth-pyramid. We therefore find the corresponding value in cubits of the even 10-thousand Pyramid miles, and add to this the even 5,000 Pyramid cubits. This gives us the total number of cubits in the base-side length of the earth-pyramid. (This total of Pyramid cubits amounts to 29,179,675·6454+.)

The cube of this total of Pyramid cubits, when multiplied by the ratio given above, yields the total of cubical Pyramid cubits in the entire bulk of the earth-pyramid, namely, 5,272,301,630,400,000,000,000.

To show how this final number gives both the Pyramid-ton weight of the earth, and the cubical bulk of the earth, by the

symmetric system furnished by the Great Pyramid of Gizeh, we shall cite briefly the explanation of this system by Professor C. Piazzi Smyth.

Professor Smyth says that, weights, on the Pyramid system, are calculable at once from Pyramid linear measures in the following simple manner:

"For small things, ascertain their bulk in cubical inches, divide by 5, and the result is the weight in Pyramid pounds [provided the said articles are of the same specific gravity as the mean density of the earth].

"For large masses, ascertain their bulk in cubical Pyramid cubits, add $\frac{1}{4}$, and the result is the weight in Pyramid tons (under the same conditions of specific gravity).

"Conversely, the Pyramid weight of a body of earth's mean density being given, to find its Pyramid cubical measure:

"For small things, multiply the pounds weight by 5, and it will give the number of cubical inches.

"For large masses, decrease the number of tons weight by a 5th part, to find the number of cubical cubits." That is, if we know the total number of Pyramid tons in any bulk having the same specific gravity as the mean density of the earth, all we require to do to ascertain the number of cubical cubits in this given bulk is: Deduct from the number representing tons a 5th part. The remaining 4/5ths represent the number of cubits.

In the proportionate feature connected with the earth-pyramid, the number of cubits in its bulk, as a number, represents the number of Pyramid tons in the earth's entire mass. And 4/5ths of the actual bulk of the earth-pyramid are equal to the actual cubical bulk of the earth.

That is to say, the entire mass of the earth-pyramid forms the basis for the calculations, when reckoned in cubical Pyramid cubits. But only 4/5ths of this mass represents the mass of the earth; and thus there are in the earth 4,217,841,304,320,000,000,000. cubical Pyramid cubits. Applying the rule explained by Professor Smyth for finding the number of tons in any given mass, the cubical bulk of which is known, we add $\frac{1}{4}$ of the above number of cubits to itself, and the resultant sum is the number of Pyramid tons

in the earth. This sum, representing *tons*, is the same as the number of cubits in the earth-pyramid.

These are the correct proportions, between weight and bulk, according to the eminently scientific Pyramid system, first propounded by Professor C. Piazzi Smyth. This system of weights and measures, as shown, is based upon the capacity of the Coffer in the King's Chamber of the Great Pyramid of Gizeh. For taking the weight of the earth as being 5·7 times heavier than pure water of a like mass, the interior capacity of the Coffer, 71,250 cubic Pyramid inches, will hold exactly one Pyramid ton of such pure water. This system of weights and measures, earth-commensurable in every respect, will in the future, we believe, become the recognised international system.

The "Earth-Pyramid" Indication of Earth's Bulk Compared with the Deductions of Science

As we have seen, therefore, this huge earth-pyramid, with its base-length of an even 10,000 Pyramid miles, plus an even 5,000 Pyramid cubits, gives us in a symmetrical way both the cubical bulk of the earth, and the Pyramid-ton weight of the earth; the number of tons in the earth being equal to the number of cubical cubits in the earth-pyramid, and the number of cubical cubits in the earth being equal to 4/5ths of the total of cubical cubits in the earth-pyramid.

In order to compare this indication of the bulk of the earth with the estimates of science, we require to convert the cubits into cubical British statute miles. This we can do by first dividing the number of cubical cubits in the earth's bulk (or 4/5ths of the earth-pyramid) by 100,000-millions, and then multiplying by the ratio 4·0270024219259+. This calculation yields the number of cubical Pyramid miles in earth's bulk, 169,852,571,478 in all. (To divide by 100,000-millions, move the decimal point at the end of the number representing Pyramid cubits in earth's bulk eleven places to the left. We then get 42,178,413,043·2, and this multiplied by the ratio given yields the number of cubical Pyramid miles in earth's bulk.)

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Then, to ascertain the corresponding number of cubical British statute miles, multiply the Pyramid miles by the ratio 1·5300166776716+. (These ratios have all been carefully calculated, and they are correct.)

This further multiplication gives the cubical bulk of the earth as 259,877,267,107· British statute miles. Or, if we express these cubical miles in a round number, as is usual in such large totals, we may say that the calculations based upon the dimensions of the earth-pyramid show that the cubical bulk of the earth is, in British statute miles, 259,880,000,000. This is the exact total given in a round number by the *British Empire Universities Modern English Dictionary* of 1920, page 963. While it is recognised that there is no need to be more particular when presenting the estimate for the bulk of the earth, than is published by the above *Dictionary*, we believe it is probable that the precise indication for this bulk shown by the earth-pyramid is right.

The Mass of the Great Pyramid Compared with the Mass of the Earth

When dealing with such large numbers, as in the foregoing, it is difficult if not impossible to comprehend them. Some larger unit than tons, or cubits, is required. But even then, unless we are able to visualise this larger unit, we cannot hope to understand the true significance of numbers that run into thousands of millions. We might take the whole mass of the Great Pyramid itself as representing a unit, and seek to compare this with the mass of the earth. But unless we first scale down the enormous size of the earth to a figure more within our comprehension, the comparison between the mass of the Great Pyramid and the mass of the earth will be to us of little practical value.

We will therefore scale down the earth's mass a 100,000-million times, and then seek to compare this greatly, but evenly, reduced earth's-size with the actual mass of the Great Pyramid. In other words, after dividing the number of cubical Pyramid cubits in the earth's bulk by the even, round, number of 100,000-millions, find how many times the cubical

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bulk of the Great Pyramid will divide into the resultant figure.

According to the linear dimensions of the Great Pyramid already accepted, the total number of cubical Pyramid cubits in the entire monument, from the Socket-level base to the apex, is fully 10⅓ millions, or, more particularly, 10,339,552. The even 100,000-millionth part of the number of cubical Pyramid cubits in the earth's bulk is 42,178,413,043·2. The one number divides into the other 4079·327+ times. That is, it would require 4079·327+ Pyramids of the same size as the Great Pyramid of Gizeh to form even a hundred-thousand-millionth part of the bulk of the earth.

The Symmetry of the Mass-Comparison

There is symmetry in this exact division of the Pyramid's mass into the earth's mass, which still further emphasizes the oneness of design in the measures of the earth, and of the Pyramid, as is indicated in the Scriptural reference in the Book of Job. In this symmetrical feature the Pyramid's basic number 10 is required; and this in itself is characteristic of the Pyramid's system of proportions, being an integral part of that system, as we have seen.

When we add the Pyramid's basic number 10 to the number of times that the Pyramid's entire mass will divide into earth's even-reduced bulk, and regard the sum as the radius of a circle, we shall find that the circumference of this circle is as many units as there are years in the precession of the equinoxes. Thus: 4079·327+, the number in question, plus 10, gives 4089·327+ as the radius of the circle. The circumference of the circle is, therefore, 25,694. (That is, practically, the precise circumference being 25,693·9994+.)

In other words, the sum of 4079·327+ and 10 is almost exactly the same as the number of inches in the vertical distance between the apex of the Great Pyramid, and the 1914 A.D. level, or that level at which the perimeter of the building is equal in inches to the years in the precession. The symmetry of this feature, strange though it may at first appear to be, is supported by the details of another feature, which we shall explain in the following pages.

The "Earth-Pyramid" Indication of Earth's Surface Area Compared with the Deductions of Science

Just as we have found that the Great Pyramid's indication of the actual bulk of the earth, when expressed in cubical British statute miles, is in agreement with the estimates of science of the present day, so also with the estimates of the surface area of the earth, the figures are in practical agreement with the indication based upon the earth-pyramid.

Taking the precise number of cubical British statute miles in the bulk of the earth as shown by the cubical contents of 4/5ths of the symmetrical earth-pyramid, we can, by the rules of mathematics governing spheres, find the number of square British statute miles on the surface of the earth.

We know that the polar diameter of the earth is less than the equatorial maximum and minimum diameters, and that therefore the earth is not a true sphere. But in calculating the cubical bulk, and surface area, an average or mean diameter derived from the actual diameters of the earth is taken as the basis.

This mean diameter of earth, used by us in our calculations, is 7917·533+ British statute miles. (The Polar diameter is 7899·3134+, the Equatorial maximum and minimum diameters are 7926·6610+, and 7926·0849+, British statute miles respectively. The actual mean between these three diameters is 7917·3531+, which is about ·18 less than the mean on which we base our calculations. But this is correct, for a little more must be allowed for, because the flattening at the poles is considerable, and therefore more weight should be given to the Equatorial diameters, as we have done).

With this mean diameter of 7917·533+, we can calculate that the surface area of the earth is, or must be very near to, 196,938,058 British statute square miles. (To find the area of a sphere, multiply the square of the diameter by the ratio π.)

This number of square miles, expressed in a round number, can be stated as 196,940,000. The estimates of science, as given in a round number by the *British Empire Universities Modern English Dictionary* of 1920, page 963, is 196,940,400 square British statute miles.

The careful estimates of science are thus very close to the indication of the surface area of the earth given by the Great Pyramid. Here again we are of the opinion that the Pyramid's indication for this area, 196,938,058 square British statute miles, is accurate; that in this feature, as in the others, the Great Pyramid contains all the scientific material for calculating the truth. It is acknowledged that the findings of science and the indications of the Pyramid are sufficiently near to each other, to convince us of the truth of the Pyramid theory.

The Remarkable Harmony between the Surface Area of Earth and the Great Pyramid's Dimensions

When we compute the surface area of the earth in square Pyramid miles (for such miles are in accord with the Great Pyramid), we find that this area presents some remarkable numbers. They show that the very surface of the planet on which man lives and has his being was symmetrically adjusted by the mighty Creator of heaven and earth, to agree with outstanding periods, both in the working of the mechanism of earth's orbit, and in His glorious Plan of the Ages.

For this is what we find: In square Pyramid geographical miles, each mile being in area equal to exactly 64 times the actual base-area of the Great Pyramid at the Rock-level, the precise surface area of the earth amounts to 148,319,713. (To convert square British miles into the corresponding value in square Pyramid miles, multiply the square British miles by the ratio ·75312874438150+.)

When we deduct from this precise total of 148,319,713 square Pyramid miles the representative Pyramid number of 5 times 50, or 250 miles, we have the remainder 148,319,463. This remainder of square Pyramid miles is equal to the sum of a round, even, 50-thousand times 2915, plus a round, even, 100 times 25,694·63, that is, the same number as there are years in the precessional cycle.

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To make the correspondency clearer we may tabulate it:

2915 multiplied by 50,000	145,750,000
25,694·63 multiplied by 100	2,569,463
50 multiplied by 5, both Pyramid numbers ..	250
Sum =	148,319,713
Square Pyramid miles in the earth's surface area =	148,319,713

The reign of Christ is declared in Scriptures to be 1000 years; and as He took to Himself His great power and began to reign in 1914 A.D., the completion of his reign will be reached by the year 2914 A.D., or a complete period of 2915 years from the date of his birth in 2 B.C. The number of years in the precessional cycle we have already noted to be between 25,694 and 25,695. The numbers 5 and 50 are special Pyramid numbers, connected particularly with the symbolical King's Chamber.

The fact that all of these definite periods and numbers should be so evenly contained in the complete surface area of the earth, is surely not without deep significance. And that they should be thus shown together in terms of the Pyramid's standard mile, is not only corroborative of the precise cubit-length of that mile, but of all the related dimensions of the Great Pyramid. All unite in pointing to the great importance, not only of the date when the world's Saviour and King left the glory of his former heavenly habitation and was born into this world to begin his mighty work of purchasing and reclaiming the fallen race of mankind, but also of the date when he was due to begin his reign in righteousness at the close of the Seven Times of Gentile dominion, 1914 A.D. When his 1000 years' reign is completed, we read that he will then hand over the Kingdom to God the Father, that the Father may be all in all.

There have been many false Christs in the world, even before the true Messiah came; but here we have another evidence as to the identity of the real Christ and Redeemer; for we see that even the very earth itself was formed to such measures, that the advents of this true One are indicated by

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it. (All the calculations, the results of which we have given above, are accurate.)

We see, therefore, still deeper significance in the questions of Jehovah, when he asked if Job had "perceived the breadth of the earth"; and when he asked if Job knew who had "laid the measures thereof," and who had "stretched the [measuring] line upon it." None but the Almighty Himself could have so formed the earth, that it would corroborate the truth of His Holy Word.
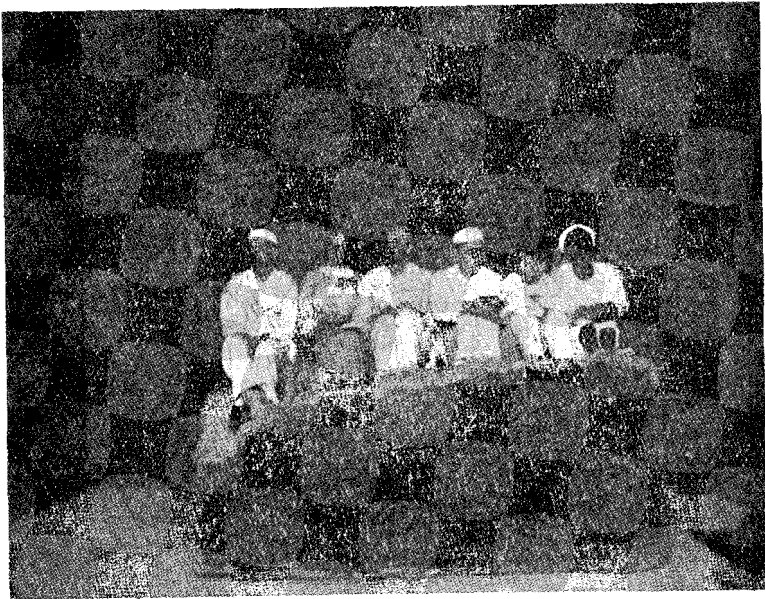
The granite Coffer in the King's Chamber of the Great Pyramid of Gizeh ; the measurers and their helpers sitting along its Western side to convey an idea of its size

SECTION XXI

FURTHER CORRESPONDENCIES CONNECTED WITH THE COFFER IN THE KING'S CHAMBER

ADHERING as we have done to the one standard set of measures for the Coffer, presented on page 102, it might seem at first that some of the correspondencies given by Professor C. Piazzi Smyth are not so accurately borne out by the calculations. Close examination, however, proves that these correspondencies are more firmly established by the application of the standard measures, though not by the direct methods spoken of by Professor Smyth. And we remember that it is only by taking advantage of the range of dimensions of the Coffer, that the features, according to the methods of indication chosen by Professor Smyth and others, can be said to exist. That is, it is only by taking more than one length, breadth, and depth, exterior and interior, that a number of these features can be made possible.

For instance, Professor Smyth draws attention to a calculation which claims that the cubical contents of a sphere, based upon the 10th part of the King's Chamber's cubic diagonal, corresponds to the capacity of the Coffer. The precise diameter of this sphere is the 10th part of the cubic diagonal-length of the chamber. But as the capacity of the Coffer is already established by theory as 71,250 cubic Pyramid inches, and the contents of the sphere is proved by accurate calculation to be $71,587 \cdot 4156+$ cubic inches, fully 337 more than the Coffer's capacity, the correspondency is merely a rough approximation, and was so recognised by Professor Smyth.

Another proportion of the Coffer's dimensions made prominent by Professor Smyth is that, the total exterior cubical bulk of the vessel is double the interior capacity. But

this is also recognised to be an approximation; for double the interior capacity is, by theory, 142,500 cubic inches, while the exterior bulk is not less than 143,155 cubic inches, or 655 inches difference. Nevertheless, both of these features can be said to be contained in the Coffer's dimensions if advantage be taken of the slight range of measures that it is capable of, and, which, as before said, we believe to have been the intention of the Pyramid's Designer.

The Coffer's Bulk is Proportionate to the Cubic Diagonal of the King's Chamber Through the Medium of a Sphere

But, now, there is a method of calculating that demonstrates a correspondency between the sphere spoken of by Professor Smyth, and the cubical bulk of the Coffer. As in many of the Pyramid's proportionate features, we require the factor 10, the building's basic number, in the calculations.

First, we regard a 10th part of the King's Chamber's cubic diagonal as the diameter of a sphere; and by mathematical computation we shall find that the cubical bulk of this sphere is 71,587·4156+ Pyramid inches. (See page 30 for the dimensions of the King's Chamber. To ascertain the cubical bulk of a sphere, multiply the cube of the known diameter by the ratio π, and divide the result by 6.)

From the cubical bulk of this sphere, whose diameter is the King's Chamber's cubic diagonal divided by 10, deduct 10. We shall find that double the remainder is equal to the entire cubical bulk of the Coffer, to within less than ¼ of an inch. For double the sphere's bulk, after deducting the Pyramid's basic number '10, is 143,154·8313+ cubic inches; and the exterior bulk of the Coffer, using the standard measures, is 143,155·0727+.

Another Indication of the Sphere's Bulk

The cubical bulk of the above-mentioned Sphere is indicated by another method by the Coffer's dimensions. When we employ any one dimension of the Coffer, we in reality

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recognise all of the dimensions, for all are dependent upon each other when we consistently adhere to the theoretical 71,250 capacity measure.

