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IN THE

GREAT PYRAMID OF JEEZEH IN EGYPT

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The International Institute as a body is not responsible for the facts or the opinions put
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All in favor of advancing truths most absolute, as portrayed in the revelations of the Great Pyr-
amid of Egypt, and of the success of the Society in preserving inviolate the Anglo-Saxon weights
and measures, will kindly communicate with the President, by whom also subscriptions, donations
and communications will be gratefully received.

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THE
INTERNATIONAL STANDARD.

THE UNVEILING OF ISIS.

III.

The Roman hierarchy, sustained by the most brilliant minds of that or any other age, still sought by a mighty effort to bring the whole race under subjection. Whilst the Princes of the Sun, Charles V., Emperor of the Romans, the noble but politic Francis I, of France, and the gorgeous defender of the Faith, Henry VIII, of England, each for his own selfish ends serving the Triple Crown, were struggling for mastery, a gigantic power, under the banner of Solomon the Magnificent, invaded Europe with a great host, laid siege to the stronghold of Rhodes, and forced those brave knights who watched and guarded the outposts of Christianity against the invasion of the Moslem. That nation, which three centuries before had been attacked with holy zeal by Crusaders, now returned the charge, and with a mighty host attempted to plant their banner as the symbol of a universal faith. But as the Moors had been driven back from Spain a century before, so now were the Saracens crushed and defeated and finally reduced to the secondary position they still hold. The moon is still under the foot of Christendom.

Under the control of the three great sovereigns, Charles, Francis and Henry, Europe had emerged from the oppressive weight of the feudal system, and now bade fair to evolve from it a magnificent empire, rivalling in grandeur that of the Cæsars. The culminating effort of Rome came under Philip II, whose avowed aim was the establishment of one government, dominating not only the old world, but bringing India and the Americas into subjection to one great political and spiritual head. In this great but direful aim there came to his aid a child of his own race, transplanted to that island, which, partly disenthralled, made a step forward in the path of progress. The wife of Philip, Mary Tudor—a dark-souled but loving woman, aided by a wily plotter from the Italian court, where subtlety and address in negotiations had become a science—turned back upon all that her father had done and led by a will o' the wisp, a phantom of love, became the faithful ally of her husband. For this only, Philip gave her the title of wife and the headless trunks of statesmen, and the ashes of martyrs attested the fury of her disappointed passion.

The death of Mary of England and the wreck of the Armada checked Philip's "vaulting ambition." Let us not exult over the enemies of peace. God's wrath overtook them. Listen to them as the poet expresses their gloomy griefs—a truthful transcript of the thoughts of Mary's counsellor, Cardinal Pole, legate of the Triple Crown:

> "Our altar is a mound of dead men's clay,
> Dug from the grave that yawns for us beyond;
> And there is one death stands behind the groom,
> And there is one death stands behind the bride.
> Alas! Our bridesmaids are not lovely! Disappointment,
> Ingratitude, Injustice, Evil Tongue—Labor in Vain!"
>
> And what came of all this?
> Ashes! Ashes!! Ashes!!! Unburied Ashes!

Amid the crackling of flames and the cries of martyrs whose blood was shed for the testimony of the word, one cried out: "Into Thy hands, O Lord, do I commit my spirit; thou hast redeemed me, oh most good and faithful God. I have never preached any doctrine of an evil tendency, and what I taught with my lips, I seal with my blood." Another cried aloud: "We shall this day light such a candle by God's grace in Eng-

land as shall never be put out," and washing his hands in the flames which licked up his life blood, he said in a clear voice: "Oh, Father of Heaven, receive my soul. How long, oh Lord, Holy and True, dost thou not judge and avenge our blood on them that dwell on the earth?"

" The unslain shadows of the martyrs slain,
Rise on their fields of old heart-ache and pain,
To fight their battles o'er and o'er again.
Those ashes scattered on the trackless shore,
Shall rise again in power to die no more;
Half buried hands, still thrust up through the sod,
From fields of carnage, prayerfully to God,
Will grasp the weapons of immortal war.
Freed spirits make their conquering battle-car
Of human hearts; they did but hold their breath
To smite unheard in their dark cloud of death.
They work for Freedom still, though out of sight:
They are torch-bearers in your mortal night.
The tyrants may destroy the body; drench
The life out with the blood, but can not quench
The spirit, nor put out the lofty light
O' the stars that in their courses "'gainst them fight."

" Wide as the wings of Sleep by night are spread
Are Freedom's exiles scattered, and her dead
Have lain their bodies down 'neath God's great dome.
But every banished spirit hurries home
Soon as the free, long-fettered life upsprings
Awave one day on mighty warrior-wings.
Each soul, let out, fights with the strength of seven,
Under God's shield, and on the side of Heaven.

The vengeance of God was indeed visited, but not vengeance as man understands it, nor as man would visit it, the vengeance of a merciful Creator, who overturned the vast fabric reared by despotism by providing an asylum for his people, who, under his guidance, should establish a government never to be destroyed; whose influence should grind to powder, like the dust of a summer threshing floor, those who oppressed it.

To this asylum came from mountain fastnesses, from caves, from all the hiding-places to which the malice of their persecutors had driven them, those who had been preserved until the highway was opened.

In this they followed the literal direction of Luther, "When you are oppressed and persecuted, flee unto other lands."

A new era began at the death of Mary. When the depu

tation came to announce to Elizabeth that she was queen, with deep devotional feeling, she cried out, "This is the Lord's doing, and it is marvelous in our eyes."

Elizabeth was the antitype of Isabella. The whole power of Rome was brought against her to overwhelm her. The grand Armada was organized and sent to overthrow her. It was on St. Michael's day, as she was eating a goose, that the destruction of the mighty flotilla with all on board was announced to her.

With Brewster as a leader, with the blessings and prayers of the venerable John Robinson and the brethren, and the shouts and acclamations of the hospitable people of Holland, the persecuted fled in the Mayflower, saying, "Let us seek God, a right way for us and for our children and for all our substance." In the cabin of the Mayflower humanity recovered its rights and instituted a government on the basis of equal laws for the general good.

This was the first realization of the prophetic symbol of a church fleeing upon the wings of a great eagle into the wilderness.

Many years ago, one morning at early dawn, on board a gallant ship, I was aroused by an order from my honored captain to come on deck that I might, with others of the ship's company, look upon a spectacle rarely seen on account of mist and storm. Jutting out into a tempestuous sea rose Cape Horn, an enormous cliff of ice-bound rock, thousands of feet high, black, grim and scarred as with the battles of ages. Myriads of screaming sea-birds hovered about it, mingling their piercing cries with the ceaseless roar of two mighty oceans. Safely sheltered on a splendid ship, we viewed the awe-inspiring scene in safety. No monster of persecution behind us forced us to land on an inhospitable shore; but in all security we looked upward to the flag that floated above us, and thanked God that we had a home.

In what contrast to our situation was that of the great souls on the Mayflower, on that memorable 20th of December, 266 years ago. With what thrills of alternate hopes and fears was

the " Promised Land" welcomed. A barren rock, "the corner
stone of a nation,"was their door-step to a world unknown."

"The ocean eagle soared
From its nest by the white wave's foam,
And the rocking pines of the forest roared ;
This was their welcome home.

"Aye, call it holy ground,
The spot where first they trod ;
They've left unstained what there they found,
Freedom to worship God !

We cannot trace in detail the history of discovery, the peo-
pling of the country, the struggles and the triumphs of the new
world. The tale of alternate despair and hope would require
volumes, not pages.

The wondrous story of our country's evolution is vividly de-
scribed by one of our greatest poets :

THE PILGRIM'S VISION.

"Come hither, God-be-Glorified,
And sit upon my knee,
Behold the dream unfolding
Whereof I spake to thee.
By the winter's hearth in Leydens
And on the stormy sea ;
True is the dream's beginning—
So may its ending be.

I saw in the naked forest
Our scattered remnant cast
A screen of shivering branches
Between them and the blast ;
The snow was falling around them,
The dying fell so fast,
I looked to see them perish,
When, lo, the vision passed.

Again mine eyes were opened ;
The feeble had waxed strong,
The babes had grown to sturdy men,
The remnant was a throng ;
By shadowed lake and winding stream,
And all the shore along,
The howling demons quaked to hear,
The Christian's Godly song.

They slept, the village fathers,
By river, lake and shore,
When far adown the steep of time,
The vision rose once more ;

I saw along the winter snow
   A spectral column pour,
And high above their broken ranks
   A tattered flag they bore.

Their leader rode before them,
   Of bearing calm and high,
The light of heaven's own kindling
   Throned in his awful eye.
These were a nation's champions
   Her dread appeal to try.
"God for the right," I faltered,
   And lo, the train passed by.

A crash, as when some swollen cloud
   Cracks o'er the tangled trees !
With side to side, and spar to spar,
   Whose smoking decks are these?
I know St. George's blood-red cross;
   Thou mistress of the seas—
But what is she whose streaming bars
   Roll out before the breeze?

Ah, well, her iron ribs are knit,
   Whose thunders strive to quell
The bellowing throats, the blazing lips
   That pealed the Armada's knell!
The mist was cleared—a wreath of stars
   Rose o'er the crimsoned swell,
And, wavering from its haughty peak,
   The cross of England fell.

Once more the strife is ended,
   The solemn issue tried.
The Lord of Hosts—His mighty arm
   Has helped our Israel's side;
Grey stone and grassy hillock
   Tell where our martyrs died.
But peaceful smiles the harvest,
   And stainless flows the tide.

O, trembling faith, though dark the morn,
   A heavenly torch is thine;
While feebler races melt away,
   And paler orbs decline,
Still shall the *fiery pillar's* ray
   Along the pathway shine,
To light the chosen tribes that sought
   This Western Palestine.

I see the living tide roll on;
   It crowns with flaming towers
The icy capes of Labrador,
   The Spaniard's land of flowers.

It streams beyond the splintered ridge
    That parts the Northern showers.
From eastern rock to sunset wave
    The continent is ours.

Yea, when the frowning bulwarks
    That guard this holy strand
Have sunk beneath the trampling surge
    In beds of sparkling sand,
While in the waste of Ocean
    One *hoary rock* shall stand,
Be this its latest legend,
    Here was the Pilgrims' land.

But while these brave and fearless men were laying the foundations of a race of great promise in the new world, how fared they of the old? Whilst nothing but the wide ocean and the savage deserts could protect these poor pilgrims from the fury of their oppressors, great darkness returned and overshadowed their native land. The pillory had become the bloody scene of human agony, and mutilation was an ordinary punishment. Great numbers were imprisoned and scourged; in some cases their noses were slit, their ears were cut off, their cheeks were marked with a red hot brand; the dungeon, the pillory and the scaffold were but stages in the progress of civil liberty towards its triumph; the lash, the shears, and the glowing iron could not destroy principles which were rooted in the soul, and which danger made it glorious to profess. Poor Burton said, as his ears were cropped off, "this is too hot to last."

As if aghast at the gaping wounds of an oppressed and martyred Christianity, nature, stirred to the profoundest depths, wrung from the very enemies of peace the boon which was to heal its deadly wounds—the New World—to whose shores, as doves to the windows, fled the children of persecution.

But to allow the oppressed the opportunity to escape was now deemed too magnanimous for that tyrant age, and a proclamation went forth denying the accused the refuge of the wilderness. But the day of reckoning had come, and a change to king and priest was at last at hand. The blue blanket of the Covenanters of Scotland was raised, and upon each pennon "For Christ, Crown and Covenant." Persecution had added to the strength of the persecuted, and Oliver Cromwell, said to

have been prevented from embarking by the henchmen of the king, now turned, like a lion, to be that king's destruction. At the head of his invincible Ironsides he took the field, captured the king and took off his head.

The colonists of New England wrote to Cromwell and said: "We believe that you are fighting the battles of the Lord," and as they pondered upon the mighty struggle then in progress, so moved were the hearts of men that they believed that the second coming of Christ was at hand, and evidences of this belief pervaded the age.

Amongst the mystic legends of the days when the Scriptures were hidden away, two have come to us wonderfully fitted to our history—those of St. George and St. Michael.

St. George was the great military saint of the Crusades. Once, in far remote times, there was a great city whose inhabitants were in mortal terror of a fierce dragon that lived near its limits. The monster had already devoured flocks and herds, and in order to appease him, the people were called upon to send out two sheep daily, until all were gone. Then, to prevent him from approaching the city, two children were chosen by lot to be sent to the insatiable beast. Soon it came to the lot of the king's daughter. "The king's daughter is all glorious within, her clothing is of wrought gold," saith the Psalmist. As she walked to the sacrifice, weeping and with downcast eyes, St. George appeared, and seeing her sorrow, asked the cause. When the princess had told him, he said: "Fear not, I will deliver you, through the power of Jesus Christ." Just then the dragon approached, and although the princess entreated St. George to fly, he made the sign of the cross and rushed to the combat. The struggle was terrible, but the saint was victorious. He transfixed the dragon with his lance; then taking the girdle of the princess, he bound the monster, and giving the girdle into her hand, they went onward to the city. The people were filled with fright, but St. George cried out: "Fear nothing, only believe in God, through whose might I have conquered this adversary, and be baptized, and I will destroy him before your eyes." And that day were twenty thousand people baptized. After this, St. George slew the dragon and cut off

his head. Then the king gave him great treasures, but he gave all to the poor, keeping absolutely nothing for himself, and he went on his way to Palestine.

At the rise of Cromwell, the St. George of the Ages, the forerunner of our Michael, a mighty event took place. The United Colonies of New England arose September 7th, 1643, and in England, simultaneously — September 17th, 1643 —was passed by Parliament the famous Covenant, and on September 22 both Houses of Parliament, with Cromwell at their head, marched to St. Margaret's Church and swore to defend Christ, Crown and Covenant.

Is there no prophecy in the words addressed by Cromwell to that Parliament, which the king's scoffers called "Barebones Parliament?"

On that typical 4th of July, 1653, "in Psalm lxviii," said he, " there are prophecies that God will bring his people again from the depths of the sea, as once he did Israel through the Red Sea. And it may be that some think God will bring the children of Israel home to their station from the isles of the sea and answer their expectations as from the depth of the sea. But at all events, sure I am, when the Lord shall set up the glory of the Gospel Church, it shall be as the gathering of peoples *as out of deep waters, out of the multitude of waters,* such are his people drawn out of the multitude of the nations and peoples of this world—and truly that Psalm is very glorious in many parts of it—when he gathers them. *Great was the company of them that publish the word.* And why shall we be afraid to say or think that this may be the door to usher in the things that God has promised, which have been prophecies of which he has set the hearts of the people to wait for and expect."

"Westward the course of empire takes its way;
The four first acts already past,
The fifth shall end the drama with the day;
Time's noblest offspring is the last."

Not in the old world was the example of liberty and republicanism to be set up. The kingly power was restored at Cromwell's death, and the old world must look to the new to learn the problem of LIBERTY. And who was the instrument

chosen to do this grand errand in the world? Father of his country, the patriot, the warrior, the benign and loving ruler—George Washington.

Far back in the centuries past, in the time of that great William, called conqueror, in the bishopric of Durham, there was a knight of noble character—one of those, perchance, who had drawn his sword in the holy cause of the Crusaders—to drive back the infidel and rescue the holy land. He was represented in full armor, a sword in the right hand, and the arms of the see—the cross—in the other. This was William de Wessyngton, a progenitor of George Washington, who, descended from a noble line of an honorable and distinguished race, was a worthy champion of the cause of humanity.

Still further back in the past, amongst the instruments especially raised up by God for the restoration of the Israelites from their seventy years' captivity, was one whose mission was to release Israel and rebuild the walls of Jerusalem and her temple. Two hundred years before his coming, the prophet thus reveals him: "Thus, saith the Lord, thy Redeemer, and He that formed thee from the womb, I am the Lord that maketh all things, that stretcheth forth the heavens above, that spreadeth abroad the earth by myself; that saith of Cyrus, he is my shepherd and shall perform all my pleasure, even saying to Jerusalem, 'thou shalt be built, and to the temple thy foundation shall be laid.' Thus saith the Lord to his anointed, to Cyrus, whose right hand I have holden to subdue nations before him; and I will loose the loins of kings, to open before him the two-leaved gates and the gates shall not be shut; I will go before thee and make the crooked places straight; I will break in pieces the gates of brass and cut in sunder the bars of iron; for Jacob my servant's sake, and Israel, mine elect, I have even called thee by thy name. I have surnamed thee, though thou hast not known me—that thou mayest know that I, the Lord, which call thee by thy name, am the God of Israel."

We see that God, through his prophet, announced Cyrus by name two hundred years before he came to be the deliverer of the Israelites from seventy years captivity in the taking of Babylon. Palestine, with its narrowed limits and its small

band of chosen people, may not be esteemed of higher value than this land, this modern Palestine, with its millions of souls brought here through much tribulation. Can it astonish us, then to find him also called by name in the words of the prophets, who, peerless among men, in ancient or modern times, was to become the great political captain of our salvation?

The Israelites vainly looked for their Messiah during eighteen centuries. In later years they seem to have lost faith. Twenty years ago, in a moment of inspiration at the contemplation of the freedom of our great land—a haven of rest for that persecuted people—Rabbi Wise, one of their most learned and enlightened teachers, published an address to them in the columns of *The Israelite*, of which he is the editor. In this address will be found these remarkable words, "My friends, you need not look beyond the Messiahship of George Washington."

And to what man, ancient or modern, can this name, with its glorious attributes, be more fitly applied—"The savior of his country, the savior of a world."

For "There was war in heaven—Michael and his angels fought against the dragon, and the dragon fought and his angels, and prevailed not, neither was their place found any more in heaven."