In this feature we take the Coffer's interior width as the basis. The number 5, and the single Pyramid inch, are required in the calculations. Thus, a rectangle, the length of which is exactly 1 inch more than the breadth, and the breadth of which is precisely 10 times the interior width of the Coffer, has an area equal to the cubic inches in the sphere in question, when we add 5 inches to this area. The difference between the two quantities is less than ½ of an inch. (The width of the rectangle is exactly 10 times the interior width of the Coffer. The length of the rectangle is just one inch more than the width. Therefore the area of this rectangle is 71,582·8820+ square inches, according to the standard measures on page 102. Add the Pyramid's sacred number 5 to this area, and we get the sum 71,587·8820+. The bulk of the sphere, the diameter of which is exactly a 10th part of the King's Chamber's cubical diagonal, is 71,587·4156+ cubic inches.)

The Day-Duration of the Solar Tropical Year Indicated by the Dimensions of the Coffer

The "Quarter Measure" is, as first pointed out by John Taylor and amply verified by the later investigations of Professor C. Piazzi Smyth, equal, anciently, to the exact quarter of the Coffer's interior capacity, that is: 71,250 divided by 4 =17,812·5 cubic Pyramid inches.

Now, the thicknesses of the Coffer's four sides and bottom were so designed that, when we add a quarter of their entire cubical bulk to the above-mentioned quarter of the interior capacity, the sum of the two quantities agrees in cubical inches with the days in the solar tropical year by the following method:

We know that the total number of inches in the perimeter of the Pyramid's Socket-level base equals the number of days in exactly 100 solar tropical years. At a vertical height above the Socket base equal to the length of the Ante-Chamber, 116·2602+ inches, we find that the number of inches in the

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perimeter of the building at this definitely-fixed higher level is equal to the days in 98 solar years. The complete perimeter of the Pyramid at this higher level, and the number of days in 98 solar tropical years, agree as 35,793·7354+ inch-days. If we deduct the Pyramid's sacred number 5 from this total we get 35,788·7354+. This final number is equal to the sum of the two quarters of the Coffer detailed, namely, the quarter of the interior capacity, 17,812·5 plus the quarter of the cubical bulk of the sides and bottom, 17,976·2681+, equalling 35,788·7681+, cubic inches. The difference between the two totals is less than a 30th part of an inch. (The entire cubical bulk of granite in the Coffer's four sides and the bottom is 71,905·0727+ inches).

Another Indication of the Solar Year Connected with the Coffer's Dimensions

We find that the measures of the Coffer have been so proportioned that the exterior of the vessel agrees with the interior, through the medium of recognised Pyramid numbers like 10, 5, etc., or the day-value of the year. For instance, the area of the bottom of the Coffer, that is, the exterior horizontal area, is so balanced to the interior capacity of 71,250 cubic inches, that they agree by the following proportions:

First, we reduce the Coffer's exterior horizontal area by exactly 1 Pyramid inch, and we get 3472·52744+ square inches.

Second, add to this reduced area the same number of inches as there are days in exactly 10 solar tropical years. The sum is equal to 7124·94942+.

Third, multiply this sum by 10, and we get 71,249·4942+; which final result is only about ½ inch under the precise 71,250 cubic-inch capacity of the Coffer's interior. In this, as in all other features connected with the Coffer, we are, of course, using the one set of standard dimensions of the vessel presented on page 102. Were we to take advantage of the limited range of measures for the Coffer, the agreements could in every case be shown to be exact.

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The bulk of the Granite Leaf in the Ante-Chamber and the Interior Capacity of the Coffer

Professor C. Piazzi Smyth draws attention to the interesting fact that the cubical bulk of the lower of the two stones forming the Granite Leaf in the Ante-Chamber is, approximately, equal to the quarter of the Coffer's capacity. This
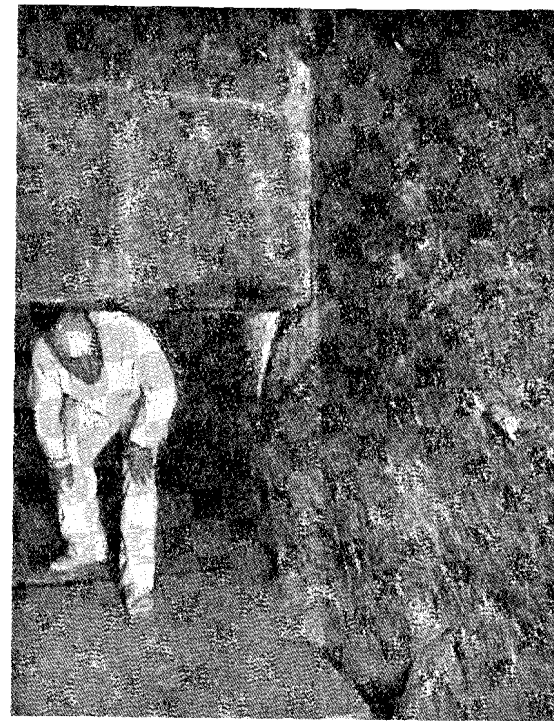
*Passing under the Granite Leaf in the
Ante-Chamber of the Great
Pyramid of Gizeh*

was the discovery of Major Tracey, and is referred to by Professor Smyth in his 5th edition of *Our Inheritance in the Great Pyramid* in the following words:

"Major Tracey again shows that the lower stone of the Granite Leaf, that this lower stone, I say, which is fairly

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dressed, rectangular, and the one on which the upper stone with its Boss-divisions of the cubit rests, expresses a notable division of the capacity measure of the Coffer. For it presents us, within the walls of the Ante-Chamber, with a fourth part of that Coffer vessel's contents; or with the veritable 'corn quarter' of old, and which is still the British quarter corn-measure, both by name and fact and practical use."

Professor Smyth then goes on to show that the entire cubical bulk of the Granite Leaf presents us with the value of the ratio π. He continues: "The above conclusion for the lower stone of the Leaf has been tested by various persons, and found to come very close to the numbers recorded [that is, the practical measures demonstrate a close approximation to the quantity required]; but quite recently a new idea was sent to me by the Rev. C. W. Hickson, to the purport that the whole Granite Leaf contained, of cubic inches, a number equal to π multiplied by 10,000."

The reference to the "Boss" on the upper stone of the Granite Leaf, in connection with the cubit, in the words of Professor Smyth which we have quoted above, necessitates our giving a further quotation: "What is there, in the Ante-Chamber, divided into five? 'The Great Pyramid's own scientific, earth-commensuric, cubit,' answers Major Tracey; 'for here it is so divided in the shape of this projecting *Boss* on the Granite Leaf, just five inches broad. And, further, that fifth part of that 25-inch cubit of the Great Pyramid's symbolical design, is divided into five again; for the thickness of this remarkable Boss is, though roughly, 1/5th of its breadth. So there you have the division of the peculiar Pyramid cubit into 5 × 5 inches."

Professor Smyth continues to describe the Boss, and its unique *uncentral* position on the upper of the two blocks of the Granite Leaf: "The *Boss*, a flat bas-relief one inch thick or protruding *from* the stone, is on the north side of the upper of the two blocks forming that 'Granite Leaf' which crosses the Ante-Chamber near its northern end . . . Why then is the Boss not even approximately in the middle of the Granite Leaf, or in the centre between the two sides of the very narrow

apartment containing it? (only 41·21 inches broad between the granite wainscots.)

"My measures of 1865 show that the Boss is just *one inch* away on one side of the centre; and as it will be elsewhere shown that it was a Great Pyramid method to indicate a small, but important, quantity by an *excentricity* to that amount in some far grander architectural feature [namely, the excentricity of the Niche in the east wall of the Queen's Chamber; for the vertical central line of this Niche is precisely one Pyramid cubit away from, south of, the vertical central line of the east wall of that chamber, thus monumentalising the earth-commensurable Pyramid cubit]—we cannot but accept this measured excentricity of the Boss as an additional Pyramid memorial of the very thing which is being called for by the sceptical just now, viz., one single, little inch memorialised by the builders of the most colossal piece of architecture the world has ever beheld. [We have now seen other methods by which the Great Pyramid was made to memorialise the single inch, and single cubit, namely, by means of the proportionate features of the Coffer, and other parts of the building.]

"All the more decidedly too," continues Professor Smyth, "when as Mr. St. John Vincent Day has since shown, that very excentric position of the Boss, by the amount of just *one* inch, has enabled the distance from its centre to the eastern end of the Leaf itself in its well-cut grooves in the granite wainscot to be, within the limits of mensuration errors, just a whole Pyramid cubit = 25·025 British inches, or something very near to it indeed. So that exactly here, where every would-be-enterer into the King's Chamber must bow the head, there is suspended over him the whole cubit, its fifth part and its twenty-fifth part or *inch* unit; which, though so small, yet it is as *securely* monumentalised in this vast building, as anything else of much larger size: clearly, too, though roughly; but in a manner which has lasted up to this very day."

Regarding the suggestion of the Rev. C. W. Hickson, elucidated by Professor C. Piazzi Smyth, namely, that the entire cubical bulk of the Granite Leaf is equal to a round,

even, 10-thousand times the value of the ratio π, we here mention that in our volume I of *Great Pyramid Passages*, pages 316-320, we present what we believe to be a more convincing method of establishing as correct this interesting and important feature; more convincing, we mean, than Professor Smyth's explanation; for Professor Smyth did not seem to realize fully the significance of the one-inch-thick side rebates or projections which run up the northern face of the Leaf, on the east and west sides of both upper and lower blocks forming the Leaf. Professor Smyth knew of these side rebates, of course, but did not take them into account sufficiently when explaining the scientific importance of the Ante-Chamber and its Granite Leaf. The northern face of the side rebates is on the same level as the face of the Boss; and by taking advantage of the extra inch thickness for the entire Leaf, both top and bottom stones, which these rebates prove must have been the original thickness of the Granite Leaf before the cutting began, the measurements yield the cubical bulk required by the theory suggested by the Rev. Hickson, even more exactly than he, with his insufficient data, could have thought possible.

And now we find that, by the Great Pyramid's thoroughly characteristic system of proportions, the Granite Coffer in the King's Chamber, in its scientifically accurate interior capacity, can be said to contain within its walls, these three definite quantities: (1) The entire Granite Leaf, equal to an even 10,000 times the ratio π. (2) The Pyramid cubit-length, which is so wonderfully monumentalised by the position of the Boss on the northern face of the Granite Leaf, as is explained by Professor C. Piazzi Smyth. (3) The full floor-length of the Grand Gallery, which the entire southern face of the Granite Leaf also shows; for the exact area of the Granite Leaf's visible south (or north) face, including both upper and lower blocks, is 1881·5985+ square Pyramid inches, that is, equal to the floor-length of the Grand Gallery, as pointed out in Vol. I of *Great Pyramid Passages*, page 318.

But these quantities here noted are not contained in the Coffer's interior capacity of 71,250 cubic inches by a direct addition. The means by which the Coffer could contain

all these dimensions, and yet hold them secret for a time, is through the medium of one of the Pyramid's factors to which we have already drawn attention, namely, the 1/10th, and 9/10ths, proportion; which factor, as we saw, is monumentalised in the King's Chamber (See page 121).

The proportionate method by which the Coffer's interior capacity agrees with the Granite Leaf in the Ante-Chamber, which Granite Leaf embodies within itself all three quantities just enumerated, is this: From exactly one-half of the Coffer's interior cubical capacity of 71,250 inches, *i.e.*, from 35,625 cubic inches, deduct the cubical bulk of the Granite Leaf, 31,415·9265+ cubic inches (which is an even 10,000 times the ratio π). The remainder is 4209·0734+ cubic inches.

Reduce this remainder of 4209·0734+ by exactly 1/10th part; and from the remaining 9/10ths deduct one Pyramid cubit of 25 Pyramid inches. We then get the final remainder of 3763·1661+ inches.

The concluding stage in the calculation is to *halve* exactly this final remainder of 3763·1661+ inches; and we shall find that the half is, to within less than a 60th part of an inch, equal to the standard floor-length of the Grand Gallery. For the half of 3763·1661+ is 1881·5830+, while the Grand Gallery floor-length is 1881·5985+ Pyramid inches, if we take the standard length for this passage. The difference is negligible, being merely ·01549+ of an inch.

The Coffer, and the Days in 1000 *Solar Tropical Years*

There is another feature in the Coffer's dimensions that shows the 10th and 9/10ths proportion, in conjunction with the perfect number 7. The basis of this feature is the Coffer's exterior breadth; and by a proportion it indicates the number of days in 1000 solar tropical years.

Regard the exterior breadth of the Coffer as the side-length of a cube. To the number of cubic inches in this cube add 70, and multiply the sum by 7. The result of this calculation is 405,824·6651+ inches. When we reduce this total by a 10th part, the remaining 9/10ths amount to 365,242·1986+, or as many inches as there are days in a round 1000 years.

Further Correspondencies between the Dimensions of the Coffer and the King's Chamber

Briefly, we note two other dimensional correspondencies between the King's Chamber and the Coffer which it holds: First, when we deduct the Pyramid's basic number 10 from the sum of all the exterior and interior surface areas of the Coffer, and then divide the remainder by 70, we get the length of the King's Chamber to within less than a 200th part of an inch of the' standard length for that chamber. (Or alternatively, we add together: the areas of the exterior and interior sides, ends, and bottoms, and we get the sum $14,429 \cdot 7672+$ square inches. Deduct from this sum 5 inches, and divide the remainder by 35, i.e., 5×7. The result is $412 \cdot 1362+$, which is very close to the standard length of the King's Chamber, namely, $412 \cdot 1316+$, the difference being $\cdot 0045+$ of an inch, or less than a 200th part.)

Second, when we multiply the Coffer's exterior solid, or cubic, diagonal by 8, we find that the result is, to within less than a 5th part of an inch, equal to the sum of the King's Chamber's length, width, and height. (The Coffer's exterior cubic diagonal, multiplied by 8, equals $848 \cdot 7701+$ inches, while the sum of the length, width, and height of the King's Chamber is, as mentioned before, $848 \cdot 5861+$.)

The Coffer is a "Blind Sarcophagus"

Our object in drawing attention to the Coffer's indications, by its distinctive system of symmetric proportions, of the lengths of the various passages and the dimensions of the Pyramid generally, is to demonstrate, as we said before, that the Coffer is a part, and a most important part, of the Great Pyramid's entire design. They enable us to place confidence in the deductive teaching of the Coffer, even though it has the appearance of having been made to serve as a sarcophagus. For along the top west edge of the Coffer there is a cut-out ledge, and shallow grooves run along the inside surfaces of the other three sides to correspond with the depth of this ledge, the whole arrangement being suitable for the sliding on of a

lid. And yet, in all records of the Pyramid, both ancient and modern, the Coffer has with one consent been spoken of as a *lidless _'one chest*. The lid, if it actually was made by the ancient workmen, is not referred to by any writer. If it ever existed (for there is a question if it did) it has completely disappeared, not even a fragment remaining.

Professor C. Piazzi Smyth and many other writers on the Great Pyramid make it clear that the cut-out ledge and its corresponding grooves in no way interferes with the leading theory, that the Coffer was intended by the great Architect and Designer to serve as the standard for Capacity measures, and Weight measures, for the use of all nations. This Coffer, having the superficial appearance of a sarcophagus, has been able on that very account to preserve its secret purpose through the centuries. Serving as a "blind sarcophagus," as Professor Smyth has named it, men in general have taken it for granted that it was made for the reception of a dead monarch, and that the whole Pyramid is merely a gigantic mausoleum. But the more we understand about the Great Pyramid, the less do we think it necessary to defend it against the advocates of the "tombic" theory, except in so far that there is absolutely no material or literary evidence that the building was so used. With Professor Smyth we believe that the monument and its Coffer *symbolise* a tomb and sarcophagus, not merely to hide for a time its Divine Authorship, but to corroborate in its grand architectural way the Scriptural declaration that through death Christ destroyed him that has the power of death, that is, the Devil (Hebrews 2: 14).

An earnest student of the Pyramid's wonderful teachings, Mr. Clive Kenrick of Edgbaston, England, believes we do well to emphasise the fact that the Coffer has always been referred to as *an empty, lidless, stone chest*, ever since the day it was first seen, and so described, by Caliph Al Mamoun in 820 A.D. He suggests, in agreement with the opinion of all who hold to the belief that the Great Pyramid, by its symbolisms, contains *spiritual* truths as well as truths of a scientific nature, that the Coffer, because it has the outward appearance of a sarcophagus, but is empty, was through this

means intended by the Designer to stand as a "symbol of the resurrection."

Just as the resurrection of Jesus Christ from the dead was demonstrated by the angel, when he directed the sorrowing women's attention to the empty grave, saying: "Fear not ye: for I know that you seek Jesus, which was crucified. He is not here: for he is risen, as he said. Come, see the place where the Lord lay. And go quickly, and tell his disciples that he is risen from the dead" (Matthew 28: 5-7), so the empty Coffer in the King's Chamber, which is *like* an opened and vacated coffin in a sepulchral tomb, illustrates the resurrection from the death-state. The empty Coffer, as a material symbol, confirms that great and comforting spiritual truth, which caused the inspired apostle to exult and exclaim: "O death, where is thy sting? O grave, where is thy victory?" (1 Corinthians 15: 55).

The Width of the Queen's Chamber

There are several proportionate features which indicate connections between the dimensions of the Coffer and the dimensions of the Queen's Chamber. We shall refer to one in the meantime. The measurement in the Coffer which indicates the width of the Queen's Chamber between the north and south walls, is the interior floor-diagonal. This floor-diagonal, when multiplied by 5, equals twice the width of the Queen's Chamber, to within less than a 30th part of an inch of that chamber's standard width. Or, to state the indication more directly, 5 times the semi-floor-diagonal of the Coffer is 205·6425+ inches, while the Queen's Chamber's width is 205·6123+.

The Length of the Granite Plug in the First Ascending Passage

Even the length of the highly symbolical Granite Plug which stops up the First Ascending Passage, is not omitted in the wonderful Coffer's measures. For twice the interior cubic diagonal of the Coffer is, to within less than a 20th

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part of an inch, equal to the standard length of the Granite Plug. (The interior cubic diagonal of the Coffer, when multiplied by 2, is equal to 178·2382+ Pyramid inches, while the standard length of the Granite Plug is 178·1892+, the
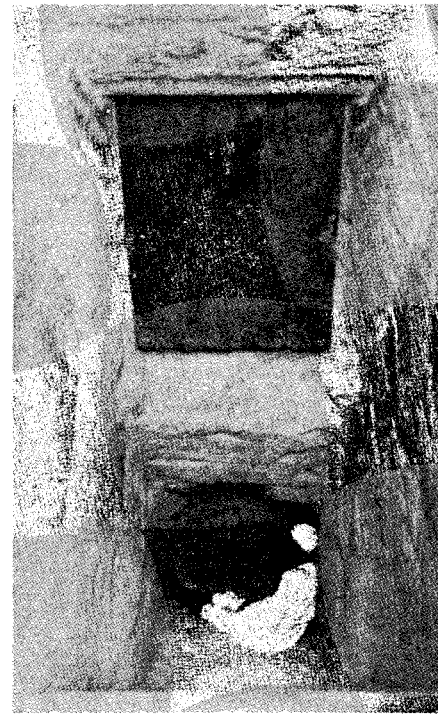
The Descending Passage of the Great Pyramid of Gizeh; the lower reach of which is now closed by an iron grill door; showing the lower butt-end of the Granite Plug in the roof. The Granite Plug closes the entrance of the First Ascending Passage

difference being ·0489+, or less than a 20th part of an inch. If we were to take advantage of the slight range of measures, as already intimated, this feature, like the others, could be shown to be exact. But, for the reasons stated, it is preferable to always make use of the one standard set of measures for the Coffer, as given on page 102.)

The Meaning of the Granite Plug Length

As the length of the Granite Plug is so closely indicated by the standard measures of the Coffer, we may be sure that there must be a deep meaning attached to this length. And so we do find it; for the precise length of the Granite Plug, and also its exact position in the lower end of the First Ascending Passage, agree with one of the most important time-measurements which the passage-system of the Great Pyramid was Divinely arranged to monumentalise.

This time-measurement is the Pyramid's corroboration of the period beginning at the exodus of the nation of Israel from Egypt, and ending at the date of our Lord's death. According to the accurate Bible chronology this period is 1647 years, from Spring of 1615 B.C. to Spring of 33 A.D. The inch-measurement now referred to closely agrees with this number of years, being 1647·3250+ inches, or barely a 3rd of an inch more than the precise amount required. This, the standard measurement in inches, is supported by a number of distinct, and harmonious, scientific features.

It is often stated by writers on the Great Pyramid that the "Point of Intersection" where the floor-line of the First Ascending Passage intersects the floor-line of the Descending Passage, marks the date of the Exodus. While this statement may be accepted, yet it is true only in a general way, for the exact date of the Exodus is not here marked by a definite time-measurement. But by a method, both exact and characteristic of the Great Pyramid, the First Ascending Passage does corroborate the period from the time of Moses to the time of Christ's sacrifice. This method requires the recognition of the Granite Plug in a special and appropriate way.

The beginning of the period when the nation of Israel was separated from Egypt was signalised by the giving of the Law through Moses, the passover lamb being the first part. In the symbolism of the Great Pyramid the Law is represented by the Granite Plug; while the Law Age or the time during which the people of Israel endeavoured to observe the Law, is represented by the First Ascending Passage. It was at, and by, the sacrificial death of Jesus Christ who was the great

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antitypical Passover Lamb of God, that this Law was "taken out of the way," Christ having "nailed it" to his cross. For the covenant people found that the Law although "ordained to life," was to them in their imperfect condition a way to death. The Law is perfect, and imperfect man cannot observe it or satisfactorily pass its exacting requirements. In the corroborative Great Pyramid, the First Ascending Passage is rendered impassable because of the obstruction of the Granite Plug at its lower end.

The exact date of the crucifixion and resurrection of Christ is marked by the line of demarkation between the First Ascending Passage and the Grand Gallery, and this illustrates the ending of the Law Age, and the beginning of the Age of Grace, that is, the Gospel Age. Therefore, any time-measurement that corroborates the period of the operation of the Law, from the Exodus to the death of Christ, would require to terminate at this line of demarkation, if such time-indication is to be reasonably convincing. But the total length of the First Ascending Passage is too short to agree in inches with the 1647-year period, being about 1543½ Pyramid inches. Here, then, is where the utility of the Granite Plug in the time-measurements becomes apparent. The length of this Plug, and its exact position in the passage, enable it to fill out the total number of inches necessary by the following method:

To the distance along the floor-line which lies between the lower, northern, end of the Granite Plug and the upper extremity of the First Ascending Passage, add the length of the Granite Plug itself. The resultant sum is just that total of Pyramid inches required to agree with the Law-period in question. We now know, declared Charles T. Russell, who drew our attention to this interesting feature, why the Granite Plug was so firmly fixed over 4000 years ago that it has remained in its present position during these many centuries, namely, that it should add its testimony, silently but unmistakably, to the truth of the Lord's Word, and to the correctness of the great epochs into which the Lord's Plan of the Ages has been subdivided.

For this time-measurement, in addition to the many others,

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proves that Charles T. Russell was correct in his interpretation of the Bible Chronology. This period of 1647 years bridges over all of those links in the chronological chain with which chronologers have experienced difficulty. But as Charles T. Russell points out in his work, *Studies in the Scriptures*, such difficulties arise only when the admittedly unreliable records of secular history are given too much credence. Taking the records of the Old and New Testaments, and relying upon, secular history only where it is not at variance with them, Bible chronology presents no difficulties which cannot easily be surmounted. And when we find that the time-measurements of the Lord's stone Witness in Egypt agree consistently with this Bible chronology, we are confirmed in our belief in the times and seasons which are based upon this chronology. (See the list of Bible dates in the *Time-Features* book.)

The First Ascending Passages' "Extended" Measure of 1647 inches shown in the Coffer's Dimensions

Moses, who is called the Law-giver, was also a prophet. One of his greatest utterances as a prophet was quoted by the Apostle Peter: "For Moses truly said unto the fathers, 'A prophet shall the Lord your God raise up unto you of your brethren, like unto me; him shall ye hear in all things whatsoever he shall say unto you. And it shall come to pass, that every soul, which will not hear that prophet, shall be destroyed from among the people'" (Acts 3: 10–26).

It was some time after the resurrection of Jesus Christ that the Apostle spoke these words, probably not long after Pentecost when the Holy Spirit first came upon the waiting disciples (See Acts, 2nd chapter). But while at this time, fully 1647 years after the Exodus, the Apostle referred to the risen Lord as that Prophet, he also, by inspiration, intimated that He would be retained in heaven until the "times of restitution of all things," which began in 1874 A.D. In the year 1878 A.D. the members of His body began to rise from the dead; and in 1914 A.D. we believe the foretold Prophet, head and body, began to exercise power over the nations. For while Jesus Christ was spoken of as King even from his birth

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in Bethlehem, God the Father had arranged that His Son should have joint-heirs in the Kingdom (See Ephesians 1: 4, 11).

It is appropriate, therefore, that the first period of 1647 years, in the beginning of which Moses foretold of the coming Prophet, and at the end of which the inspired Apostle referred to the risen Lord as that Prophet, should be found in connection with the second period of 1915 years in the dimensions of the Coffer which lies in the symbolical King's Chamber. For until the 1915-year period had run its course the events in the 1647-year period could not receive fulfilment.
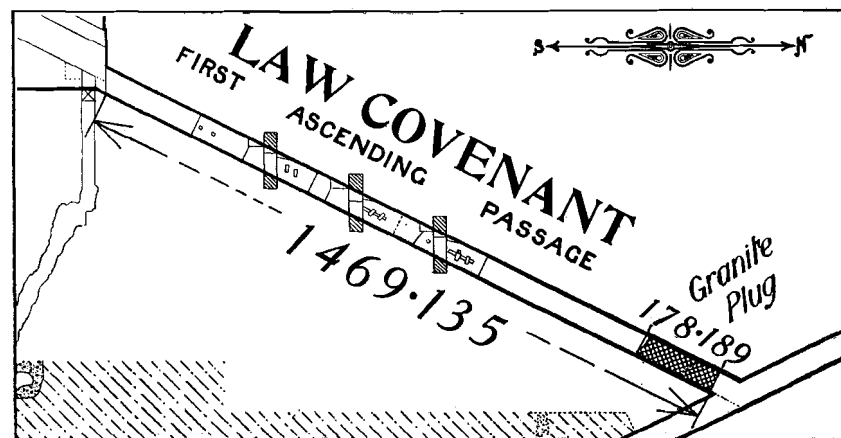
By the following proportion the Coffer's dimensions present both of these periods together, by corresponding inch-measurements: Taking one half of the interior capacity of the Coffer, we have the basis of the calculation. From a 10th part of this half capacity deduct 1915 inches. The remainder is, to within about, a 6th part of an inch, equal to the extended length of the First Ascending Passage. Or if we deduct the standard extended length of the First Ascending Passage, 1647·3250+ inches, from the 10th part of half of the Coffer's capacity, that is, from 3562·5, the remainder is 1915·1749+, which is a sufficiently close indication of the precise 1915-year period.

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But there are other dimensional features in the Coffer that indicate the 1915-year period, sometimes alone, and sometimes in connection with the added 1000 years of the Millennium, *i.e.*, the 2915-year period. All of these indications are, of course, proportional, and they are all based upon the Coffer's standard set of measures given on page 102. We shall here draw attention to some of them:

First, when we multiply the exterior breadth of the Coffer by 50, the special number of the King's Chamber, and reduce the result by an even 100th part, the sum of the remaining 99 parts is 1915·0367+ inches. Like the proportions of a 10th and 9/10ths so often found in the Pyramid's calculations, the proportions of a 100th, and 99/100ths are also frequently required; and also, even, the proportions of a 1000th, and 999/1000ths. These proportions are quite in accord with the Pyramid's mathematical design.

Second, by an area the Coffer indicates the 2915-year period as follows: Take 10 times the interior end area of the Coffer, and regard this as the circumference of a circle. Compute the length of the diameter of this circle, and it will be found to be 2915·0609+ inches. The results of both of the above indications are practically the exact number of inches necessary to represent the precise periods of 1915 and 2915 years. (The interior end area, based upon the Coffer's standard measures, is 915·79341+ square Pyramid inches.)

Third, by using the exterior side diagonal as a basis, there is a calculation which shows the 1915-year period, and the square of the days in the solar tropical year, together, and exact to within a fraction of an inch. With the standard measures for length and height, the exterior diagonal of one side of the Coffer is found to be 85·0238848293+ Pyramid inches.

Regard this exterior side diagonal as being the side-length of a cube. The number of cubic inches in this cube is 964,170·57166+. Multiply the double of this number of inches by 10, and deduct 10 inches from the result. The final result is then found to be 19,283,401·4332+ inches. This total of inches is, to within less than ½ of an inch, equal

to a round, even, 10,000 times 1915, plus the square of the days in the solar tropical year. (The square of the days in the solar tropical year, as mentioned before, is 133,401·8636+, which is the exact number of square cubits in the Socket-level square base of the Pyramid. Add this number to an even 10,000 times 1915, and we get the sum 19,283,401·8636+, which differs from the above final number of inches by less than ½ an inch.)

The 33½ *Years of our Lord's Earthly Sojourn*

The Coffer, in one of its symbolical meanings, represents the Holy Ark of the Covenant which stood in the Most Holy of the tabernacle and temple. This Ark represented our Lord, and all the Kingly and Priestly glory that are his. It is right, therefore, that the Coffer which stands in the same relationship to the King's Chamber as the Ark did to the Most Holy of the temple, should show forth the glory and Kingdom of the Christ of God.

It is by its proportionate indications of the 1915 and 2915 periods of years, that the Coffer brings prominently before us the spiritual power and beauty of our Lord, and his Kingdom reign in righteousness of a 1000 years, from 1914 to 2914 A.D.

But this marvellous Coffer not only pointedly suggests to us the thought of Christ's Kingdom-glory and power, but also even the great foundational work of His first advent into the world, namely, his 33½ years of life as the Man Christ Jesus, in the last 3½ years of which he suffered while ministering and preaching the coming Kingdom. Having done the will of his Father perfectly in every detail, he at 33½ years of age died the just for the unjust, a perfect ransom-sacrifice or corresponding price for Adam and the whole human race, that he might bring us back to life and harmony with God.

These 33½ years are corroborated in the Pyramid by the 33½ inches at the upper end of the First Ascending Passage, appropriately between those two points on the floor-line that mark the very dates of Christ's birth and sacrificial death, *i.e.*, the point in horizontal alignment with the produced floor-level of the Queen's Chamber for the first date, and the

VERTICAL END SECTIONS (*Looking South*) THROUGH THE LINE OF THE NORTH EDGE OF THE 'WELL'
SHOWING THE SMALL HORIZONTAL PASSAGE LEADING FROM THE GRAND GALLERY WESTWARD
TO THE WELL, ALSO THE VARIOUS MEASUREMENTS (PYRAMID *INCHES*)
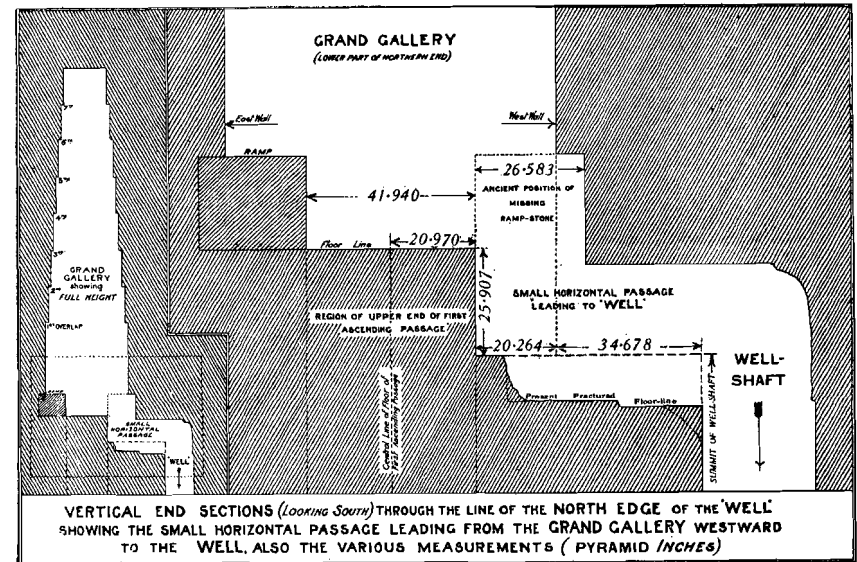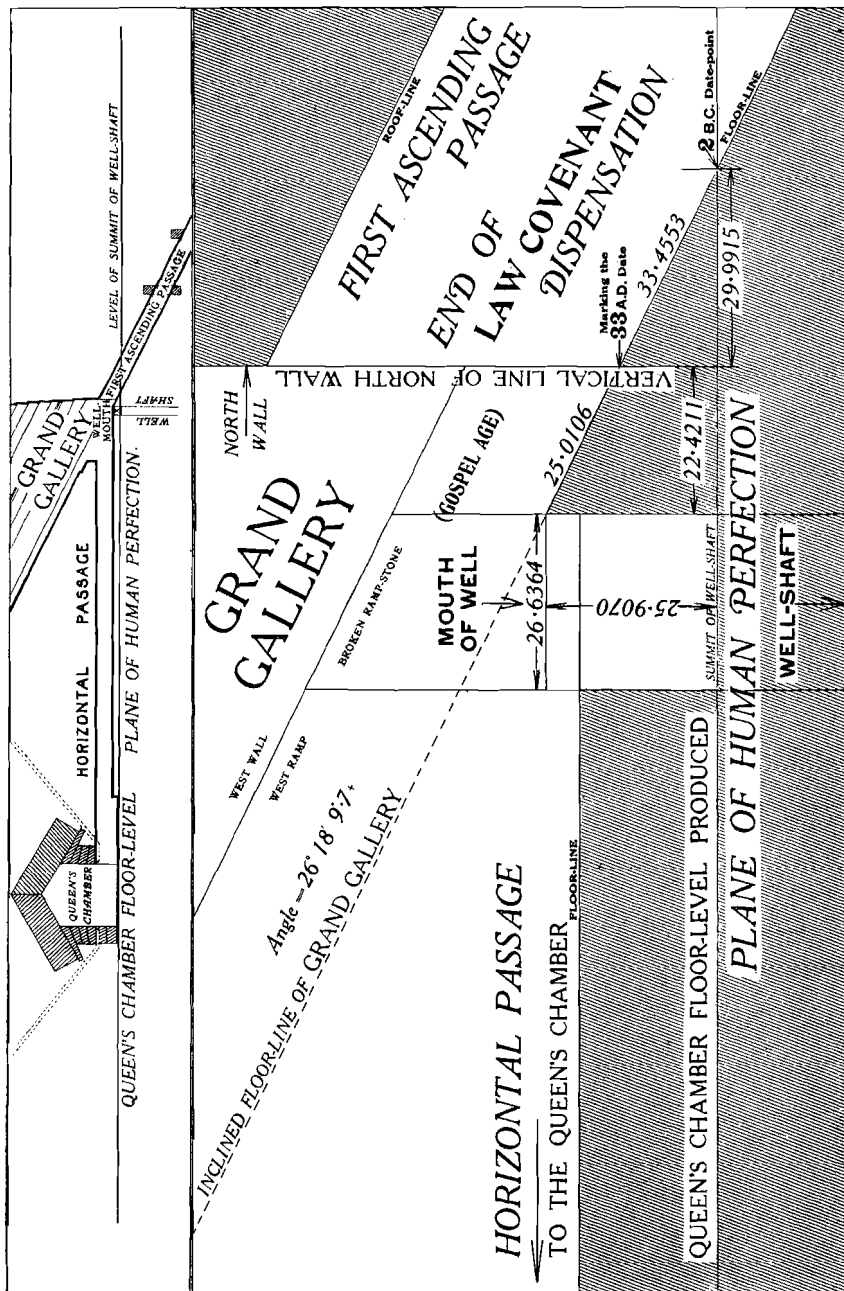
point where the floor of the First Ascending Passage ends and the Grand Gallery begins for the second. (See *The Great Pyramid: Its Time-Features.*)

But while these 33½ inches at that particular part of the Pyramid clearly illustrate the life of our Lord in his first advent at the close of the Law Age of Israel, the spirit-begotten aspect of his life on earth, when as a New Creature he was being made perfect through the things he suffered in the flesh, that he might become a compassionate High Priest, is more definitely illustrated by the ascent of the lofty, but steep, Grand Gallery. For the Lord Jesus, as the spirit-begotten New Creature, is represented in the apt symbolism of the Pyramid as walking up this slippery and narrow way, to attain to his heavenly inheritance and Kingdom symbolised by the King's Chamber.