St. Michael, God-like, synonymous with St. George, is always represented as young and beautiful. As patron of the church militant, he stands with mild, majestic mien; his only attributes are shield and lance. As conqueror of Satan he stands in armor with his foot on the evil one, who is half human and like a dragon in shape.

> " The defender of his country, the founder of liberty,
>   The friend of man ;
> History and tradition are explored in vain
> For a parallel to his character.
> In the annals of modern greatness
>   He stands alone,
> And the noblest names of antiquity
> Lose their lustre in his presence.
> Born the benefactor of mankind
> He united all the qualities necessary
> To an illustrious career.

Nature made him great;
He made himself virtuous.
Called by his country to the defence of her liberties,
He triumphantly vindicated the rights of humanity,
And on the pillar of National independence
Laid the foundations of a great republic.
Twice invested with supreme magistracy,
By the unanimous voice of a free people,
He surpassed in the cabinet
The glories of the field,
And voluntarily resigning the sceptre with the sword,
Returned to the shades of private life.
A spectacle so new and so sublime
Was contemplated with the profoundest admiration.
And the name of George Washington,
Adding new lustre to humanity,
Resounded to the remotest regions of the earth.
      Magnanimous in youth,
      Glorious through life,
      Great in death.
His highest ambition, the happiness of mankind;
His noblest victory, the conquest of himself;
Bequeathing to posterity the inheritance of his fame,
And building his monument in the hearts of his countrymen,
He lived the ornament of the Eighteenth century,
He died regretted by a mourning world."
      "SERVANT OF GOD WELL DONE."

                          CHARLES LATIMER.

THE ALTAR AND PILLAR TO JEHOVAH.
III.

Herodotus, on the authority of the Egyptian priests, says that the Great Pyramid "was built in steps, battlement-wise, or according to others, altar-wise." According to this, "battlement-wise" and "altar-wise" were one and the same, and this leads to the enquiry, May there not have been a more intimate relation between the battlements and the altars of the ancients than is generally supposed? For an answer to this question I have consulted the Bible, as well as I could in a brief space of time, and without any knowledge of the Hebrew, and have come to the conclusion that the pyramids of Egypt, and similar structures of other countries, are referred to in the Bible under the name of "altars," "towers," "treasuries," "mountains,"

and "high places;" and are also designated by a word synony-
mous with "towers," but mistranslated "walls," confounding
the isolated defences in the most of cities with the continuous
defences round about them ; also that all these structures were
characterized by terraced or battlemented sides, except that in
many instances these sides were finally covered with either plas-
ter or casing stones, as if to symbolize the fact that their pyra-
midal figure was to be lost sight of under the mists of antiquity,
and under consequent misunderstandings and mistranslations
of the Hebrew Scriptures. Of course, it would be the height
of presumption in one ignorant of the Old Testament original
and of archæology to do more than direct the attention of the
learned to the class of passages from which I draw my conclu-
sions, assuring them that I do so in the hope that they will give
the subject a thorough examination, and will establish the truth
of the matter either *pro* or *con.* Should it be found that I have
concluded correctly, the result will be another step towards the
discovery of an interdependence between the inspiration of the
Bible and that of the Great Pyramid, in fulfilment of the predic-
tion of the pastor of the pilgrims, that "more light was to
break forth from the Word of God."

The first mention of a tower in the Bible is that of Babel, the
tower of Babylon ; and there are satisfactory reasons for believ-
ing that it was a terraced pyramid, like the mastaba of Egypt,
from which Nimrod, the rebel son of Cush, journeying "east-
ward" from "the land of Ham," is likely to have derived
his inspiration. "Go to," said the rebel horde, "let us build
us a city, and a tower whose top may reach unto heaven."
Of the "ladder" seen by Jacob in trance vision, which the
artists have always had sense enough to represent as a flight
of steps, similar to that on either side of the elevation on
which the ancient Greeks placed their pantheon, it is said that
it was "set up on the earth, and the top of it reached to
heaven." Between the dream of Jacob and that of Nimrod
there was this difference, however: that Jacob's was fulfilled
to perfection, in the heaven-inspired work of the first-born son
of his chosen wife, while Nimrod's was but partially fulfilled,
falling short of the heaven to which it aspired, the Gods com-

ing down, and so confounding the language of the builders that "they left off to build." And yet, the original design of Nimrod demanded an attempt to carry it out; and long afterwards, on the spot on which the tower was to tower to heaven, there "was erected the pyramidal temple of Bel-Merodach, finally repaired by Nebuchadnezzar, the ruins of which at Borsippa are now known as Birs Nimrud—citadel of Nimrod." So says Appleton's new edition of the American Cyclopedia. The tower of Babel, or of Babylon, like " the tower of Syene," was in fact a citadel in the midst of a city. In Bel-Merodach Nebuchadnezzar placed the spoils of Jerusalem. It had, therefore, interior chambers, or treasury vaults, and was a treasury stronghold. Herodotus describes it as " a solid tower of a stadium in depth and width, upon which another tower is raised, and another upon that, to the number of eight towers." This makes a pyramid of eight great terraces, or so many stories of a pyramidal store-house, dedicated to the guardianship of ill-gotten treasures rather than to that of sacred mysteries and the worship of Jehovah. One of the burnt bricks of which it was composed, discovered in the ruins, bears this inscription : "A former king had built it (they reckon 42 ages) ; but he did not complete its head. Since a remote time the people had abandoned it, without order expressing their words. Since that time the earthquake and the thunder had 'dispersed its sun-dried clay." The Scripture account is thus wonderfully confirmed, except in regard to the brick ; and as to this we are told that the people *said*, " Go to, let us make brick, and burn them to a burning," not that they *did* burn them ; or by " burn them to a burning" may have been meant, *subject them to the light and heat of the sun*, which the ancients called " pure fire ;" for the monotheism of Noah, except in the Heber branch of the descendents of Shem, had already degenerated into worship of the symbols of Jehovah of hosts, the sun and moon, and the hosts of heaven. The impious attempt to climb from earth to heaven without the recognition of a Mediator between God and man, was destined to be defeated. Remembering that the primary meaning of the word " Babel" is " gate of God," and that the word " teocalli," the name of a like kind of pyramid

in ancient America, means " house of God," it is remarkable that on awaking from his dream of the stairway from earth to heaven, with the angels of God ascending and descending upon it, and with Jehovah above it, Jacob exclaimed, " How dreadful is this place ! This is none other but the house of God, and this is the gate of heaven."

The next mention of a tower in the Bible, is in Gen. xxxv, 21, where we read that "Israel journeyed and spread his tent beyond the tower of Edar." This, in itself, is a very simple and uninstructive statement, but it becomes very significant in the light of the prophecy in Micah, iv, 8 : "And thou, O tower of the flock, the stronghold of the daughter of Zion, unto thee shall it come ; even the first dominion ; the kingdom shall come to the daughter of Jerusalem ;" and this prophecy depends greatly for its significance on the fact that the " tower of Edar" (which means " tower of the flock") was near to Bethlehem, where was to be born " Him who was to be ruler in Israel," and near to Jerusalem, where he is to reign forever "before his ancients gloriously." I take this literal " tower of the flock" to have been a watch-tower, from the top of which the shepherds, not only those of Jacob's day, but those to whom " the angel of the Lord" announced the birth of the long-promised " Saviour and King" in the near-by city of Bethlehem, " watched their flocks by night," ready at a moment's warning to hasten down its terraced sides to their protection.

And the "Tower of the flock," to whom is addressed such language as that of Micah—who can it be but " the Shepherd, the Stone of Israel," including, representatively, as the capstone of the Pyramid representatively includes the Pyramid as a whole, "the sheep of his pasture and the work of his hands?" Who can it be but the " Living Stone, elect, precious," constituting ¦the Christ, "the Living Head," including the " lively stones" constituting " the Body of the Christ ?" Who can it be but " the Captain of Salvation," the " Victor over death and hell," represented by the jasper monolith, or blood-stone, and representatively including his " twelve foundations," inscribed with " the names of the twelve apostles of the Lamb," of whom the chosen representative, as feeder of his sheep and

lambs until his return, is Peter, the rock on whose battlemented sides he will build his church so impregnably that "the gates of hell shall not prevail against her?" Again, as to the "tower of the flock" beyond which Israel "spread his tent," on his way from Bethlehem to "Hebron, where Abraham and Isaac sojourned." If I am right in identifying Joseph with the shepherd Philitis, it must have preceded the Great Pyramid, and is likely to have been built by "Melchizedek, king of Salem and priest of the Most High God," to prefigure his successor, the "High Priest forever after the order of Melchizedek," and the Great King of Salem forever in the line of the same august and mysterious personage.