All of the 144-thousand followers of Christ Jesus, prospective joint-heirs with him in Kingdom honours, and, like him while here on earth in his humilation, spirit-begotten New Creatures, are also depicted as ascending the Grand Gallery during the Gospel Age, that they may join him and see him as he is, in spiritual glory.

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All of these truths, taught in the Scriptures, and corroborated by the symbolism and measures of the Great Pyramid, are connectedly shown in this one little hollow block of granite in the King's Chamber, the Coffer, and so accurately that we need never doubt their authenticity. No man could have put them there without inspired guidance.

The thought of the "Grand-Gallery" experiences of our Lord's walk as a New Creature, and the 33½ years of his life on earth, are connectedly shown by the interior dimensions of the Coffer. Just as the rectilinear block of granite forming the Coffer had, before the interior hollow was made, six exterior surfaces, so the interior hollow may be said to have six interior surfaces, even though it is open. We can assume the existence of a top interior area equal to the floor-area, by imagining a flat cover placed over the opening.

Computing the total area of all six interior surfaces of the Coffer, we find that the Grand Gallery length, and the 33½ inches at the upper end of the First Ascending Passage, are both shown by the following method: We first deduct from the sum of all six areas 33½ inches. The remainder, when divided by 6, gives us the average for one interior surface. This average is equal in square inches to the linear inches in the Grand Gallery length, to within less than a 100th part of an inch of the standard length. . (The total number of square inches in the Coffer's six interior areas is 11,323·0373+, using the standard measures on page 102. Deduct 33½ inches, and divide the remainder by 6 for the average, and we get 1881·5895+. The standard floor-length of the Grand Gallery is 1881·5985+ inches. The difference is merely ·0089+ of an inch, or less than 100th part.)

Another method of explaining this proportionate feature is to compare the total number of inches in the Coffer's six interior areas, with the sum of: (1) the total floor-distance from the point at the upper end of the First Ascending Passage which marks the date of Jesus Christ's birth, up to the southern terminal of the Grand Gallery, 1915·0538+ inches, (2) plus 5 times the standard floor-length of the Grand Gallery, 9407·9927+ inches. The sum of these is 11,323·0466+.

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As the total interior surface area of the Coffer is 11,323·03736+ inches, the difference is less than a 100th part of an inch over all, or ·0092+ of an inch. By this method, therefore, not only are the two floor-lengths corroborated by the dimensions of the Coffer, and by this means also the dimensions of the King's Chamber (for these floor-lengths, as we have seen, corroborate the King's Chamber's measures), but the three prominent dates connected with Christ's first advent, and the establishment of his Kingdom are likewise confirmed once more, namely, 2 B.C. and 33 A.D. for the birth, and the sacrificial death, of Christ, and 1914 A.D. for the end of Gentile dominion and the assumption of Kingly power by Him whose right it is to reign.

The Number of the Spirit-Begotten Overcomers of the Gospel Dispensation

While the Coffer by the above method indicates the length of the Grand Gallery to a very close degree of accuracy, there is another proportionate feature which yields the Gallery length still more precisely. The Gallery is the Pyramid's grand symbol of the Gospel Dispensation or Age, the period set apart by the heavenly Father for the calling-out of His Sons, joint-heirs with Jesus Christ in the Kingdom. Jesus himself was called from his birth, for he was born into this world that he might become earth's great King in due time, as he declared: "To this end was I born" (John 18: 37). The spirit-begotten Church of the firstborn began to be selected from the world after Jesus Christ's death and resurrection, at Pentecost.

Jesus Christ, the glorified Lord, promised: "To him that overcometh will I grant to sit with me in my throne, even as I also overcame and am set down with my Father in his throne." And the Revelator said that he heard the number of them that were sealed, "an hundred and forty and four thousand" (Revelation 3: 21; 7: 4; 14: 1-5).

The Great Pyramid's Coffer in the King's Chamber, representative of the Ark in the temple's Most Holy, not only indicates by its simple, yet wonderfully adjusted dimensions,

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the various passage-lengths, chamber-dimensions, and interior and exterior measures of the Pyramid generally, as well as the size and weight of the earth, and the durations of the year, month, and precessional cycle, but also the most important number of all, namely, the 144,000, the number of the Gospel Age overcomers.

Appropriately, this indication of the 144-thousand is connectedly shown with the length of the Grand Gallery, the symbol of the upward walk of the spirit-begotten followers of Christ in the Gospel Age.
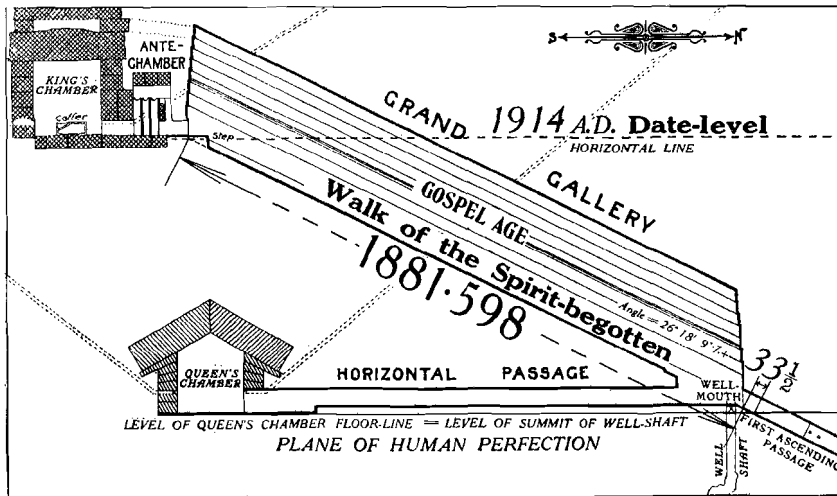
The calculation which indicates these two numbers together is based upon the exterior length of the Coffer, and by proportions which we have now seen several times. When we regard the Coffer's exterior length as the side-length of a cube, we find that the number of inches in this cube is equal to the sum of 5 times 144,000, plus 2 times the floor-length of the Grand Gallery. (This sum is $723,763 \cdot 1970+$ inches; and using the Coffer's standard exterior length as the side-length of a cube, the number of cubical Pyramid inches in the cube is found to be also $723,763 \cdot 1970+$.)

It is in this mathematical and geometrical way that the Coffer illustrates the close union of the 144-thousand overcomers of the Gospel Age with their Lord and Head Jesus Christ; and demonstrates how their very number, declared in the Scriptures, is bound up with all the features and times and seasons of Jehovah's great Plan of the Ages, as corroborated by the varied, yet harmonious, measures of the Great Pyramid. How well indeed does the Great Pyramid fulfil its mission as God's Sign and Witness in the land of Egypt!

Diagram (left page)

No. 1 SQUARE

Area = 144,000 inches

No. 3 SQUARE

Area = 48,250 inches

219·658826 +

Perpendicular

379·473319 + inches

Hypotenuse

Base

309·4349689 +

No. 2 SQUARE

Area = 95,750 inches

= 1915 × 50
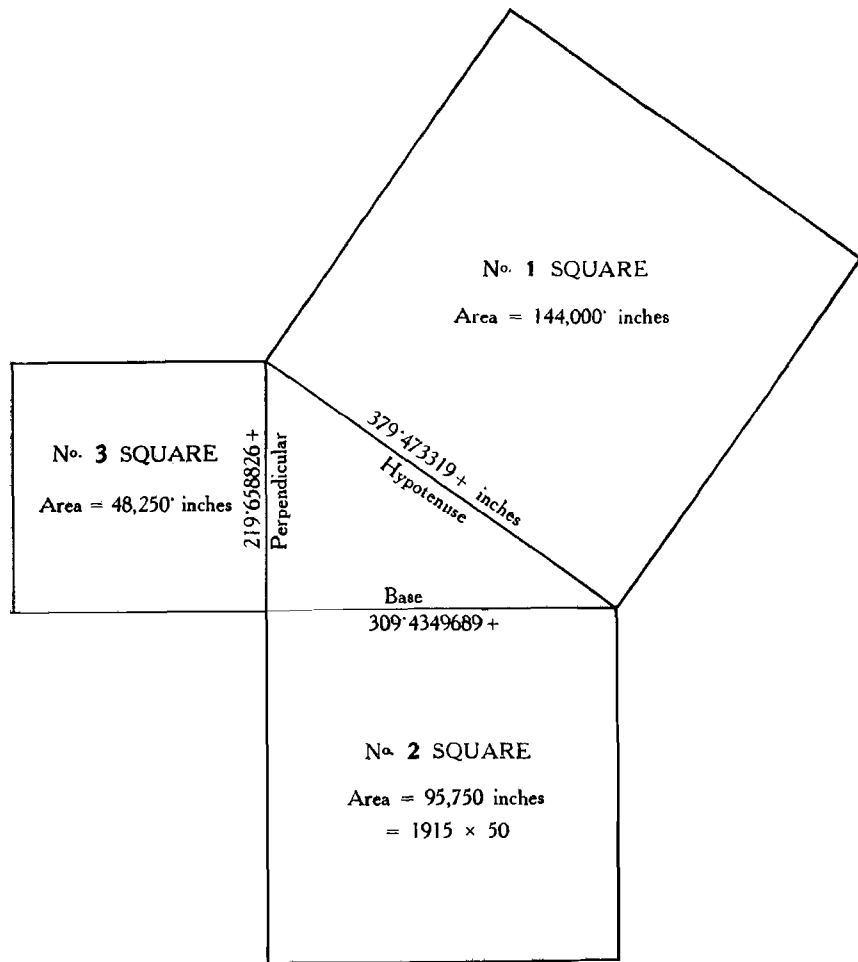
Diagram to Illustrate the Geometrical Connection
between the Numbers
71,250 and 144,000 and 1915

SUM of Nos. 2 and 3 Squares	·	= 144,000	= No. 1 Square
Difference of Nos. 2 and 3 Squares	= 47,500	= ⅔rds of Coffer's capacity
Add half difference - · -	= 23,750	
Sum	= 71,250	= Full capacity of Coffer, Q.E.D.

SECTION XXII

THE GEOMETRICAL CONNECTION OF THE NUMBERS
71,250 AND 144,000 AND 1915

WE now draw attention to a feature which may be said to be a geometrical and mathematical demonstration of the thought: It is during the Kingdom reign of the Christ Head and Body, that is, the Lord Jesus Christ with his 144-thousand joint-heirs, and through the direct instructions of this new Ruler of earth, that the world will have restored to it the perfect standards of Measure and Weight, as represented by the interior capacity of the Coffer, 71,250 cubic Pyramid inches.

The teaching of the Scriptures is that just weights and just measures are absolutely essential to the well-being of mankind. We read: "Ye shall do no unrighteousness in judgment, in metyard, in weight, or in measure." "Thou shalt not have in thy bag divers weights, a great and a small. Thou shalt not have in thine house divers measures, a great and a small. But thou shalt have a perfect and just weight, a perfect and just measure shalt thou have."

As the Lord is the Creator of all things, visible and invisible, it is but right to conclude that He is also the originator of just weights, and just measures; and that to deviate from these must displease Him. For it is written: "A just weight and balance are the Lord's: all the weights of the bag are his work." "Divers weights, and divers measures, both of them are alike abomination to the Lord."

We know that the Lord gave to his chosen people, the nation of Israel, these just weights and measures; and it is now being made manifest that, even before the birth of the father of the faithful, Abraham, and long before the Law was given through Moses the servant of God, these just weights and

measures were monumentalised in the stone Witness, the Great Pyramid of Gizeh, especially by means of the Coffer in the King's Chamber.

But as the chosen nation disregarded the Law in this, as in other particulars, the exact value of the Standards were lost to them, though close approximations are still preserved in the metrology of the Anglo-Saxon peoples, as we have noted. As the perfect Law of God will be restored during the reign of Him who is greater than Moses, so will the Standards of just weights and measures be restored. The existence of the Great Pyramid and its symbolical and scientific teaching, in addition to the Scriptural teaching, are proof of this.

The geometrical figure which shows the connection of the three numbers, 71,250, 144,000, and 1915, the full significance of which we now already know, is a plane right-angled triangle. The square of the length of the hypotenuse of this triangle is exactly 144,000; while the square of the length of its base is exactly 50 times 1915. With these two sides of the right-angled triangle thus definitely fixed according to these two well-established numbers (the number 50, also, being the King's Chamber's special number), we find that the square of the third side, *i.e.*, the perpendicular, symmetrically yields the third number, 71,250, by the following method:

According to the well known proposition of Euclid, the square of the length of the perpendicular of this right-angled triangle is equal to the difference between the two other squares. Therefore, in this particular triangle, the square of the perpendicular is 48,250; for 144,000, minus 50 times 1915, gives this difference.

Reckoning these numbers in Pyramid inches, the precise number of inches in the Coffer's interior capacity, 71,250, is yielded by a proportion between the two smaller squares of base and perpendicular, of the above right-angled triangle. This proportion is the difference between these two squares; that is, exactly 1½ times this difference is 71,250, Q.E.D. In other words, just as the difference between the square of the perpendicular and the square of the hypotenuse yields the square of the base (144,000 minus 48,250 yields 95,750, which is equal to an even 50 times 1915), so the difference

between the square of the perpendicular and the square of the base, when half of this difference is added to itself, yields the Coffer's interior capacity (95,750 minus 48,250 yields 47,500. Half of this difference is 23,750; and this added to 47,500 yields the sum 71,250).

Here, then, by an exact plane geometrical figure, the number of the 144,000 overcomers, the prominent period of 1915 years from 2 B.C. to 1914 A.D., the special King's Chamber's number 50, and the Standard Capacity Measure of the Coffer, 71,250 (by the proportion of 1½), and all that these prominent numbers imply in the Pyramid's symbols and in the Biblical Plan of the Ages, are brought together. This, surely, is evidence of intentional design.

Further Development of the Geometrical Figure

Not only do the proportions of the above-mentioned plane geometrical figure yield the Coffer's capacity, but they agree also with other dimensions in the Pyramid, thus proving still further the close connection that the number of Christ's overcoming followers has to the number of years in the Gospel Age, and the Millennial reign of 1000 years (*i.e.*, to the 1915 and 2915 periods of years); and always bearing out the thought of the upward walk and sacrifice of these spirit-begotten ones of the Gospel Age as symbolised by the Grand Gallery.

Keeping strictly to the dimensions of this particular right-angled triangle, as fixed by the square of each of the three sides, namely, (1) the square of the hypotenuse exactly 144,000, (2) the square of the base exactly 50 times 1915, and (3) the square of the perpendicular 48,250, or the difference between the other two squares, we can find the length of each side by computing the square-root of each of these squares. Thus, (1) the hypotenuse-length is 379·473319+, for this is the square-root of 144,000. (2) The base-length is 309·434968+, for this is the square-root of 50 times 1915. (3) The perpendicular-length is 219·658826+.

By the usual Pyramid method of proportions, these dimensions of the right-angled triangle show a large number of related Pyramid measures. We here mention a few briefly:
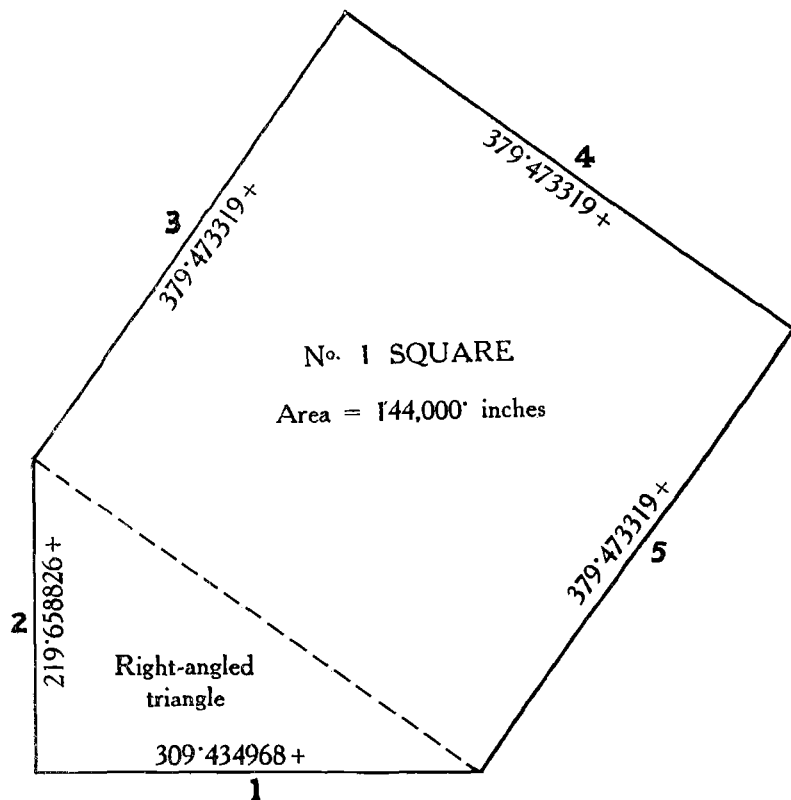
No. 1 SQUARE

Area = 144,000 inches

Right-angled triangle

Diagram to Illustrate the Further Development
of the Geometrical Figure

Line 1 is the side-length of the *Square*, whose area is 50 times 1915 inches

6 times *line* 1	= 1856·6098+ inches	
Add 1 Pyramid Cubit	= 25·	,,
Sum	= 1881·6098+	= Grand Gallery floor-length

The sum of *lines* 1 to 5	= 1667·5137+ inches	
Divided by 2	= 833·7568+	= Vertical height of Grand Gallery

5 times *line* 2	= 1098·2941+ inches	
Add one-half of this	= 549·1470+	,,
Sum	= 1647·4411+	= First Ascending Passage "Extended" length

(1) The base of the triangle, multiplied by 6, and one Pyramid cubit of 25 inches added, equals the floor length of the Grand Gallery to within about a 100th part of an inch of the standard length. (The resultant figure is 1881·6098+, while the standard length of the Gallery is 1881·5985+.)

(2) If we draw in connection with the triangle the square of the hypotenuse, we shall have a square (of 144,000 square Pyramid inches in area), and to one side of this square a right-angled triangle. The boundary-lines of this plane figure are, therefore, the base and perpendicular of the triangle, and three sides of the adjoining square.

The total length of this definitely-fixed boundary, when divided by 2, is equal to the vertical height of the Grand Gallery, to within less than a 200th part of an inch of the standard height. As the dimensions of the King's Chamber, and of the Socket-base area of the whole Pyramid, are mathematically and geometrically connected with the floor-length and vertical height of the Grand Gallery (as we have already seen many times), the length of the boundary of this precise figure is related to them all. (One half of the sum of the 5 sides of the plane figure is 833·7568+ inches, while the standard vertical height of the Grand Gallery is 833·7616+, a difference of ·0047+ of an inch, or less than a 200th part.)

(3) Multiply the perpendicular of the triangle by 5, and add one half of the result to itself. The resultant sum is equal to the extended length of the First Ascending Passage, to within about a 10th part of an inch of the standard extended length. This extended length of the First Ascending Passage is, as explained, the sum of the floor-distance between the lower end of the Granite Plug to the upper end of the passage, plus the length of the Granite Plug itself. (The perpendicular of the triangle multiplied by 5 is 1098·2941+ inches. Half of this, 549·1470+, added gives the total 1647·4411+ inches. The standard extended length of the First Ascending Passage is already stated as 1647·3250+ inches.)

(4) To find the length of the diagonal of the large 144,000 area square, multiply the side-length of this square by the square-root of 2. (The square-root of 2 is 1·4142135623730+.) This diagonal-length is, therefore, 536·6563+ inches. If we
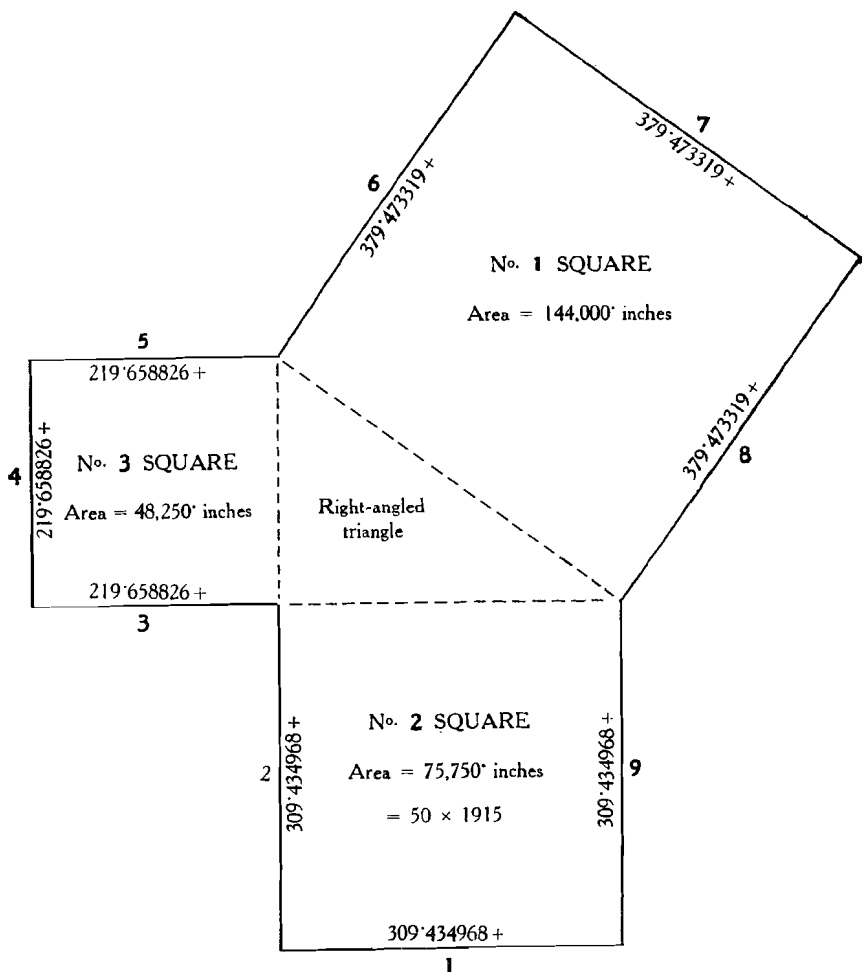
No. 1 SQUARE

Area = 144,000˙ inches

No. 3 SQUARE

Area = 48,250˙ inches

Right-angled
triangle

No. 2 SQUARE

Area = 75,750˙ inches

= 50 × 1915

219˙658826 +

219˙658826 +

219˙658826 +

309˙434968 +

309˙434968 +

309˙434968 +

379˙473319 +

379˙473319 +

379˙473319 +

Diagram to Illustrate the Geometrical Figure's Indication of the Precessional Cycle of the Equinoxes

3 times the sum of Nos. 1 to 9 sides	=	8177·104 +	inches
Multiplied by the Ratio π	=	25,689·129 +	,,
Add the number 5	=	5·	,,
Sum	=	25,694·129 +	= Years in the Precessional Cycle of the Equinoxes

multiply this diagonal by 10, and deduct a 10th part from the result (or multiply the diagonal by 9), we shall find that the final remainder is equal to the sum of 1915, plus 2915, practically. (The diagonal multiplied by 9 is 4829·9068+.) By this symmetrical proportion the 144,000 is shown to be connected with the Gospel Age length in years, the 1915-year period from the birth of Jesus Christ in 2 B.C. to the beginning of his reign in 1914 A.D.; and to the longer period of 2915 years, to the completion of the reign of 1000 years, 2914 A.D.

(5) While the reign of the Christ is reckoned as beginning from the termination of the Seven Times of the Gentiles, 1914 A.D., the body-members of earth's new Ruler, the Christ, began to be raised from the sleep of death 1878½ years after the birth of Jesus Christ, i.e., in Spring of 1878 A.D. (But while the 144,000 body-members began to join their Lord and Head 1878½ years after the birth of Jesus Christ in Bethlehem, the "feet" members are still on the flesh, awaiting their change, as we have noted before.)

The dimensions of the large 144,000 area square also indicates this important detail of the Lord's Plan of the Ages, i.e., the beginning of the "First Resurrection" 1878½ years after the world's Saviour was born into the world. For when we multiply the semi-diagonal of this square by the perfect number 7, we get in inches a close approximation to the period in question, namely, 1878·2971+ inches.

(6) Then the interval of 1875 years between the birth of our Lord, and the date of his second advent as an invisible spirit being, from Autumn 2 B.C. to Autumn 1874 A.D. (For the Scriptural times and seasons prove that our Lord was present 3½ years previous to the beginning of the first resurrection of his body-members), is also symmetrically indicated by the dimensions of the plane geometrical figure, but in this case by the square of the perpendicular of the triangle:

Multiplying the length of the triangle's perpendicular by the square-root of 2 (as explained above), we get the length of the diagonal of the square, of which this perpendicular is the side-length. This diagonal-length is 310·64449+ inches.

Consider two adjoining sides, and the diagonal, of the square as the three sides of a right-angled triangle, and find the sum

of these three sides. This sum is 749·9621+ inches.
Multiply the sum by the inches in the Pyramid cubit, *i.e.*, by
25, and we shall find that a 10th part of the result is practically
a round 1875 inches. (The 10th part of 25 times the sum of
the three sides of the triangle is 1874·9053+ inches.)

(7) If we now take the area of the triangle of the geometrical
figure whose dimensions are based upon the numbers 144,000,
1915, and 50, as detailed, we find that, by a proportion in
which the Pyramid cubit is again used, it yields the 2915
measure.

With the base and perpendicular lengths of the right-angled
triangle already given, we can compute the area of this triangle,
which area is 33,985·0610+ square inches. Multiply 10 times
this area by the number of inches in the Pyramid cubit, and
regard the result as being the area of a square. The
total number of inches in this square is 8,496,265·2640+.
The square-root of this total of inches will give the side-length
of the square. This side-length is practically, in round figures,
2915 inches. (The precise side-length is 2914·8353+.)

(8) We have seen before how intimately related the duration
in years of the Precessional Cycle of the Equinoxes is to the
1915-year period. This plane geometrical figure also indicates
this close relationship; for the sizes of the three squares of the
figure are so balanced that, taking the sum of the entire outer
boundary line of these three adjoining squares, we find that
when we multiply this sum by 3, and regard the result as the
diameter of a circle, the circumference of the circle, plus the
Pyramid's sacred number 5, equals as many inches as there
are years in the precessional cycle. (The sum of the nine
outer lines of the three squares, multiplied by 3, equals
8177·1040+ inches. Multiplied by the ratio π, and 5 added
to the result, gives the final result, 25,694·129+, which is
the number of years in the precession.)

An alternative method of expressing this proportionate
feature is to multiply the sum of the three sides of the right-
angled triangle by 9, and then by the ratio π, and add 5.
(The sum of the triangle's three sides is 908·56711+.)

SECTION XXIII

The Capacity of the King's Chamber
Related to the Capacity of the Coffer

DIRECTING our notice to the position of the King's
Chamber in the Great Pyramid, and to the relative
proportions of the Coffer to the size and wall-courses
(5 in number) of this chamber, Professor C. Piazzi Smyth
comments upon the significance of the fact that the bottom
course of masonry forming the walls of the chamber sinks
down below the level of the floor to the extent of about a 10th
part of the full height of that wall-course, thus leaving visible
above the floor-level 9/10ths.

This is true, to a close approximation; but we shall quote
Professor Smyth's words, which show the features he attached
to this architectural detail: "But the tenth part, nearly,
taken off the visible height of the lower granite course of the
chamber's walls; what was that for?

"Its first effect was to make that course, within the fraction
of an inch, the same height as the Coffer; and the second was,
more exactly, to make the capacity, or cubic contents of that
lowest course of the room, so decreased, equal to fifty times
the cubic contents of the Coffer, already deduced to be 71,250
cubic Pyramid inches.

"Two separate sets of measured numbers in Pyramid inches
for the length, breadth, and height, of that lowest chamber-
course, giving as follows, when divided by the Coffer's contents:

$$\frac{412·14 \times 206·09 \times 41·9}{71,250} = \frac{3,558,899·}{71,250} = 49·95$$

And:
$$\frac{412 \times 206 \times 42}{71,250} = \frac{3,564,624·}{71,250} = 50·03$$

VERTICAL SECTION *(LOOKING WEST)* OF KINGS CHAMBER; ALSO OF ANTE-CHAMBER, AND SOUTH END OF GRAND GALLERY   *CROSSED LINES INDICATE GRANITE.*
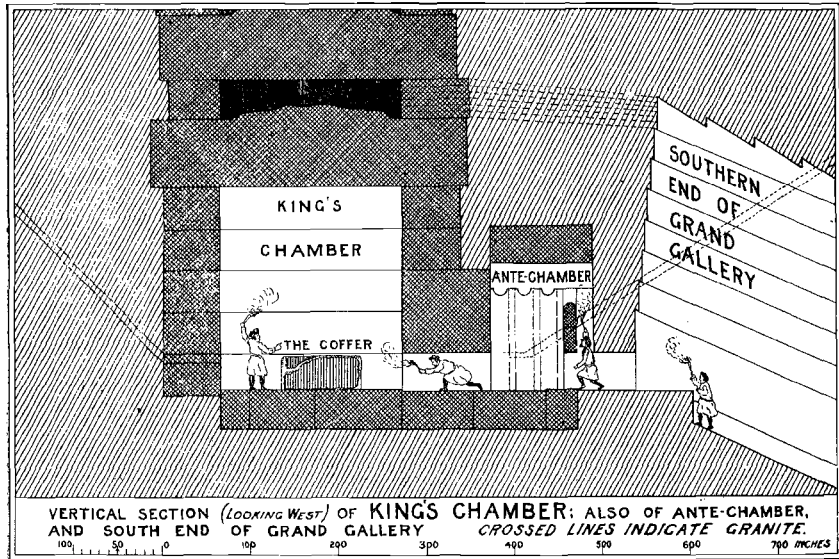
"Hence, close as was the connection of the several parts of the Coffer with each other by the tie of capacity, equally close is the connection of the Coffer with the one *adjusted* course of the granite room in which it stands, and by *capacity* measure also. While, if the multiple before was 2, and is 50 now, is not 50 twice 25, or double the number of inches in the cubit of the Great Pyramid?"

Even though his figures yielded close approximations only, we can see both by the above quotation and by his comments in other places in his Pyramid volumes, that Professor Smyth was impressed with the agreement between the capacity of the lower section of the King's Chamber (as defined by the height of the first, or lowest, of the chamber's five wall-courses), and the interior capacity of the Coffer. This feature was thought by him to be important, as confirming the theory attached to the exact capacity of the Coffer, and its bearing upon a universal and scientific system of weights and measures. We share his views on this matter; and the still further, more precise, features we are now presenting go far to establish the claims of Professor Smyth, as we think all careful

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students will agree. It is because this feature of capacity, in addition to all the other features, supports the interpretation of the Scriptures, namely, that the Great Pyramid is Jehovah's Sign and Witness to His own people, and to the world in general, both now and in the future, that we deem the correct understanding of the building's Biblical and scientific teachings as of great importance, and worthy of close attention.

The 50th Part of the Lowest Wall-course Contents and the Interior Capacity of the Coffer

The two points, therefore, that Professor Smyth desired to impress were: (1) The level of the top of the Coffer is, to a near approximation, on the same level as the first wall-joint above the floor, which wall-joint runs round all four sides of the King's Chamber, maintaining the same dead level along its course (that is, originally, for the effects of an earthquake have very slightly disturbed the strict rectangularity of this noble chamber, as pointed out by Professor Flinders Petrie); and, (2) that this wall-joint is just at the exact vertical height above the floor-level, specially arranged by the building's designer, which enables the cubical contents of the chamber within the confines of the visible height of the first, or lowest, wall-course to be almost precisely 50 times the cubical capacity of the interior hollow of the Coffer. Professor Smyth's figures show, and he himself mentions, that the correspondencies are not absolute, but close approximations.

Yet, so wonderfully has the Great Pyramid been designed, and so nicely balanced are all its varied dimensions, that even the little differences from the absolute that are implied by approximations can be shown to be part of the general system of measures that obtains throughout the monument. What, therefore, at first may appear unfinished or incomplete in design, yielding near approximations only, are often seen on careful examination to be further developments of the same design. These approximations, also, sometimes hide deeper beauties, unsuspected comfirmations of the main features.

We have shown that, according to the standard dimensions, the vertical distance of the first wall-joint above the floor of

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the King's Chamber is 42·1940198+ Pyramid inches. And as the theoretical length and breadth of the chamber are 412·1316879+, and 206·0658439+, Pyramid inches respectively, it follows that the cubical content of the chamber within this first wall-course totals 3,583,380·4698+ cubic inches. This total is more than that computed by Professor Smyth, but is correct according to the standard measures of the whole structure of the Pyramid; for all these measures stand together. These dimensions are within the limits of the practical measures of Professors Smyth and Petrie.