The next Bible mention of a tower by name, if I mistake not, is that of the Great Pyramid itself, under the name of "Migdol," which means, according to the Hebrew lexicographers, "a tower," involving the idea of "greatness." According to this the Great Pyramid was the Great Tower, or *the* tower, *par distinction*, and appears to have given name to the entire Gizeh hill, if not to the entire region between the two royal residences, Noph on the south and Tahpenes on the north, afterwards Memphis and what is now "the decayed and filthy village of Gizeh, once adorned with magnificent palaces." (See INTERNATIONAL STANDARD, p. 476.) The mention of Migdol to which I allude is this: "Speak unto the children of Israel, that they turn and encamp before Pi-ha-Hiroth, between Migdol and the sea, over against Baal-Zephon; before it shall ye encamp by the sea." (Ex. xiv, 2.) By this I understand that they encamped, at the end of their third day's journey, between Migdol on the west, from which they set out, and the sea on the east, by which they were stopped, with Pi-ha-Hiroth, *i. e.*, "*the mouth of Hiroth*, or *the passage of Liberty*," close to the south of them, to mark the place of the entrance and passage of the Red Sea, and with Baal-Zephon, *i. e.*, "*the lord of the North*," a little to the north of them, to indicate their ultimate destination, in respect to both place and power.

You say that the Israelites did not set out from Migdol, but from Rameses, and in proof of the fact you refer me to Num-

bers, xxxiii, 3, where we read, "And they departed from Rameses in the first month, on the fifteenth day of the first month: on the morrow after the passover the children of Israel went out with a high hand, in sight of all the Egyptians." Yes, and this Rameses was not a city, but one of the treasure citadels, mistranslated, "treasure cities," referred to in the passage, "And they built for Pharaoh treasure cities, Pithom and Raamses." (Ex. i, 11). That these were "treasure strongholds," or citadels, rather than cities, and that they were situated somewhere between On and Noph, *i. e.*, between Heliopolis and Memphis, is generally admitted. The map of Egypt in Bagster's Polyglot, illustrating the exodus, represents the Israelites as setting out from the near neighborhood of Heliopolis, which was about ten miles from the Great Pyramid; but instead of representing them as going due east, by the shortest and quickest route to the sea, where they were to pass over dry shod, and the Pharaoh and his host were to be drowned, it represents them as making a great detour in the direction of Rameses in Goshen, as if God intended them to return to the land of the Philistines by the route by which they came to the land of Egypt, but afterwards changed his mind and led them to a place where they could only proceed by the working of a miracle. The sacred historian says: "And it came to pass when Pharaoh had let the people go, that God led them not through the way of the land of the Philistines, although that was near; for God said, lest peradventure the people repent when they see war, and they return to Egypt. But God led the people about through the way of the wilderness of the Red Sea. And the children of Israel went up by five in a rank out of the land of Egypt." (Ex. xiii, 17-18). By this I understand that the children of Israel, instead of returning to the land of the Philistines by way of Rameses, in Goshen, and thence by the ordinary, short, and apparently only common-sense route, proceeded eastward on the latitude of the five-cornered Great Tower, "led by Jehovah in the pillar of cloud by day and of fire by night," until their forward march was stopped by the sea, when they "turned" back to the convenient camping ground "before Pi-ha-Hiroth, between the Great

Tower and the sea, over against Baal-Zephon," where, forming an extensive line of encampment parallel with the shore, they rested till the commandment to Moses, "Speak to the children of Israel that they go forward," when they passed "through the midst of the Red Sea," and were "led about through the wilderness of the Red Sea," the desert of Arabia, for the space of forty years, all for the purpose of ensuring their escape from the bondage of Egypt, and of making their return to it an impossibility.

When Pharaoh said to Moses and Aaron, "Go ye, sacrifice to your God in the land," Moses replied, "It is not meet so to do; for we shall sacrifice the abomination of the Egyptians to Jehovah, our God: lo, shall we sacrifice the abomination of the Egyptians before their own eyes, and will they not stone us? We will go three days' journey into the wilderness, and sacrifice to Jehovah, our God, as he shall command us." Pharaoh then said: "I will let you go that ye may sacrifice to Jehovah, your God, in the wilderness; only ye shall not go very far away." (Ex. viii, 25-28). What is this "abomination of the Egyptians" so likely to have been as that which made "every shepherd an abomination to the Egyptians,"— not cattle, but sheep? Therefore, not a remnant of the paschal lamb, in the many thousand families of Israel, was allowed to remain till morning; all not eaten was burned, to avoid provoking the hostility of the Hamitic Egyptians, which was one with that of tower-building Cain toward altar-building Abel, on account of his acceptable symbol of the promised Redeemer. On the morning after the passover, therefore, it became the Israelites to make as great haste out of Egypt as possible. The "three days' journey" was a hasty, straight-forward flight, like that of a flock of sheep intent on escape from a pack of wolves, ready at any moment to start in pursuit of them; and when accomplished, it formed, with the prospective passage of the Red Sea, with Baal-Zephon on the north, and with Pi-ha-Hiroth (now Clysoma) on the south, a symbol of the crucifixion of the Lamb of God, the "strait and narrow way" of escape from a worse than Egyptian bondage, "the bondage of sin and death," to life eternal. A staggering, wavering, serpentine line of

march out of Egypt, such as that commonly represented, is totally inconsistent with the significance of the unfermented bread and wine of the passover, and with the necessity of eating the bread and paschal lamb "in haste, with their loins girded, their shoes on their feet, their staff in their hand," and the vessels containing their dough "bound up in their clothes upon their shoulders."

"On the morrow after the passover, the children of Israel went out with a high hand in the sight of all the Egyptians;" and where from, if not from the monumented *midst* of the Egyptians, the center of attraction and the cynosure of all eyes? The conspicuous boldness of the proceeding was all the more reason for straightforward expedition in the execution of it. Moreover, "Moses took with him the bones of Joseph; for Joseph had straightly sworn the children of Israel, saying, 'God will surely visit you; and ye shall carry up my bones away hence with you.'" (Ex. xiii, 19.) And as the body of Joseph was not buried, but was simply "embalmed and put in a coffin in Egypt" (Gen. l, 26), awaiting interment in the burial-place of his ancestors, I believe that the definite spot indefinitely called "Egypt" was the representative *midst* of Egypt, and that the "coffin" was the granite coffer in the west end of the King's Chamber, in the direction of the ultimate destination of the sons of Joseph, "the horns of an unicorn," the two horns of a one horn, with which he was to "push the people to the ends of the earth," *i. e.*, to the northern and southern divisions of the New World, represented by the upper and lower halves of the skeleton occupant of the granite "measure of the man, *i. e.*, of the angel," whom we know Joseph to have been. The architect of the Great Pyramid was the first royal arch mason, and the military and religious fraternity of free and accepted masons (not slaves), of which he was the head, must needs have enshrined him with masonic honors; the deceased king, Cheops, having declined the honor in favor of the man through whose instrumentality he had been converted from idolatry to the worship of Jehovah; and Cephren, who stood in nearly the same relation to him, being foremost of the living to do him reverence.

In the fourth dynasty, when the use of natron in the art of embalming was as yet unknown, the embalming of the body of Joseph did not make a mummy of it, but allowed it to decompose and leave the bones and a little carbonacious dust at the bottom of the sarcophagus. Moses took possession of the bones, leaving only the black dust for us; and how? I believe that he and Aaron, being "learned in all the wisdom of the Egyptians,", found their way to the King's Chamber on the fearful night of the passover; not through the obliquely ascending passage, this having been stopped by the granite portcullis directly after the embalmed body had been left in its casket, but through the crooked upright passage, by the aid of a ladder, from the subterranean entrance of what I call the Great Pyramid's intestinal canal, through the pyloric orifice, so to speak, into what I call the stomach, the analogue of the "whale's belly" and "the heart of the earth," and from this, through the cardiac orifice into the esophagus, and out of this into the right hand side of the beginning of the Grand Gallery, "bursting asunder the bars of death" and "rolling away the stone," thus accounting for the Great Pyramid's symbol of the resurrection of our Lord in a manner altogether natural. I suppose that in the King's Chamber they found, not only "the bones of Joseph," but his treasures, his gold and silver standards of capacity measure, the "vessels of the sanctuary," including that unit of capacity, "the silver cup with which he did divine," besides gold and silver in the form of Israel's predestined standards of weight and linear measure; and in the Queen's Chamber his masonic regalia, with the masonic jewels of every degree, besides the typical robes of the foreordained Aaronic priesthood, with the Urim and Thummim and all the precious stones of the ephod and the breastplate; and I suppose that they took possession of all these treasures as the rightful inheritance of the children of Israel, leaving only their embodiment in the parts and proportions of the Great Pyramid, to be deciphered and brought forth by means of their possession four thousand years afterwards. The spoliation of the Egyptians in borrowing from them "jewels of silver and jewels

of gold, and raiment," in compensation for the one hundred years of unrequited toil, was to cover up the corresponding spoliation of the Great Tower, was it not? in case such jewels should be observed by the tell-tale "mixed multitude" on the persons of "the Hebrew women;" and as to the gold and silver vessels, requiring to be concealed "among the pots" of "six hundred thousand men on foot," I fancy them made receptacles of a part of the dough "bound up in their clothes upon their shoulders." So, you see, I think poor Al-Mamoun not so much deceived in regard to the treasures in the Great Tower, the tradition of which had come down to him from his Ishmaelite ancestors, as in not knowing that he had been anticipated by the two great Isaacsons of the tribe of Levi, Moses and Aaron.