The 50th part of 3,583,380·4698+ is 71,667·6093+ cubic Pyramid inches. But the capacity of the Coffer is, by the theory accepted, 71,250. Therefore, the 50th part of the cubical contents of the lowest wall-course section of the chamber is only approximately equal to the Coffer's interior capacity. The difference between the two quantities is 417·6093+ inches.

But this difference is in itself corroborative of the general feature, and of the mathematical proportions of the building; for by the mathematical ratio π, squared (which ratio we have required to use in connection with the proportions of the Step at the head of the Grand Gallery), it indicates the length of the King's Chamber. This is confirmatory of the main feature, for the length of the chamber is the basis for the whole calculation.

Thus, when we multiply the difference of 417·6093+ Pyramid inches by the square of the ratio π, the result is equal to 10 times the length of the King's Chamber, to within less than a 30th part of an inch of the precise standard length for that chamber.

The Level of the Top of the Coffer in Relation to the First Wall-joint Level

As the vertical height of the first, or lowest wall-joint of the King's Chamber is 42·1940198+ Pyramid inches, and the standard exterior height of the Coffer is 41·2131687+ (as given on page 102), the level of the Coffer's top is only approximately in horizontal line with the top of the chamber's lowest wall-course. The difference between these two levels is less than

an inch; but it is just that precise amount less than one inch to enable this difference to indicate with remarkable exactness an appropriate time-feature.

This time-feature is appropriate to the Coffer's dimensions and related symbolism; and it is appropriate to the symbolism of the King's Chamber itself. For the precise difference between the two levels of the tops of the Coffer and lowest wall-course indicates, by a capacity measure, the King's Chamber's special number 50, and the 2915-year period, the long and important interval between the birth of earth's King of Peace, and the termination of His reign of 1000 years, 2 B.C. to 2914 A.D.

In this capacity feature, as in many others, the Pyramid's basic number 10, and the perfect number 7, enter as factors. The Coffer stands in the western half of the chamber, and our measure is confined to this half.

We desire to find the cubical capacity of the half area of the chamber which lies between the levels of the Coffer's top, and the top of the first wall-course. To ascertain this capacity we multiply the area of one half of the chamber's horizontal section by ·98085102+ (for this is the exact difference between the two levels in question). The half horizontal area of the chamber is 42,463·1320+ square Pyramid inches, as based upon the chamber's standard measures.

The one number multiplied by the other yields the required cubical capacity, namely, 41,650·0064+ cubic Pyramid inches. When we multiply this number of cubic inches by the perfect number 7, the resultant figure is equal to an even 100 times 2915, plus 50, the King's Chamber's special number. The difference between the two totals is only about a 25th part of an inch. (The sum of an even 100 times 2915, and 50, is 291,550; while 7 times the above number of cubic inches is 291,550·0449+.)

Another feature touching capacity-measure in the King's Chamber and its granite Coffer brings in, by a proportionate calculation in which the Pyramid's basic number 10 is a prominent factor, the day-value of the lunar year of 12 synodic months, as will be seen on the next page:

*The Capacities of the Lowest Wall-course and the
Coffer, and a Lunar-Year Indication*

We noticed in another Section of this treatise how the duration of the lunar year was indicated, though indirectly, by the capacity of the entire King's Chamber. The feature now presented deals with the partial capacity of the chamber, namely, of that portion within the limits of the lowest wall-course. It also deals with the interior capacity of the Coffer. It is a peculiar feature, but wonderfully exact in its result; and in view of all the other features already considered, can be accepted as part of the Pyramid's proportionate system of measures.

The two parts of the calculation are as follows: (1) Divide the total cubical contents of the lowest wall-course portion of the King's Chamber by 100 (*i.e.*, divide by 10 × 10), and deduct from the result 10. (2) Multiply the number of days in the lunar year of 12 synodic months by 100, and deduct from the result 10. The sum of these two quantities is equal to the interior capacity of the Coffer, to within about $\frac{1}{2}$ of an inch. (The contents of the lowest wall-course section of the King's Chamber is, as already given, 3,583,380·4698+ cubic Pyramid inches. This, divided by 100, and 10 deducted, is 35,823·8046+. The number of days in 100 lunar years, minus 10, is 35,426·7064+. The sum of the two results is 71,250·5111+, or about half an inch more than the Coffer's capacity in cubic inches.)

SECTION XXIV

TEMPERATURE AND OTHER MENSURATIONS

SCIENTIFICALLY accurate as the Great Pyramid is now proved to be, not only in its material lines, but more especially in the wonderful truths which it presents, we might reasonably expect that the monument would yield by its own convincing method, scales for measuring off in a concise manner heat, angle, etc.; and even of presenting a basis for a scale of money-values, that the commerce in a perfecting world might be conducting on a stable currency.

Mean Temperature of the King's Chamber

Variations in temperature, it has been found by scientists, must be eliminated as far as is possible if the best results are wanted in some classes of very delicate research-work. In elaborate astronomical calculations, where the time-element is important, the disturbing influence which the rise and fall in temperature has on the mechanism of the clock in observatories is overcome by placing the instrument far underground. The chief clock of the Royal Observatory of Greenwich is below-ground; and in the Paris Observatory the all-important clock stands no less than 95 feet under the surface, in one of the caves below the city.

Over a number of years the mean variations in temperature were specially tested by the authorities at the Royal Observatory in Edinburgh, Scotland. Suitable thermometers were let into the rock at measured distances below the ground level; and from the records which were accumulated during these years, the mean variation at each level was ascertained. The following are the results:

'THE MEAN SEMI-ANNUAL VARIATION OF HEAT:

At the surface of the ground amounts to .. .. 50° Fahr.
At three inches under the surface .. .. .. 30° ,,
At three feet under the surface .. .. .. 16° ,,
At six feet under the surface .. .. .. 10° ,,
At twelve feet under the surface .. .. .. 5° ,,
At twenty-four feet under the surface .. .. 1° ,,

At the great depth of 95 feet, therefore, the temperature must be nearly stationary. But, as Professor C. Piazzi Smyth shows, the very unique situation of the granite King's Chamber in the Great Pyramid, makes of that chamber the most admirable scientific observing-room in the world. For besides having the properties of a deep cave, being shut in from outside variations of temperature by nowhere less than 180 feet of solid masonry (and therefore about double the "depth" of the Observatory cave in Paris), the King's Chamber has a necessary property not possessed by caves, namely, that of the correct barometric air-pressure. For the height of the Pyramid on its rock hill above the hot plain of Egypt, and the height of the King's Chamber in the building itself, in all 360 feet above the sea-level, gives at that particular latitude the required barometric pressure of 30 inches. This air-pressure is the annual mean of barometric observations at, and around, the Great Pyramid.

The mean barometric pressure of 30 inches at the altitude of the King's Chamber, agrees with the very figure which expresses the degrees of latitude on which the Great Pyramid stands, that is, 30° north of the equator. The appropriateness of this agreement is emphasised by the geometric proportions of the sphere; for, according to geometry, the surface area of that part of the sphere which lies between the equator and the parallel of latitude on which the Great Pyramid was built, 30° north, is equalled by the surface area between that Pyramid-latitude and the north pole. Incidentally, also, this agreement is harmonious with a 90° division of the quadrant, or 360° division of the complete circle.

By a most elaborate system of temperature observations when at the Great Pyramid, and by carefully weighing up

the best recorded observations of temperature in all parts of the earth, Professor C. Piazzi Smyth came to the conclusion that the mean temperature of earth is 68 degrees Fahrenheit. This, also, he found to be the mean temperature in the King's Chamber in the Great Pyramid.

The peculiar interest which attaches to this mean temperature of 68° for all habitable parts of the earth (leaving out the extremes both of intense Arctic cold, and excessive tropical heat, as not either of them being suited to man's well-being), is that, it is exactly at one-fifth above the freezing point of water, and four-fifths below the boiling point of water, when the barometric air-pressure is 30 inches. Here again there is appropriateness in the figures, because 5 is the special number of the King's Chamber, and 68° Fahr., the temperature of one-fifth, is known to be the mean temperature of this chamber. just as it is the mean temperature of the whole habitable earth.

Therefore, owing to the fact that earth's mean temperature of 68° Fahrenheit is at a fifth of the distance between the freezing and boiling points of water, and that this is also the mean temperature of the King's Chamber in the Great Pyramid, Professor C. Piazzi Smyth perceived that the much needed new scale of division for a universal thermometer, for the use of all nations, is presented by the distinctive numbers of the Great Pyramid. Thus, the fifth of the scale from the freezing point of water at 30 inches barometric pressure is naturally subdivided into 50 degrees, and the remaining four-fifths to the boiling point of water into 4 times 50, or 200 degrees. Making the freezing point of water the zero-point of the scale (as in the modern French Centigrade thermometer), the boiling point of water is then at the convenient temperature of 250° above zero.

Other prominent points in the thermometrical scale, which must be recognised by man in his practical work, can be read in convenient round numbers on the Pyramid system of division. For instance, in their Vol. II of *Natural Philosophy*, page 63, the Society for "Diffusion of Useful Knowledge" publishes that iron begins to appear bright red in the dark when it is heated to the temperature of 752° Fahr. In other words, this particular temperature of 752° Fahr.

is the point at which heat first begins to cause bodies to give out light. In the thermometer, divided off as indicated by the Pyramid, this important dividing line of heat reads 1000°, or just 4 times the temperature of boiling water.

Then, at the top of the scale there is another round, and characteristic Pyramid number, that is, 5000°, exactly 5 times the important dividing line of heat referred to above. For this high temperature is the point where platinum, the most dense and refractory of metals, begins to melt. At the opposite extreme of the Pyramid scale of the thermometer, where chemists place the lowest degree of absolute cold, we read the even number of 400° below the zero of this scale, which zero, as explained, is the point where water begins to freeze. Theoretically, it is possible to descend lower still in the scale, but for most practical purposes 400° below the zero indication of the Pyramid is what many chemists would consider the lowest limit. The following comparative table was drawn up by Professor C. Piazzi Smyth:

TEMPERATURE IN PYRAMID THERMOMETER DEGREES

THE AIR-PRESSURE BEING AT 30 PYRAMID INCHES:

Platinum melts	5000	Mean temperature at the	
Wrought-iron melts	4000	level of the King's	
Steel melts	3500	Chamber in the	
Cast-iron melts	3875	Great Pyramid	50
Pure gold melts	3125	Mean temperature of all	
Copper melts	2875	habitable lands, and	
Pure silver melts	2555	the temperature the	
Iron visible in dark	1000	most suited to man	50
Zinc melts	900	Mean temperature of	
Mercury boils	882	London, England	25
Lead melts	815	Low winter temperature	
Sulphur melts	278	at the Great Pyramid	20
Water boils	250	Water freezes (The Zero)	0
Pure alcohol boils	198	Freezing mixture, snow	
White wax melts	170	and salt	−50
Greatest observed		Mercury freezes	−98
shade temperature	139	Greatest Arctic cold	
Summer temperature at		experienced	−125
the Great Pyramid	100	Greatest artificial	
Blood heat	91·5	cold (chemical)	−350
Butter and lard melt	82	Absolute zero	−400

Using these definite, practical, temperature points in the thermometrical scale, on which they read in even Pyramid numbers, remembering also that they are primarily based upon the Pyramid's mean temperature-indication of one-fifth, we can easily extend the table, showing the melting-points of the various metals on the one hand, and the freezing-points of liquids on the other.

Angle Measure

The scientists of the period of the French Revolution believed that if the quadrant of the circle were divided into 100°, and, hence, the whole circle into 400°, angular measure would be rendered easier than by the old 90° quadrant, or 360° circle. But as their "centesimal" method of division did not gain favour in the scientific world generally, they were compelled to revert to the original "sexagesimal" system, and divided once more their whole circle into 360°.

For a time Professor C. Piazzi Smyth advocated a 250° quadrant, or an even 1000° circle, believing that this was the indication of the Great Pyramid. He afterwards, however, modified his views, and inclined to the suggestion of Mr. J. M. Clark of Cleveland, Ohio, U.S.A., that the quadrant should be 60° only, with subdivisions in the decimal system.

While a 240° division of the circle, with decimal subdivisions, has much to commend it, our own thought is that the original 360° circle with subdivisions into 60', and again into 60", with decimal divisions after that, is the system which is really indicated by the Great Pyramid's scientific dimensions. And this sexagesimal system of dividing the circle gains support from the Scriptures; for in the Biblical year there are an even 360 days, representative of the complete circle of the earth round the sun (although the provisions of the Law of Moses enabled the people of Israel to automatically correct their year-length, showing, therefore, that the 360-day year was for convenience in the observing of dates, as well as, also, to serve a symbolic and prophetic purpose—See Leviticus 23: 5-16; Deuteronomy 16: 9; Revelation 11: 2, 3; 12: 6, 14; 13: 5).

The objection raised against the sexagesimal system of division, in the minds at least of some, is the opinion that it is Babylonish in its origin. But though it may be proved that this system was in use in the country of the Chaldeans, this does not necessarily mean that it was *invented* by the idolaters of that early time.

The outstanding feature in the Great Pyramid which shows that that monument indicates the ancient sexagesimal division of the circle is the perimeter of the Rock-level base. As we mentioned before, twice this Rock-level perimeter is the exact length of the Pyramid geographical mile; and in some "great circle" of the earth, a great circle possibly passing through the Great Pyramid, this exact mile-length must divide an even 21,600 times, that is, as many times as there are "minutes" in the complete circle. (One minute of arc in this great circle of earth represents one Pyramid geographical mile; and as there are, in the sexagesimal system of dividing the circle, 60 minutes in the degree, and 6 times 60 degrees in the circle, there are 21,600 minutes, or geographical miles, in the "Pyramid" circumference of the earth. The "great circle" of the equator is, of course, longer than this "Pyramid" great circle. By another method the Great Pyramid indicates the equatorial maximum and minimum diameters, as is explained in Vol. III of *Great Pyramid Passages*.)

The angle at which the outside flanks of the Great Pyramid rise from the platform to the apex, called the π angle, is directly related to the angle at which the passages ascend or descend. The most important passage is recognised to be the Grand Gallery; and the angle of this passage has been proved by actual observations to be very close indeed to the theoretical standard of 26° 18′ 9″·7, so close as to be a practical demonstration of the ideal standard.

It is interesting to find that, a combination of the two related angles of outer casing-stone surface, and interior passage-floors, through the medium of two right-angled triangles, yields the actual vertical height of the Grand Gallery. The vertical height of the Grand Gallery is, of course, dependent on the floor-length of the passage, and on the angle at which this floor rises from the horizontal. We have already noted that

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the number of inches in the vertical height of the Grand Gallery is geometrically, and mathematically, connected with the exact dimensions of the King's Chamber on the one hand, and with the Socket-level square base of the whole monument on the other.

When we compute the side-lengths of two right-angled triangles, the perpendicular of each being an even 100 inches, the hypotenuse of one rising at the casing-stone angle of 51° 51′ 14″·3, and of the other at the passage-floor angle of 26° 18′ 9″·7, we find that the sum of all six side-lengths is, to within less than a 12th part of an inch, equal to the standard vertical height of the Grand Gallery.
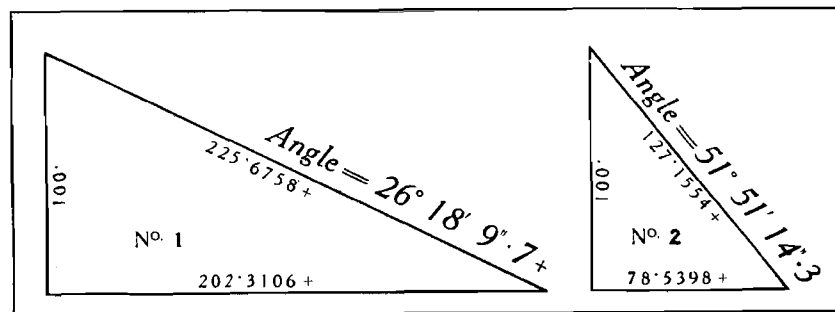
The side-lengths of the two triangles in inches are:
(1) Perpendicular 100, base 202·3106+, hypotenuse 225·6758+.
(2) Perpendicular 100, base 78·5398+, hypotenuse 127·1554+.
The total sum of the sides of these two triangles is 833·6816+, while the standard vertical height of the Grand Gallery is 833·7616+, Pyramid inches.

Possible Money-System Indication

As the basis of any system of money-values is weight, and as it is now clearly proved that the Great Pyramid, by means of its wonderful "Coffer" in the equally wonderful King's Chamber presents mankind with the most scientific system of weight-measures that could possibly be devised, it is not improbable that the Architect of the Pyramid also intended

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His witnessing monument to indicate a standard weight-basis for money. At first Professor C. Piazzi Smyth was against the idea that any money-system was embodied in the scientific dimensions of the Great Pyramid, for money was associated in his mind with worldliness, and seemed to be foreign to the pure message of the Pyramid. Later, however, he saw that he had possibly been misjudging this matter, and decided that something further might still be learned from this grand monument.

What caused him to withdraw from his former attitude and agree that money-values might be indicated by the Pyramid, was certain remarkable coincidences between Pyramid-measures, and the grain-weight of the coinage of America. It was Dr. W. F. Quinby of Wilmington, Delaware, U.S.A., who drew attention to the correspondency, showing how the number of inches in the length of the King's Chamber agrees closely to the number of grains in the standard weight of the "Dollar of the Fathers," and hence how the grains in the half dollar and quarter dollar agree with the inches in the half length (width), and quarter length of the chamber.