This idea of Moses having taken the bones of Joseph from the granite sarcophagus in the midst of Egypt is brought forward as an argument in favor of the idea that the exodus from Rameses was from the near neighborhood of Migdol, the Great Tower, another name for the Great Pyramid. The force of the argument hinges mainly upon proof that the builder of the Great Pyramid was Joseph, making it probable that his embalmed body was deposited in its sacred interior. But that such was the fact is stoutly denied, on the ground that Joseph's viceroyalty, according to the Egyptologists and chronologists, was some centuries later than the pole-star date of the Great Pyramid, which was 2,160 B. C., according to Sir John Herschel, or 2,170 B. C., according to Prof. Piazzi Smyth. Of course, the chronological argument cannot be entered into here; but I may say without fear of contradiction, that the testimony of the Egyptologists and that of the learned commentators on the Bible are out of harmony with each other by many centuries, and that where doctors so greatly disagree a third party may possibly be called in to decide. At any rate, no one need be too positive in denying the contemporaneousness of Joseph's viceroyalty and the building of the Great Pyramid until he has patiently read all the arguments in favor of it. Meantime, circumstantial evidences may be allowed their due weight, even if

they *do* precede the chronological. An *alibi* has not been proven, by any means.

One of the reasons for believing that the Migdol spoken of in the geography of the last encampment of the Israelites in Egypt was the Great Pyramid, or more probably the pyramids constituting " the Gizeh group" named from the first and greatest of them, is that to the retrospective view, in a journey eastward from the Rameses allowed to have been the starting-point of the exodus, it presented the most conspicuous landmark on the horizon. Another reason is, that the itinerary of the three days' journey, with the prospective passage of the Red Sea, *Yam Suf,* or Sea of Reeds, forms a cross, of which the psssage represents the bleeding head, crowned with thorns ; of which the encampment " by the sea, beside Pi ha-Hiroth, before Baal-Zephon," represents the heart, from which flowed blood and water, nearer to the left side than to the right; of which Pi-ha-Hiroth (*the passage of Liberty*) represents the left hand, extended towards enslaved Africa ; of which Baal-Zephon (*the lord of the North*) represents the right hand, extended toward lordly and more distant Europe; of which Etham (*strength*), the end of the second day's journey, represents the navel (Job xl, 16) ; of which Succoth (*a booth*), the end of the first day's journey, represents the secrets ; and of which Rameses, or Raamses (*thunder*), the starting-point of the journey, the treasure tower between the treasure towers Migdol and Pithom, represents the feet, planted on a rock, a symbol of the Rock of Ages.* "By faith" in the promised Redeemer, "Moses refused to be called the son of Pharaoh's daughter, choosing rather to suffer affliction with the people of God than to

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* Speaking of the Gizeh rock, I wish here to correct a foolish mistake in my last,—that of referring to Prof. Smyth as saying that the Great Pyramid is partly founded on an embankment composed of the chippings of its own stones. Prof. Smyth's language on this subject, on pages 87 and 88 of "Our Inheritance," is this : "So very close was the Great Pyramid placed to the northern brink of its hill, that the edges of the cliff might have broken off, under the terrible pressure, had not the builders banked up there most firmly the immense mounds of rubbish which came from their work, and which Strabo looked so particularly for 1,850 years ago, but could not find. Here they were, however, and still are utilized in enabling the Great Pyramid to stand on the very utmost verge of its commanding hill, within the limits of the *two* required latitudes, 30° and 29° 58' 23", as well as over the center of the land's physical and radial formation ; and at the same time on the sure and proverbially wise foundation of rock."

enjoy the pleasures of sin for a season;" and here, on the ground, in Egypt, "where also our Lord was crucified," was projected a symbol of that faith and of the Rock on which it was founded.

You admit, as do all good Hebrew scholars, that "Pithom and Raamses" were "treasure strongholds," rather than "treasure cities," but say that if I place them on the Gizeh rock , beside the oldest and greatest of the Gizeh group, with Raamses for the middle of the trio, I must show good reason for the exodus being spoken of, at the outset, as having started from Rameses (another way of spelling Raamses), and for its being looked back upon, at the end of the three days' journey, as having started from Migdol, the Great Tower, meaning either the Great Pyramid in particular or the Gizeh group in general. A good reason for Raamses being recognized, at the outset, as the place of departure, I take to be this : that it was built by Moses himself, the organizer and leader of the exodus. That it was built by Moses as "the son of Pharaoh's daughter," for his foster grandfather, the "king who knew not Joseph," is evident from the name, this being composed of *Ra*, the god of light, who was worshipped at Heliopolis, and *Moses*, which means "drawn forth," as a cloud is drawn from the water, and as lightning and thunder are drawn from the cloud. In the case of Rameses II, who from his title of "Sesu-Ra" became the mythical Sesostris of the Greeks, and who flourished many centuries after Moses, the prefix, "Ra," was made a suffix, the title "Sesu-Ra" being given him by the people, "for some unknown reason," say the authorities, "during his lifetime." I mention this simply to show that the first syllable of the name Rameses, or Raamses, refers to the god Ra, and that to be clearly intelligible the name should be written Ra-Moses, or Ra-Amoses. The vowels in Hebrew not being written, but indicated by vowel points, were exceedingly subject to variation; and hence Ra-Meses may easily have been Ra-Moses, and Ra-Amses may easily have been Ra-Amoses. The prefix is most likely to have been added by the Pharaoh who said to Moses and Aaron, "Who is Jehovah, that I should obey his voice to let Israel go ? I know not Jehovah, neither will I let

Israel go;" for it was in reference to this Pharaoh that Jehovah said unto Moses: "See, I have made thee a god to Pharaoh, and Aaron, thy brother, shall be thy prophet." (Ex. vii, 1.

Previous to this the God of Israel had said to Moses in respect to Aaron: "He shall be to thee instead of a mouth, and thou shalt be to him instead of God." (Ex. iv, 16.) And this leads me to speak of the significance of the word Pithom, the name of the other of the two "treasure strongholds" built for the Pharaoh who "knew not Joseph" by "the people of the children of Israel." The word, according to Cruden, means "*their mouthful*" and answers well to the decree, "He shall be to thee instead of a mouth," and to the text, referring to the words of God, "Open thy mouth wide and I will fill it." (Ps. lxxxi, 10.) I think, therefore, that Ra-Amses and Pithom were built by Moses and Aaron, "the people of the children of Israel," for Pharaoh Mycerinus and a daughter of his, to whom Moses was as intimately related as Philistine Joseph was to Cheops and Cephren, and over whom he exerted an influence as powerful in the sphere of the domestic and social as that of Joseph over Cheops and Cephren in the sphere of the civil and religious. The Great Treasure Tower had been built for Cheops and Cephren by Joseph ; Mycerinus and his daughter wanted to be honored and served in the same way, by another wonderfully wise Israelite ; and who so wise, and yet so subject to their will, as the one reared from infancy as their own son and grandson in the royal palace? The greater of the two towers entrusted to his architectural skill and inspiration, the one for the Pharaoh, was enough for Moses, and he could easily entrust the building of the one for the Pharaoh's daughter to his dignified and highly gifted brother Aaron.

I would hardly have ventured upon this exposition if it were not sustained by the learned. In an old book entitled, "Sacred Geography," by Elijah Parish, D. D., I read in regard to what the Egyptian priests told Herodotus concerning the three great pyramids of Gizeh : "They also say 'that the first was built by Armœus, or Aramœus, the Syrian; the second by Ammosis; the third by Inaron.'" The writer adds: "This coincidence of names will appear complete if we look at the

words without their prefixes. *A Mosis:* in Hebrew his name was *hy Mouseh; in Aron, his Aaron.* All this supports our supposition that the Israelites built the (three great) pyramids (of Gizeh.) Under the first name, *the Syrian,* or *Aramean,* is the very title given to Jacob, Deut. xxvi, 5: 'A Syrian ready to perish was thy father, and he went down into Egypt.'" In regard to this, I think that Joseph, the so called Philistian, named the Great Pyramid after his father Jacob, the Syrian, on account of Jacob's having foreseen it, in trance vision, in its battlemented condition, with the angels of God ascending and descending upon it, and on account of Joseph's having first heard the story of it from his father's lips while yet in Palestine. Still another name for the Great Pyramid was "Ur," *i. e.,* "Great," the name by which it was known as the pyramid of Cephren; and this name may have been given it by Joseph, when he was Prime Minister for Cephren, in honor of his father Abraham, who was from "Ur of the Chaldees," which may mean that his ancestral derivation was from the region of the tower of Babel, that being the Chaldea most frequently referred to in the Bible.