These, and some other, correspondencies in numbers, while not exact, were sufficiently close to attract attention, and have, even if they be mere chance coincidences, suggested a line of investigations which may lead to acceptable conclusions. When the learned Secretary of the Royal Society of London in the year 1677, Dr. Hooke, was lamenting on the lack of some wanted detail of the Great Pyramid, which he thought that Professor John Greaves, being an astronomer, should have supplied in his Pyramid book, he commented that this lack "only shows how useful theories may be for the future to such as shall make observations; nay, though they should not be true, for that it will hint many inquiries to be taken notice of, which would otherwise not be thought of at all."

In Leviticus 27: 25 we read: "And all thy estimations shall be according to the shekel of the sanctuary." It is understood from this command that the shekel of the sanctuary, or, more literally, the "sacred shekel," was the standard or basis of all the money values of Israel. No matter whether the things bought and sold were gold, silver, copper, or land, houses,

etc., all were to be valued according to the sacred shekel. This standard shekel, also, on the strength of statements contained in the New Testament, and in Josephus, and the Talmud, is believed to have been the silver shekel of the country, in use from the most ancient times. Originally it was not a coin, but a weight, having, however, a set value like a coin.

It is agreed by those who have studied this subject that "we have no direct witness to the weight of the ancient Hebrew shekel"; but we have sufficient indirect testimony to show that this silver shekel must have weighed between 224 and 225 grains troy (See the article on Money in Vol. III of *Hastings' Dictionary of the Bible*).

From the 38th chapter of Exodus, verses 25 to 29, we can calculate that a talent contained 3000 shekels. In the *Oxford Bible Helps* a talent is said to be equal to 674,392 grains troy; and if we divide this by 3000, the weight of the shekel is seen to be 224·8 nearly. We believe that 225 grains cannot, therefore, be far wrong as an estimation for the weight of the original silver sacred shekel.

If we accept the estimate of Professor C. Piazzi Smyth for the total number of grains that the Coffer could contain, namely, 18,030,100; and reckoning that the sacred shekel weighed, originally, 225 grains (for we know that this must be a very near approximation), the Coffer would contain 80,133·7+ shekels. As there are 3000 shekels in one talent, and as, for heavy weights over 3000 shekels, the talent measure is used in Scriptures (See Exodus 38: 29), the 80,133·7+ shekels in the Coffer can be expressed as 26 talents, and 2133¾ shekels. But if we express the total number of shekels in talents and a decimal part of a talent, we find that the Coffer contains 26·711+ talents.

As the figure 26·711+ is practically the same as the number of Pyramid inches in the interior width of the Coffer (See list on page 102), we can say that the Coffer contains as many talents' weight as there are inches in its interior width. In other words, the number of grains contained within the space of one inch of the Coffer's width, this space running the full interior length and depth of the vessel, has the same weight as the ancient Hebrew talent.

The grains spoken of above are, of course, the modern British "artificial" grains. In the original Anglo-Saxon grains, which are smaller, the Hebrew talent would require to be expressed in a greater number of grains, just as the Coffer's capacity is more truthfully expressed as in a greater number of ancient grains. (During the transition period when the old "real" grains were made to give place to the new "artificial" grains, the arithmetical school-books taught that "32 real grains, or 24 artificial grains, make one pennyweight troy." There are 7680 real grains, or 5760 artificial grains, in the pound troy.)

The Coffer, therefore, was computed by Professor Smyth to contain 18,030,100 artificial grains, or, 24,040,100 real, or ancient Anglo-Saxon, grains. But, as we said before, Professor Smyth suggested that even the Anglo-Saxon grain was slightly smaller in its original, primitive, metrology, and that more nearly 25,000,000 of them could have been contained in the Coffer. That is the round, ideal, "Pyramid" number, and may be accepted for the purely scientific purposes of the Great Pyramid. We believe, however, that though it is hardly probable that the Anglo-Saxon grain has come down to our day without some slight change in its original size, it is not necessary for us to suppose that the Coffer must have contained exactly 25,000,000. We suggest the following capacity in original grains for the Coffer:

Taking the ancient Hebrew silver shekel as the standard unit, and following the Scriptural indication that 3000 of such sacred shekels made one talent, so, it is not improbable, 300 original Hebrew grains was the weight of one shekel. In modern "artificial" grains the weight of the silver shekel is 225; and at this weight, as we have seen, there are 80,133·7+ shekels in the Coffer's interior capacity. An easy calculation will show that, with 300 original grains to each shekel, and 80,133·7+ shekels in the Coffer, the total capacity of the Coffer is 24,040,133·3+ ancient Hebrew grains. This total of original grains for the Coffer's capacity is practically the same as the total of ancient Anglo-Saxon, or "real," grains computed by Professor Smyth, *i.e.*, 24,040,100, the difference being only about 33.

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We may therefore take it that the Coffer was made to contain 24,040,133 real grains; and, as Professor Smyth points out, these grains are "real" in the sense that, they are practically the weight of full and fair grains of well-grown wheat, so that there is nothing artificial in them. As Jehovah instructed the people of Israel to use these grains when fixing the weight of the "shekel of the sanctuary," a round 300 of them for one standard shekel, probably, and a round 3000 shekels for one talent, and as he commanded them through Moses that "all thy estimations shall be reckoned according to the shekel of the sanctuary" (Leviticus 27: 25), we can see how this agricultural people would naturally build up a monetary system of values, as, indeed, the Scriptures demonstrate. It is not improbable, therefore, that during Christ's Millennial reign, the present chaotic monetary systems of the "kingdoms of this world" will be replaced by the ancient perfect system, the basis of which is preserved in the scientific Coffer in the King's Chamber of the Great Pyramid. When, at the completion of the reign of Christ, the kingdom is delivered up to God the Father, that He may be all in all (See 1 Corinthians 15: 24), it may no longer be necessary to use any system of monetary values, for the perfect condition will then have been reached, and all things will be made new—Revelation 21: 1–5.

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SECTION XXV

The Great Pyramid of Gizeh
Indicates the Date of its own Erection

FROM data supplied to him by Col. Howard Vyse, the famous astronomer Sir John Herschel was able to compute, from the position of the stars in direct relation to the Great Pyramid, the actual date when this monument was erected. For at that time the Pyramid was built, the north star of the period was Alpha Draconis, the chief star in the Dragon constellation. And the Descending Passage of the Great Pyramid was constructed at such an angle that, at midnight of the Autumnal Equinox of the year when the building stood completed, this north star shone down the central axis of the passage.

The date computed by Sir John Herschel was 2161 B.C. Later, Professor C. Piazzi Smyth, then Astronomer Royal for Scotland, found that at the year when the Pyramid was erected, not only did Alpha Draconis, when at its lower culmination in its daily circuit of the pole of the heavens (for it was then at a distance of about 3⅓ degrees from the celestial pole, and therefore a circumpolar star), but at precisely the same instant, namely, midnight of the Autumnal Equinox, another notable star, Alcyone of the renowned Pleiades group, stood exactly on the meridian of the Great Pyramid, at that point in the heavens which is at right-angles to the downward inclination of the Descending Passage.

In other words, Professor Smyth's valuable discovery was that, at the very moment intended to be so signally monumentalised by the Pyramid's great designer, the north star, Alpha Draconis, and the principal star of the Pleiades, Alcyone, were at right angles to each other; Alcyone on the Pyramid's meridian at midnight of the Autumnal Equinox

above the pole of the heavens, and Alpha Draconis on the same meridian below the pole, and at that exact angle below the pole to enable it to shine right down the Descending Passage of the Great Pyramid.

The date for this celestial phenomena Professor Smyth computed to be on, or about, 2170 B.C. He stated, while publishing this computation, that if it were ultimately found that 2170 B.C. was not the absolutely correct date, the correct one, when ascertained, would be "at least closer thereto than the beginning or end of the duration of the Great Pyramid's building can be to its middle date." The relative positions of the two stars, Alpha Draconis and Alcyone, with reference to the Great Pyramid's meridian and Descending Passage, was very carefully recalculated by the eminent astronomer, Richard A. Proctor, and the year 2140 B.C. was pronounced by him as more likely to be the correct one. To this Professor Smyth agreed, saying in his later editions of *Our Inheritance in the Great Pyramid* that 2140 B.C. might now be considered as fairly well established.

Owing to the slow and sure movement of the precession of the equinoxes, the exact positions in the heavens of Alpha Draconis and Alcyone which are necessary to agree with the Great Pyramid's meridian and downward passage cannot again occur until 25,694-5 years have come and gone since Autumn of the year 2140 B.C., which is 2138 full years before our Lord was born in Bethlehem.

The Great Pyramid Marks the Date of its Erection by a Convincing Time-Measurement

In addition to the astronomical fixing of the building-date of the Great Pyramid, which is very exact and full of significance in another direction, as we shall refer to presently, the structure within its own masonry contains a time-measurement in inches pointing to this very date 2140 B.C.

An interesting account of the steps that led to the discovery of this time-measurement is given by Professor C. Piazzi Smyth. It appears that Mr. Charles Casey of Pollerton Castle, Carlow, Ireland, who was writing a work on the Great Pyramid,

communicated with Professor Smyth in the year 1872, and expressed himself as not yet convinced of the truth of the "Sacred" claim of the Great Pyramid. He wrote: "Unless the Great Pyramid can be shown, besides being fraught with high science, to be also Messianic (*i.e.*, to have some acknowledgment to the real Divinity of Christ, as the promised Messiah) its 'sacred' claim is a thing with no blood in it; it is nothing but mere sound."

· Professor Smyth then goes on to quote Mr. Casey as declaring that, while the explanation of the meaning of the Well-shaft years before by the young Scotsman, Mr. Robert Menzies, namely, that this shaft symbolises the death and resurrection of Jesus Christ, and that therefore the Grand Gallery with its lofty height represents the Gospel of Grace, or the Gospel Age, which began at the time of Christ's work on earth; and hence the First Ascending Passage represents the Age of the Law of Moses which preceded and led up to the Gospel Age, yet, said Mr. Casey, that explanation, though good, was not for him sufficient. He wanted to see some definite indication in the Pyramid that the builder had, by inspiration, foreknown the very date of the advent into this world of the Saviour, and had marked that fact in the building itself.

Mr. Casey wrote: "I feel sure that the builder, if really inspired from on High, would have known how many years were to elapse between this great mechanical work in the beginning of the world, and the one central act of creation in the birth of the Divine Son; and, though not using any letters of inscription or devices of sculpture throughout the monument, he would have marked it there as the most positive and invaluable proof that he could give, of the truly Divine inspiration under which the building had been planned and executed."

Professor Smyth considered this to be a crucial test of the Divine inspiration claim of the Pyramid; for this was at the very beginning of the understanding of the method by which the Great Pyramid was made to record times and seasons, prophetically. It is just by such enquiries as that of Mr. Casey, reasonable though exacting, that the beauties of the Lord's Sign and Witness have been sought out.

Professor Smyth, who confessed that it had never occurred to him to thus confront the sacred and scientific theories in this manner, immediately consulted his measures, taken by him at the Pyramid long before in 1865, and duly published by him in his 2nd volume of *Life and Work at the Great Pyramid*. A necessary detail of the measurement of the Descending Passage which had escaped him in 1865, was furnished at his request by Mr. Waynman Dixon, an engineer then employed in the vicinity of the Pyramid. It was in this year 1872, when Mr. Casey started the time-measurement enquiry, that the Queen's Chamber's hidden air-channels were discovered by Mr. Waynman Dixon.

As the north wall of the Grand Gallery had already been seen to mark the date of our Lord's birth (although we now see that it also, more definitely, marks the date of his death and resurrection), Professor Smyth took this point as the commencement of his time-measurement. He measured backward down the floor-line of the First Ascending Passage till he reached the floor-line of the Descending Passage, that is, to the point on this downward floor which we name the "Point of Intersection," and thence upward towards the outside Entrance, searching meanwhile for any definite structural feature throughout this upper length of the passage which might be reasonably considered as affording a marking-point for some appropriate, and outstanding date. This date, of course, would be a B.C. date, and a convincing starting-point for a time-measurement leading up to the first advent of the world's Saviour.

When conducting his measuring-operations in the Pyramid during 1865 Professor Smyth had duly noted, among other features in the masonry of the Descending Passage, one prominent detail in the construction of the passage's two side walls. He noted that at some distance in from the outside Entrance there are two vertical wall-joints, *i.e.*, two on the east, and two on the west, walls. These two pairs of vertical joints are conspicuous, because the other wall-joints above and below them are not vertical, but at right-angles to the downward incline of the passage.

He rightly judged that this peculiar departure in the masonry

arrangement of the walls must have been intended by the building's Designer to serve some special purpose, whatever that purpose might prove to be. But there was something even more interesting, and unaccountable, than the conspicuous vertical joints. Immediately below each pair a strongly marked, and perfectly straight, line had been drawn, or scored, evidently with a metal tool by the ancient workmen. These scored lines, one on each side-wall of the passage, and nearly opposite to each other, are exactly at right-angles to the incline of the passage, like the wall-joints below them. The fact that immediately above them the two vertical wall-joints were arranged by the Architect, the scored lines, being at right-angles to the passage, are made the more noticeable; their presence is emphasised.

In describing these lines Professor Smyth remarked upon their evenness and straightness, and their truthful rectangularity to the incline of the passage; for in testing them with a specially-made wooden square, he could find no flaw. They were, he said, evidently made with a blunt steel instrument, and by a master-hand for power. At the time when he examined them, 1865, he had no idea what they were meant for. But when, in 1872, Mr. Casey started him on the "time-measurement" enquiry, and when he had been supplied with some further particulars regarding the precise distances between the vertical wall-joints and the scored lines by Mr. Waynman Dixon, he was "almost appalled," he writes, when he found that his measured floor-length from the north wall of the Grand Gallery, terminating at these lines, truthfully drawn on the walls over 4000 years ago, demonstrated that they marked the very date sought, 2170 B.C.

When we remember that this was the first definite application of a known period of years to the test of an inch-year time-measurement, we can appreciate the excitement and joy of heart experienced by Professor Smyth at his important discovery. For while we now see that these opposite lines on the east and west walls of the Descending Passage more clearly mark the precise date 2140 B.C. as the year when the Great Pyramid was erected (probably completed in that year), yet the great fact that the building-date was thus definitely marked by the

builder of ancient days was plainly revealed to Professor Smyth, corroborating the previously ascertained astronomical date. When he communicated his discovery to Mr. Casey, that gentleman wrote: "This testimony satisfies me, and fills me with thankfulness and joy."

As the standard floor-distance between the scored line on, say, the west wall of the Descending Passage, and the "Point of Intersection" is 628·0688+ Pyramid inches, according to the mean of the practical measures of Professors Smyth and Petrie, as well as our own, this number of inches, added to the standard floor-length of the First Ascending Passage,
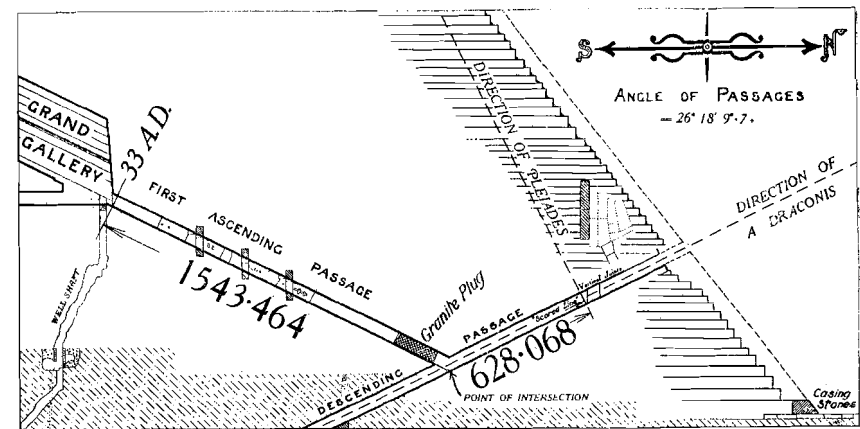
gives the total inch-length between the north wall of the Grand Gallery and the scored line as 2171·5330+, or practically 2171½ Pyramid inches. (Professor Smyth agreed with Professor Petrie that his measured-length of the First Ascending Passage was probably too short; although at the same time his opinion was that Professor Petrie's measure was rather too long. The scientific features of the Pyramid, however, show that a fair mean between the two published lengths for this passage by these two careful workers is correct. Thus, theoretically, the standard floor-length of the First Ascending Passage is 1543·4642+ Pyramid inches.)

This total floor-measurement of 2171½ Pyramid inches agrees with the number of years between Autumn of the year 2140 B.C. when the Pyramid was erected, and Spring of the year 33 A.D. when our Lord died and rose again, 2171½ years in all. This method of applying the floor-measurements is added corroboration that the north wall of the Grand Gallery, which is also the upper terminal of the First Ascending Passage, marks the date of our Lord's death and resurrection, Spring of the year 33 A.D.

SECTION XXVI

THE SIGNIFICANCE OF THE "STAR-POINTINGS" OF THE LORD'S STONE "SIGN" AND "WITNESS" IN THE LAND OF EGYPT

IN the inspired words of the Psalmist we read of Jehovah that "He telleth the number of the stars; he giveth them all their names" (Psalm 147: 4). In the very earliest ages the stars were divided into 48 sections or constellations. Twelve of these were called the "twelve signs of the Zodiac." The other 36 are known as Decans.