After this respectable array of evidence in regard to the starting-point of the exodus and the identity of the Great Tower with the Great Pyramid, it is a sort of necessity to pre-

	G.P. Migdol, Aramæus, Altar to Jehovah		Ra-Amoses, Ammosis	Pi-Thom, Inaron.
Soris 1st King of 4th Dynasty. R. 29 yrs.	Suphis Shofo, or Cheops. R. 63 years.	Sen-Suphis, Nu-Shofo, or Cephren. R. 66 years.	Mencheres or Mycerinus and daughter, son and granddaughter of Cephren. R. 63 years.	Ratœses, or Asyches, of the hard heart. Drowned in the Red Sea. R. 25 years.
	Sire and Son in Kingship; Brothers in Masonry and Monotheism.			
Joseph in prison for his virtue, 10 years.	Joseph, the so-called Philistian, Premier of Cheops and Cephren, 80 years.	From the death of Joseph to the birth of Moses, 50 years.	Moses in Pharaohs' palace as son of the princess, 40 years.	Moses in Midian till the Exodus, 40 years.

Parallel between the sojourn of the Israelites in Egypt and the period of Egyptian history connected with the three great pyramids of Gizeh.

sent a diagram, illustrating, however imperfectly, a parallelism

between the Bible history of the Israelites in Egypt and the Egyptological history of the fourth dynasty from its beginning till after the construction of the last of the three great pyramids of Gizeh, which runs into this dynasty's oppressive, disastrous, revolutionary end. Beginning the parallel between the sojourn of the Israelites in Egypt and the period of Egyptian history connected with the three great pyramids of Gizeh with the reign of Cheops, and ending with that of Asyches, the sum of the reigns, according to Manetho, is 217 years. Beginning with the prime ministry of Joseph, when he was thirty years of age, the sojourn of the Israelites in Egypt, according to Usher, was 210 years—as many years as there are Royal Babylonian cubits in the base side of the last of the three great pyramids built during that time. The seven years' difference between this sum and the other belongs to the life of Joseph in prison under Cheops, following the three years under Soris, supposing him to have been cast into the king's prison by the lewd wife of Potiphar when he was twenty years old, three years after his purchase as a slave, at which time he was seventeen. With this previso it is easy to see that the parallel periods of the history of the Israelites in Egypt, beginning with the reign of Cheops, amount to just 217 years—seven years of Joseph in prison under Cheops; eighty years of premiership under Cheops, or rather over Cheops and Cephren, which ended with his death; fifty years from this till the birth of Moses, the son of Amram, the son of Koath, the son of Levi; forty years from this to his voluntary exile in Midian, in Arabia Petrœa, from the deadly wrath of his foster grandfather, and forty years from this till his return to Egypt, at eighty years of age, to demand from the successor of his dead foster grandfather the liberation of the Israelites, and to be to them another shepherd, bearing the prophetic bones of Joseph before them to the land of promise.

The Great Pyramid is generally supposed to have belonged to Cheops alone, but I think it belonged to both Cheops and Cephren, as brother masons and suppressors of idolatry, under the influence of their monotheistic and divinely inspired Prime Minister. Their successive reigns of sixty-three and sixty-six years make it vastly more natural to suppose them to have

been sire and son than to suppose them to have been brothers by blood; and the fact that the names of both, as "Shofo and Noum-Shofo," are found in red paint on one or more of the Great Pyramid's interior stones of construction, makes it probable that their fraternity was that of brother masons, and also that the Great Pyramid was built for both. From this it follows that the second of the three great pyramids was in all probability built for Mycerinus, who is called the son of Cheops, but is more likely to have been the son of Cephren and grandson of Cheops, unless he came to the throne at ninety or one hundred years of age, rather than twenty-five or thirty, sixty-three years before his death. As to the third pyramid, seeing that it is comparatively small and encased with red granite, an igneous rock, while the others are encased with marble, an aqueous rock, I think it was built for a daughter of Mycerinus. In keeping with this idea is the circumstance that Aaron, the builder of the red granite pyramid, was destined to represent the church element of the Hebrew theocracy in the person of its high priest, to turn the waters of Egypt to blood by the stretching forth of his rod, to shed the blood of the clean beasts chosen for sacrifice, and to offer sacrifices and burnt-offerings upon the altar; while Moses, the builder of the white marble pyramid next to the red granite, was destined to represent the state element of the Hebrew theocracy in the person of its law-giver, to part the waters of the Red Sea by the stretching forth of his rod, to bring water out of the rock by smiting it, and to hew out, probably from a part of the same continuous stratified rock, the two easily broken tables of stone, on which to receive Jehovah's inscription of the ten commandments, midst the thunders and lightnings of the waters above the firmament, from the flaming top of mount Sinai. As for the daughter of Mycerinus, for whom I think Aaron built the red granite pyramid, I take her to have been the princess called by Herodotus the daughter of Cheops, about whom the Egyptian priests told him such a scandalous story concerning the means by which she obtained the granite blocks for the construction of her pyramid; pointing her out, I think, as the foster mother of the baby Hebrew, found by her in the ark of bulrushes

among the flags of her bathing place in the waters of the Nile. The woolen enswathment on the dried up part of a body found in the elaborately carved sarcophagus in the granite pyramid, in defiance of the propriety of linen for such purposes, may indicate that the compassionate foster mother of Moses, near the close of her life, while he was yet in Midian, became converted to his religion ; and this may explain why the Egyptian priests gave Herodotus to understand that she was the daughter of Cheops, the first great convert to the religion of Joseph. The child Moses was but the fourth generation after the settlement of the Israelites in Egypt, and his young foster mother was but the fourth generation from Cheops.

Of course, it is somewhat against the parallel which I have drawn that it does not agree with the learned authorities called Egyptologists. Bunsen, *e. g.*, says that the sojourn of the Israelites in Egypt was 1,434 years, though Moses, as explained by Paul in Gal. iii, 17, allows it to have been but 210 years. With due deference to learning, it is well to ask ourselves, on the subject of the Israelites and their ancestors, Which is the better authority, and which ought to be subservient to the other in the work of interpretation, Egyptology or the Bible?

<div style="text-align:right">J. W. REDFIELD.</div>

*THE GEODESIC THEORY.

The Geodesic Theory was advanced in 1882, by Robert Ballard. C. E., Queensland, Australia.

As it is far more than a merely ingenious consideration of this inexhaustible subject, and as it deals with the whole Gizeh group of pyramids rather than with the interior part of the great one alone, and concerns itself with geodesy in particular, I deem it worthy of a separate place in my classification and of a most careful review.† To pyramid students in general it will be regarded but as a subordinate part of that general solution of the problem which is advocated by thc school of Prof. Smyth. Such, in one sense of the word, is my own conviction. Nevertheless it is worthy of an independent consideration. Its originator obtains from his discussion a firm c onviction that all the pyramids of Egypt were built and employed, among other purposes, for one special, main and important purpose of the greatest utility and convenience." He takes the Gizeh group for the basis of his theory, "as being the one affording most data and as being probably one of the most important groups. He finds that this entire group is arranged upon a system of right-angled triangulation of the simplest character. Thus the centers of the bases of Cheops and Mycerinus (the 1st and 2d pyramids) define the extremities of the hypothenuse of the celebrated Pythagorean triangle, 3, 4, 5, and those of Cheops and Cephren (1st and 2d pyramids) mark the hypothenuse of the right-angled triangle, 20, 21, 29, even more beautiful than that of Pythagoras "because more practically useful." Developing the system thus established upon these triangles as BASES, he obtains a geodesic plan the length of all of whose mathematically defined lines he is enabled to throw into a series of "connected natural numbers, each of which on being multiplied by 8 becomes reduced to R. B. cubits, (so named because this cubit closely resembles the Royal Babylonian cubit of 1.683399

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* Published by John Wiley & Sons, New York.

† Selections from certain unpublished "Notes on Pyramid Studies," by C. A. L. Totten, U. S. Army.

British feet).   The length of this R. B. cubit whlch thus works in without fractions on the beautiful set of natural numbers which connect the whole group," is 1.685066 British feet.

As the R. B. (Robert Ballard) cubit differs from the Royal Babylonian cubit by only 1-600 of a foot (!) which is closer than most any two good English two-foot rules will be found to agree, Mr. Ballard is disposed to believe that he has discovered the true length of the original Royal Babylonian cubit itself, and given us at least the *working* measure of the ancient Egyptians.   Mr. Ballard next constructs a table of measures which fits the plan and fits the circumference of the earth.

This table in brief may be put as follows :

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6o R. B, Cubits make 1 Plethra or Second.
 ⎰  6 Plethra        "    1 Stadia.   ⎱ These were ancient
 ⎱ 10 Stadia         "    1 Minute.   ⎰ Roman, etc., measures.
   60 Seconds        "    1 Minute.
   60 Minutes        "    1 Degree.
  360 Degrees        "   ⎰ 1 Polar circumference of the earth.
                         ⎱ (=77760030 R. B. Cubits = 24.81642 miles.
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Remarking upon his tables thus deduced, Mr. Ballard claims "for the R. B. cubit that it is the most perfect ancient measure yet discovered, being the measure of the plan of the pyramid of Gizeh."   Continuing his discussion, Mr. Ballard determines the exact measure of the bases of the principal pyramids of the Gizeh, their slopes, ratios and angles, and finally shows that all of them are based upon the general proposition that, "in any pyramid the apothem is to half the base as the area of the four sides (triangular) is to the area of the base."   He next verifies the statement of Herodotus, that "the area of each of the four faces of Cheops was equal to the area of a square whose base was the altitude of the Pyramid," and establishes thereon the theory that "this Pyramid (the great one) was *the exponent of lines divided in mean and extreme ratio.*"   Having carefully discussed the various measured dimensions of the angle, quoin or casing stones of these pyramids, he next shows upon what a simple system of "templates" the actual stone-work at the group might have been accomplished by its skilful masons. Mr. Ballard next discusses the peculiarities of the triangles, 3, 4, 5, and 20, 21, 29, deduces from them some other equally important ones, and finally, under this head, gives a general

view and identification of these six triangles, which occupied an important position in the trigonometry of a people who did all their work by right angles and proportional lines." With these triangles as functions, Mr. Ballard completely occupies one entire circumference, and thus makes out his point that such a system *could* have formed the basis of a practical Egyptian trigonometry. He then, at some length, elaborates the most important feature of his theory. "About twenty-three years ago," he says, "on my road to Australia, I was crossing from Alexandria to Cairo, and saw the pyramids of Gizeh. I watched them carefully as the train passed along, noticed their clear-cut lines against the sky, and their constantly changing relative position. I then felt a strong conviction that they were built for at least one useful purpose, and that purpose was the survey of the country. I said, here be the theodolites of the Egyptians, built by scientific men well versed in geometry, but unacquainted with the use of glass lenses. These great stone monuments are so suited in shape for the purpose of land surveying, that the practical engineer or surveyor must, after careful consideration, admit that they may have been built mainly for that purpose. Not only might the country have been surveyed by these great instruments, and the land allotted at periodical times to the people, but they, remaining always in one position, were there to correct and readjust boundaries destroyed or confused by the annual inundations of the Nile. * * * The pyramids of Egypt may be considered as a great system of landmarks. * * Those of Gizeh appear to have been the main ones. The system through the subordinate groups may have extended from Chaldea through Egypt into Ethiopia. The land of Egypt was valuable and maintained a dense population; every year it was mostly submerged, and the boundaries confused. Every soldier had six to twelve acres of land; the priests had their slice of the land, too. After every war a re-allotment of the lands must have taken place; perhaps every year. While the water was lying on the land, it so softened the ground that the stone boundaries must have required frequent readjustment. By the aid of their great stone theodolites, the surveyors, who belonged to the priestly order, were

able to readjust the boundaries with great precision. The "*closing*" of one pyramid over another, in bringing any of their many lines into true order, must even now be very perfect; but we can only imagine the beauties of these grand instrumental wonders of the world, when the casing stones were on them. We can picture the rosy lights of one, and the bright white lights of the others; their clear cut lines against the sky, true as the hairs of a theodolite, and the sombre darkness of the contrasting shades, bringing out the angles with startling distinctness. Under the influence of the Eastern sun, the faces must have been a very blaze of light, and could have been seen at enormous distances like great mirrors. I declare that the pyramids of Gizeh, in all their polished glory, before the destroyer stripped them of their beautiful garments, were in every respect adapted to flash around clearly defined lines of sight, upon which the lands of the nation could be threaded. The very thought of these mighty theodolites of the old Egyptians fills me with wonder and reverence. What perfect and beautiful instruments they were! Never out of adjustment, always correct, always ready; no magnetic deviation to allow for. No wonder they took the trouble they did to build them so correctly in their so marvellously suitable positions. Let us, in the first place, comprehend clearly the shape of the land of Egypt. A sector, or fan, with a long handle—the fan, or sector, the delta, and the handle of the fan, the Nile valley—running nearly due south. The pyramids of Gizeh are situated at the angle of the sector, on a rocky eminence, whence they can be seen for many miles. The north and south lines could have been accurately run up and down the 'land of the waters' by 'plumbing' in the north star and the apex of the moonlit pyramid. The latitude of Cheops being known, and the annual northing and southing of the sun, the necessary sectoral lines could have been run in all directions as far as the extreme apex of the pyramid was visible by observations on the sun rising or setting (swallowed as it were) over his summit."

Mr. Ballard devotes no little space to the consideration of the various "natural lines" that would be flashed across the land of Egypt by such a group. The *cardinal* lines and those of

45° (1.2 northeast, northwest, etc.) being particularly marked, and numerous others formed by the "closing in" of pyramid to pyramid, as the distant observers' station shifts and circles about the horizon. He next describes the character of "the· ancient portable survey instrument," such as could have been modeled upon the system; such an instrument he believes to have been as simple in its construction and use as an ordinary modern "plane-table." It carried upon its upper limb a little group of pyramids, each pivoted upon its center and modeled upon the proportions and colors of the great Gizeh theodolites themselves. With such an instrument, provided with suitable sights and gearing, he clearly demonstrates that all the details of the annual Egyptian survey could be as accurately "filled in" as with our own modern "plane-table." The portable instrument could be readily "set up" at any locality, by observations upon the distant archetype, and by revolving the upper limb until the lights and shades and mutual eclipsing of the pyramid of each group—those of the model and those of Gizeh itself appeared to correspond. With the instrument at last thus oriented, any of the modern processes of surveying could have been accomplished.

Closing his argument, Mr. Ballard "conjures the investigator to view these piles *from a distance* with his mind's eye, as the old surveyor viewed them with his bodily eye. "Approach them too nearly," he exclaims, "and, like Henry Kinglake, you will be lost in the one idea of solid immensity. Common sense tells us they were built to be viewed from a distance. Modern surveyors stand *near* their instruments and send their flagmen to a distance. The Egyptian surveyor was *one of his own flagmen*, and his instruments were towering to the skies on the distant horizon. These mighty tools will outlast many a generation of surveyors."

This contribution of Mr. Ballard to our knowledge of the pyramids is of the most interesting character. He has developed there (caught, as it were, by inspiration almost at a single glance, as years ago he hurried by *upon a modern railroad!*) a brand new line of study, and seems to have fortified its premises very securely against attack. His little book should be in

the hands of every student who is interested and engaged upon this engrossing subject. His theory cannot fail to attract the attention that it merits; it is founded upon too solid a basis to be treated lightly, and must command respect.

It is subject, however, to the same pointed questions with which the purely scientific theorists, just noticed, can be interrogated. It is advanced as a probable theory, and so long as it is based upon a simple system of 3, 4, 5, triangulation, it is comprehensible upon its own merits, and aside from all other considerations seems to satisfy the entire arrangement of the Gizeh group in its relation to the land surveys of the whole surrounding locality commanded by it. So soon, however, as even its "working cubit" is shown to be as truly *earth-commensuric*, as from other consideartions we shall later see that its hidden and more "sacred cubit" is, the whole mystery of the pyramid returns upon us with all its overwhelming immensity. No arguments have yet been advanced upon the purely scientific basis that give even a plausible explanation of *how* these narrowly encompassed people of the eldest days *could possibly* have determined the whole commensuration of the earth! The whole of it is certainly built into the pyramid, but it was also *sealed up* therein from every gaze for full 3,000 years! Such parts of its mere "working" units as were at all transmitted by the initiated when they left the land, were by their ignorant successors employed but blindly as things whose value they by no means comprehended. With the interior of the pyramid (*i. e.* of the great one) Mr. Ballard's theory has nothing whatever to do. He says, "I have paid little attention to the inside measurement. I take it we should first obtain our exoteric knowledge before venturing on esoteric research." This is all very well; he has reviewed the group from the standpoint of his *own* profession, which is essentially *an outdoor one*. But here again the very mystery of this monument looms up with all its overwhelming grandeur. It answers the surveyor just as it answers the astronomer, just as it has answered the geometer, the geographer, and every class of men who are interested in the commensuration of the earth on which we live! And these answers have come home so convincingly to each of them, that

each is satisfied the monument " was mainly erected to embody the principles " *of their own special branch of investigation*! Certainly such a monument would be "a sign and a wonder in the midst" of any land and at the noon of any day of man's career!