Around these sections pictures are supposed to exist. Tnese were drawn on charts, or otherwise recorded by the ancient nations, all using practically the same figures. The order of the constellations never varies; they have been carefully preserved throughout the centuries from dim antiquity, and can be seen in many almanacs printed today. This similarity in the pictorial arrangement of the stars by the peoples of the world, no matter how far separated from one another on earth or in history, proves both a common origin, and a deep-seated conviction that these celestial symbols have some vital connection with the destinies of the human race.

Jehovah Intended the Stars to Serve as Signs

We note particularly that Jehovah himself referred to these celestial figures when, in addressing Job, he demanded: "Canst thou bring forth the twelve signs of the Zodiac in their season?" (Job 38: 32, R.V.). The fact that the Almighty recognised the Zodiacal Signs, and that the names of other constellations are similarly associated with the Divine Name in the Scriptures, supports the claim made by many students of the Bible, that the grouping of the constellations into distinctive figures, and their names and the names of many stars, are of more

than human origination. We recall that it is in this same chapter of Job that Jehovah addresses the prophet with reference to the Great Pyramid, under the symbol of the earth.

It is true that the Creator had designed the heavenly bodies to be for "seasons, and for days, and for years," but he also expressly states that they should serve as "Signs" (Genesis 1: 14–16). When God commanded: "Let them be for signs," he intended that they should be used to signify something quite apart from their natural office; for a "sign" has in itself no relation to the thing which it is used to represent. It is something chosen to signify something else; as, for instance, the letters of the alphabet, which are, in combination, signs selected to convey to our minds ideas.

So also with the stellar "signs," there is no actual connection between these luminous bodies and the vital spiritual truths they were chosen by the spirit of God to represent. The grouping of the 48 constellations into figures such as a bull, or a serpent, is likewise quite unconnected, for there is no resemblance between the constellations and the figures selected to denote them.

And yet, just as there is a definite system governing the letters of the alphabet, and the signs of music, so there is a definite and eminently logical system running like a musical poem through the celestial emblems. This word "signs" in Genesis 1: 14 is rendered "ensign" in Numbers 2: 2. In the original Hebrew it reads "oth," from which is derived the English word "oath." To take the "oath" is to pledge oneself to truth. In poetic strain we can claim that, by the everlasting stars God pledged himself as to the truth of his glorious Plan of the Ages. For the astral symbols corroborate that Plan in every detail.

The Misuse of the Constellation Signs by the Idolatrous Nations is not a Contradiction of their Divine Origination

Even though the idolatrous nations in the days of old made use of the stars in their mythological worship, this does not weaken, but confirms our understanding that the constellar groupings and naming of the stars was of Divine inspiration.

The worship of the idolatrous nations is indeed a strange method of witnessing to the truth; nevertheless, by perfectly counterfeiting each detail of the scheme of salvation, these false religions unwittingly substantiate the Lord's Word. We believe that ultimately men shall discover that everything in heaven and earth has played its part in building up the Truth. "It is the glory of God to conceal a thing: but the honour of kings is to search out a matter." *Prov. 25:2* .

We are justified in taking it for proved from the text in Job already quoted that the constellations were known more than 2000 years before Christ. The ancients were therefore familiar with them. As we have said, many records with charts on stone and other imperishable materials have been found among the relics of the oldest nations. This hieroglyphical language was one which appealed to the people of these early days.

Throughout the ages the heavenly Father has graciously granted faithful honest hearts a measure of insight into his purposes, to enable them to endure with patience the forces of evil within and without, until in the due time dictated by his wisdom these evil agencies will be overcome and destroyed forever. Ever since Jehovah pronounced the memorable sentence against the instigator of evil, Satan, that old Serpent and Dragon, all righteous men have longed for the fulfilment of that sentence.

In his famous work, *The Origin of Religions*, Dupuis has collected a large number of traditions prevalent in all nations of a Divine person born of a woman, suffering in conflict with a serpent, but triumphing over him at last, and finds the same reflected in the figures of the constellations. The learned theologian; the Rev. G. Stanley Faber, rector of Long-Newton, after careful consideration acknowledged in his work, *Origin of Pagan Idolatry*, that the configurations of the Zodiacal Signs refer to the Seed of the woman, and his bruising of the serpent. Richer, a French writer of note, has repeatedly asserted that the whole primitive revelation may be traced in the constellations.

This primitive faith, which the Zodiacal arrangement of the stars undoubtedly depicts, could only have come down from Adam, who alone with Eve heard it in the beginning from God.

himself (Genesis 2: 13-15). For it is a matter of Scriptural record that there was a primeval revelation of hope given to mankind immediately after the fall into sin through the disobedience of Adam. The Apostle Paul refers to this when he says, in Romans 8: 19, 20, that God's earthly creation, when made subject to frailty because of the entrance of sin, was at the same time subjected in hope of a deliverance when the "sons of God" should be manifested.

After the flood this hope must have been more clearly defined, by means of the symbolism of the stars, Divinely arranged and picturized through the medium of one appointed,—Shem, as some students see reasons for believing. We know that the hope granted by the Lord of heaven and earth must have taken more definite form after the flood, because all the mythological religions of the ancient world reveal that men possessed knowledge of many of the details of the Plan of Salvation. Of this there can be no mistake. Nevertheless, every part of the Plan could not have been known, and probably very little was understood. For just as the earthly agent used by Jehovah in erecting His stone Witness in Egypt, which was to afterwards serve as a Sign to His people and the world in the Millennial Day, could not have understood the true import of the great edifice which for many years he was engaged in constructing, so it is not necessary for us to claim that the agent whom God used to arrange and name the constellations and stars, names which have descended unaltered to our day, should have realized the true and ultimate object of it all.

Modern Astronomers Annoyed at the Ancient Stellar Figures, but Must Still Recognise Them

Astronomy has never been known to exist apart from the 48 pictorial emblems. And as these are not essential to the pure astronomical science, their inseparable connection with it cannot be explained unless we understand that both the pictures and the science had one common author, who had a definite purpose in thus linking them together. We conclude that his intention was to associate with astronomy a complete system of thoughts and hopes, as sharply defined as the stars.

Explain it how we may it is worthy of note that, while many astronomers have expressed annoyance at the apparently confusing mass of figures delineated on all authentic celestial planispheres or star-charts (as witness Sir John Herschel, who complained that "the heavens are scribbled over with interminable snakes," and speaks of them as "those uncouth figures and outlines of men and monsters usually scribbled over celestial globes and maps"), yet they are no more able to set them aside than sceptics, honest or otherwise, have been able to abolish the written Word of God. Nor have they succeeded in substituting a more convenient and popular system of mapping off the skies.

Men of all nations, no matter of what religion or shade of opinion, agree in adopting these primeval Signs of the heavens. In view of this self-evident truth the Rev. G. Stanley Faber stated that "the forms of men and women, beasts and birds, monsters and reptiles, with which the whole face of the heavens has been disguised, are not without their signification."

The primitive names, both of the Signs and of the individual stars, handed down unaltered from ages past, are in constant use in the secular press of today. Aben Ezra, commenting upon the original 48 constellations as enumerated a thousand years ago by Albumazer, says: "According to Albumazer, none of these forms from their first invention have varied in coming down to us, nor one of their words [names] changed, not a point added or removed."

The Original 48 Constellations have been Carefully Preserved and Transmitted to the Present Generation

We are indebted to Claudius Ptolemy of Alexandria, who describes the constellations very particularly, for our understanding of them. In 137 A.D. he completed his celebrated list of fixed stars, using as his guide the catalogue compiled about the year 150 B.C. by the Greek astronomer Hipparchus, who is sometimes called the "Father of astronomy." In Ptolemy's list the position of each of the thousand and more stars he deals with is noted by the exact place it occupies in the pictorial figures of the ancient constellations. As Ptolemy

also added the celestial latitude and longitude of each star in his catalogue, we can tell with exactness the locations and arrangements of the starry pictorial figures as they appeared to the ancient peoples. Hipparchus similarly describes his catalogue, and Ulugh Beigh in 1420 A.D. adopted the same method. The attempted replacings of other figures for the originals by irresponsible meddlers, such as the substituting of "Berneice's Hair" for the original decan "Coma," the woman with the child, have been detected and rectified. In this way the ancient constellations have been preserved.

Those figures other than the 48 ancient constellations, which are found in some modern star-maps, such as the Sextant, Giraffe, Fox, Lynx, Clock, Air-pump, and about forty more, are interpolations, and only becloud the pure message as set forth in the beginning. It was Petrus Theodorus, about the year 1580 A.D., who began adding to the number of pictorial constellations; but Flamsteed, the first Astronomer Royal for England, a contemporary and adversary of the great Christian astronomer Sir Isaac Newton, was largely instrumental in confusing the symmetrical arrangement of the original 48 emblems by the introduction of others. It is manifest that Theodorus and Flamsteed did not realize the symbolical significance of the primeval asterisms, for their own additions are meaningless.

The Originators of the Ancient and Authentic 48 Constellations

We shall not at this time particularly present the results of our investigations into the origins of this interesting subject. We point out, however, that Hipparchus expressly states his opinion that the constellation-pictures and names are "of unquestioned authority, unknown origin, and unsearchable antiquity." But while it is true that there is no definite record that any nationality ever has claimed to have invented these strange celestial symbols, it must not be overlooked that all authorities, ancient and modern, agree in attributing to "Chaldean Shepherds" the birth of the astronomical science. And these Chaldean Shepherds are

identified with the "Shepherd Kings" who came from the East, and invading Egypt caused the Great Pyramid to be built. This was the reasoning of Professor C. Piazzi Smyth, founded upon what appears to be safe historical grounds.

Proctor shows that there is a vast blank space in the southern sphere of the heavens, that is, in all ancient star maps, where constellations had not been formed. This blank space, however, is not concentric around the southern pole of the heavens, but angular thereto. This, he holds, is owing to the gradual change in the positions of the stars as beheld from the earth, brought about by the precessional movement.

Calculating back precessionally, he finds that the constellations of the south must have been concentric around the pole about 2000 or more years B.C. Also, because of this blank space, where none of the figures of the constellations appear, Proctor concluded that the originator of these constellations could not have seen any of the southern stars from a point further south than 38° to 41° north of the equator. This latitude passes through the region of Ararat, where the ark rested after the flood. The date when the flood dried up, according to the Bible chronology, corroborated by the exact time-measurements of the Great Pyramid, is 2472 B.C. From this circumstance we would also conclude that the inspired framer of the figures of the constellations came forth from the ark. According to the Vailian theory, the stars as we now see them would for the first time have been visible only after the flood. Professor Isaac N. Vail proves that his theory is founded on scientific facts, and is supported by the correct under-standing of the Scriptures respecting the "days" of creation.

In his valuable work *Primitive Constellations* Robert Brown, Jnr., proves that astronomy, history, and archaeology unite in pointing to the Euphrates Valley as the place where the Signs of the Zodiac, and various others of the ancient constellation-figures were originated. He shows that the history, myths, and legends connected with the earlier constellations are all within the sphere of *Semitic* influence; and that the Greeks are certainly not to be credited with inventing the constellation-figures, although they largely perverted them in their mythological worship.

Further Scriptural Allusions to the Constellations

Reverting to the Scriptural allusions to the stars and constellations, which allusions strongly confirm the thought that these ancient pictorial signs and star-names were indeed, meant by Jehovah to symbolise and illustrate His Plan of Salvation, we read in the Book of Job, chapter 26, verse 13 (using the marginal reading of the Revised Version): "By his spirit he hath garnished the heavens; his hand hath formed the fleeing serpent."

As many commentators remark, it is not probable that the inspired writer, when speaking of the creative powers of the great Jehovah, would so abruptly descend from the wondrous beauties of the heavens to the formation of a repulsive reptile, without some deep significance underlying this association. Commenting upon this text Barnes says: "There is no doubt that Job refers here to the constellations."

The "fleeing serpent" is Hydra, the first Decan in the Zodiacal Sign of Leo, or the Lion. That Job is not referring to the physical stars and to a literal serpent, but to figurative constellations, is borne out by the meaning of the Hebrew word translated "garnished." In Daniel 4: 2 this Hebrew word is rendered: "I thought it good to show." Nebuchadnezzar says: "I thought it good to show the signs and wonders that the high God hath wrought toward me. How great are his signs! and how mighty are his wonders!" (Daniel 4: 2, 3).

Also, in Amos 5: 8 we read: "Seek him that maketh the seven stars and Orion;" that is, the Pleiades, and the constellation Orion, the "Mighty Hunter" (See Job 38: 31). And in Job 9: 9—"Which maketh Arcturus, Orion, and Pleiades, and the chambers of the south," or the twelve signs of the Zodiac.

If we paraphrase the above texts we can see better their true import: "By his spirit [operating through one appointed, as it did through David and other holy prophets—See 2 Peter 1: 21; Matthew 22: 43] he hath thought it good to show [by means of the adorning, frescoed, Signs of the constellations] in the heavens [the various details of his glorious

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Plan of Salvation. For this purpose] his hand hath formed [the constellation of] the fleeing serpent," or Hydra, to represent Satan vanquished at last. For the same reason, also, he "maketh Arcturus, Orion, and Pleiades, and the chambers [or other Signs in the Zodiac] of the south," that all the stars of the heavens might "declare the glory of God"; for the "firmament sheweth his handiwork" (See Psalm 19: 1).

The Signification of the Constellations "Hydra" and "Draco"

While the constellation Hydra, the fleeing serpent, that long constellation which stretches east and west across the heavens, far south in the southern sphere, represents Satan in his ultimate vanquished state (and all the symbolical arrangements of the stars agree in this as the proper interpretation), there is another constellation which shows this great Deceiver of the world in his temporary place of self-exaltation. This is Draco, or the Dragon constellation, the great serpent that, in the planispheres, is depicted twining around the very northern pole of the heavens.

With one consent it is universally acknowledged that the constellation Draco, the third Decan in the Zodiacal Sign Sagittarius, is associated with Satan, called in the Scriptures "the dragon, that old serpent, which is the devil." Satan's ambition was that he would be like the Most High, and ascend above the heights of the clouds. He had said in his heart that he would ascend into heaven, and exalt his throne above the stars of God, and sit also upon the mount of the congregation, in the sides of the north (See Isaiah 14: 12–14).

In due time the old serpent will be cast down; but for a wise purpose Jehovah has permitted him to rule as the "god" of this evil world; for he is called "the god of this world." But he is the god of a dying world, and has the "power of death" for a time. In the Great Pyramid the dying condition of the world of mankind is represented by the steep Descending Passage, leading to the Subterranean Chamber, or Pit, symbolical of death. How appropriate, therefore, that at the very date when the Pyramid was erected the chief star

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in the Dragon constellation, named in ancient times Thuban, which means literally, in Hebrew, "subtile," and hence "subtle," but now more generally known as Alpha Draconis, should shine right down this inclined passage!

The Great Pyramid's "Star-Pointings" Forms a Key to the Decipherment of the Stellar Signs

But, as we have seen, not only was the symbolical stone Witness in Egypt arranged by its Divine Architect, in its structure, the site it stands on, and the time of its erection, to point to the stellar representation of that great evil being who is called "that Old Dragon" and "Serpent," the "god of this world," it was also planned to direct the groaning world to their only sure hope of deliverance from Satan and death. For just as the Dragon constellation represents Satan, so the Sign "Taurus" is the Zodiacal symbol of Christ in his power; and the Pleiades group of seven stars in this Sign is believed to be the centre of the universe, whence the Almighty governs.

Satan may appear to work his own evil designs for a time, but the "sweet influences" of the Pleiades cannot be bound, but must prevail over all in God's due time (See Job 38: 32). While the axis of the Descending Passage in the Great Pyramid pointed to Tauban, the subtle, in the Dragon constellation, the wonderful scored lines on the walls of this passage, drawn at right-angles to the downward way, pointed directly upward to the very centre of the Pleiades in the Taurus constellation, to Alcyone, which means centre, or foundation.

The Great Pyramid, in its exact pointings to these well-recognised and Scripturally-noted constellations, may be regarded as a "key" to the reasonable decipherment of all the stellar signs. For just as all the various books of the Bible unite in proclaiming the Plan of the Ages, and also, just as the Pyramid's passages and chambers unite in corroborating the truth of that Plan, so the twelve Signs of the Zodiac, with their accompanying thirty-six Decans (three Decans to each Sign), must unite in declaring the glory of God, as revealed in His loving designs for the salvation of mankind.

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It is the angle of the Descending Passage which, by pointing at the time of the Pyramid's erection to the very place in the celestial sphere where the "Dragon" star shone brightly, that enabled the Divine Architect to make of His stone Witness a connecting-link between the celestial and terrestrial symbols of His Plan. Had this angle been other than it is, the union would not have been established. Neither would the equally wonderful union between the Great Pyramid and Bethlehem, the place of our Lord's birth, have been established. This angle, therefore, was not chosen in an haphazard fashion, but was most scientifically fixed, and with definiteness of purpose, like all other features of the Pyramid.

Without angles the astronomical science would be impossible. So also with the navigation of the seas, and the surveying of land, the knowledge of the laws governing angles is indispensable. And it would appear that we must recognise the important part played by angles if we desire to build up faith in the testimony of the Great Pyramid, and the testimony of the constellations, on the firm foundation of instructed reason. To the scientific thinker and worker nothing appeals more logically than a demonstration by angles. The laws governing them are so well known, and they are so absolute, that the most critical mind is fully satisfied with the deductions drawn from their intelligent application.

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