"It must be admitted," Mr. Ballard further adds, "that in the details of the building of the pyramids of Gizeh there are traces of *other* cubits than R. B. cubits." It is with these details, the interior and exterior details of the pre-eminently *Great* Pyramid, that its mystery has most to do. Mr. Ballard's figures and proportions corroborate the entire scheme of external and internal measures as presented by Professor Smyth, and furnish his school of followers with what will now be one of their new and strongest indirect supports. We are therefore strongly disposed to accept this theory, in the main, as undoubtedly explanatory of a subordinate use to which the pyramids might have been put in the days of their prime and beauty. Perhaps it was *the idea* as given out to the nation at large by its originators, the mysterious "Shepherd Kings." As an apology to the nation for the erection of such expensive structures, they could certainly have thus presented a far better case than by any ingenuity they could have formulated for a mere tomb or astrologic "hanky panky." In their efforts to conceal the interior parts and symbolism of the one truly *Great* Pyramid (to erect which, this strange people had actually come to Egypt, and upon whose completion they as strangely left it) no better system could have been adopted by the Hyksos than such an one as this. Among the few sound points that Professor Proctor, in his astrological theory (?) does establish to our satisfaction, is the probable fact of the contemporaneous commencement of at least all the principal pyramids in the Gizeh group. Though certainly subordinate to the pyramid of Cheops, which was completed nearly one hundred years before that of Mycerinus, the latter as well as others of the group, seem to have been begun during the lifetime of the original *Shepherd* pyramid builder. Upon Mr. Ballard's hypothesis (of at least a subordinate surveyors use for the monuments) we can account for such an overwhelming increase to the first cost of the structures. A great and lasting good was to be conferred

upon the people of the land, but also *a great secret was to be securely kept away from them.*   There was the most gigantic system of freemasonry wrapped up in the whole scheme, and an extraordinary care was manifestly taken to conceal the intents and purpose of the principal element of the group.   That this was effectually realized we know from the fact that its secret was not *discovered* until about A. D. 800, nor ever even partly *understood* until actually the day of this, our own most favored generation.   To enlist the Egyptians in a vast system of national triangulation, by means of which their yearly obliterated landmarks could be most certainly redetermined, would be one of the most vital questions in such a land.   Each man and family would be concerned to re-enter into the possession of his own property in the shortest possible time after the annual inundation.   Every hour lost in Egypt after the subsidence of its sacred stream was measured in golden grains unrealized. The national interest thus enlisted would certainly not clog so long as the work remained unfinished.   We have independent and convincing proof that this wonderful people hesitated at no undertaking which rendered a single drop of the River Nile available for bread and butter.   It would thus be infinitely easier to unite the nation upon a group of structures destined for such a popular and even *personal* use, than even to *force* them at the lash of a task-master to build a merely royal tomb on a huge and costly astrologic folly.   By a judicious arrangement of the workmen, *initiated* into various degrees of the real secret, those interested could all the more effectually conceal, even while it was building before their very eyes, the fact that "Cheops" was not solid, as were the others, from all who were not "Hyksos" or possessed of the "master masons'" secrets.

<div align="right">C. A. L. Totten.</div>

INTERESTING COMMUNICATIONS.

NORTH ABINGTON, MASS., December 10, 1883.

Dear Sir:—Three letters have come into my hands, which are very interesting certainly, and would be more, if one dared to hope that what they speak of would come to pass. But in order to make them quite intelligible, I must tell you how they came to be written.

At the time of the Annual Meeting, in November, I was at Mr. Bisbee's rooms. I mentioned to him a matter which I had been thinking of a good deal in connection with Great Pyramid affairs, viz: the establishment of an astronomical observatory on the top of that edifice. Mr. Bisbee immediately desired me to write down what I had in mind, which I did, and left it in his hands, not knowing what use he would make of it.

As it seems, he forthwith sent the memorandum to Professor Smyth, and the result has been the letters which I have now the pleasure of laying before you.

But, perhaps I had better give you first what my idea was, so that the whole matter may come in the natural order before you.

I have long felt that we ought to do something practical and of real value for the Great Pyramid. In this practical age, when people say so constantly, "Well, what good will it do?" we shall most honor the Great Pyramid by doing something for it of immediate benefit, and shall also do most to win sympathy and aid. What, then, could be more striking to the imagination, or of more real worth to men, of that kind of worth which the Great Pyramid stands for, than to make it a permanent astronomical station? To set our best modern astronomical science at practical work upon that vast, primeval building which the most ancient astronomical science erected so many ages ago, and in which it expressed its ideas with supreme majestic force, would be a noble act, establishing a most notable and worthy conjunction of the works of man. To me it seems well nigh too grand to be possible.

Then, again, consider how it would aid our cause. We desire to have the Great Pyramid made the starting post for all measurements of the earth's surface, just as it was originally used, and made to be used; but especially to have its meridian taken for the prime meridian for the whole globe. To restore the building thus to the uses for which it was intended by the builders, would be an act of the highest dignity, it seems to me, and one peculiarly befitting our modern civilization, which has grown out of the recognition of the worth of the ancients. Now all the force which Greenwich has grows out of the fact that it is an astronomical observatory, where special work has been done. Make this such an observatory, and by the natural flow of things it would come, in time, to be recognized as the geodesical center of the globe; and all measurements would start from it. Its fitness for this is too great and manifest to make any resistance successful, after the movement towards it shall have been once begun in some natural and appropriate manner.

A part of my idea, and assistant to the main end, is that the Pyramid, and a park around it, should be made neutral ground under the guardianship of all English speaking people, or of all Christian nations, so that war should not interfere with it; and as the spot can never have any strategic importance, this could easily be done.

Such, in substance, is the idea in my mind; and you will easily perceive how important it seems to me, and how earnestly I would seek for action, if there appeared the least hope of attaining the desired end. And now for the letters themselves. In the first one I have omitted the very kind personal references of Prof. Smith, as having no special bearing upon the matter in hand.

15 ROYAL TERRACE, EDINBURGH, SCOTLAND, December 6, 1883.

My Dear Lucian I. Bisbee:—

* * * * * * * * * *

But the chief object of your letter is the proposal of Rev. Jesse H. Jones to call men's attention forcibly to the Great Pyramid, by a virtual scientific fire-raising on the top of that remarkable monument of the ages, and of architecture, in the shape of putting an astronomical observatory thereon. * * * * * * * *

Who would not, therefore, join with Mr. Jones in the spirit and intention of his proceeding, if it were practical also?

But this latter point must be considered. And here I should remind you that something very similar was proposed by an ex-admiral, who was superintendent of the Na-

tional observatory at Washington, D. C. But after preparing his drawings of an observatory on the top of the Great Pyramid, he found that human life and residence required roads, lights, drains, water supplies, etc., which would seriously deface the Monument ; and its mere height of 480 feet, more or less, would give no sensible advantage in astronomical observation, but would seriously increase the terrestrial disadvantage of wind-force, against which, and the sand-storms of the desert, some protection is just as necessary, or more so, than it is with us against rain. To have the Great Pyramid enclosed in a people's park, and an astronomical observatory therein, might be more practical. And there is a clergyman at Alnwick, Northumberland, a keen observer, who is just now scheming how he can get assistance and co-operation in taking out his 18-inch reflector telescope to Egypt, and have a season's observing there ; to whom I will venture to recommend Mr. Jones' scheme—to be pyramidal if Egyptian in any degree.

Yours very truly,

C. PIAZZI SMYTH.

Perhaps it is out of place for one, entirely unacquainted with Egypt by experience, as I am, to make any reply to the difficulties raised by Professor Smyth. However, I will risk one remark : he and his wife lived there four months and worked ; and Colonel Howard Vyse lived there seven months and worked; and a city full of people, many of them Englishmen, live in Cairo, but six miles away; and " what man has done man may do," is a good old proverb; and that a telescope, and abundant shelter for it, can be anchored to the top of the Pyramid without defacing it, seems to me plain.

However, hardly had this letter been received by Mr. Bisbee, when another came, or rather two in one, which were as follows:

ST. PAUL'S VICARAGE,
ALNWICK, NORTHUMBERLAND, ENGLAND, December 7, 1883. }

My Dear Professor:—Very many and best thanks for letting me see the enclosed letters, (from Secretary Lucian I. Bisbee and Rev. Jesse H. Jones, Boston, U. S. A.) They touch a subject in which I am, as you know, exceedingly interested ; for I believe that Cairo, on account of the dryness of the climate, affords facilities for astronomical observation unequaled by any place in the world which is available for the purpose. I think very valuable results would accrue from taking a large telescope, such as mine, out there for a season, and in this opinion I am, I believe, supported by yourself and by the first double-star observer in the world, Mr. S. W. Burnham.

As far as I am concerned, my telescope and my services will be at the disposal of the Institute, if they will find the necessary funds for transporting me and it out there and home again. The instrument is, as you know, a silvered-glass reflector of 18¼ inches apereture, of the very finest quality, equatorially mounted, and driven by clock-work ; and the double-star work which this instrument has already performed is such that, in the published opinion of Mr. S. W. Burnham, it is capable of doing the most difficult and delicate work in this department of astronomy—which I need not say is far and a way the most severe in testing the quality of an instrument. I have a sidereal clock, micrometer, and all necessary appliances. The only thing required would be a new stand, adapted to the latitude of Cairo. I am, as you know, perfectly acquainted with its management and

working. Being a poor man, I cannot by myself bear the expense of taking it out to Egypt for a season ; but I have no doubt, were the matter taken up by the Institute, several would gladly join in the expedition, and would help to bear the expense. As to transporting it to the top of the Great Pyramid, you are a far better judge than I can be of its feasibility. But knowing how handy the instrument is on account of its short focal length, and the great ease with which all its parts can be transported, as compared with those of a refractor of anything like the same size, I do not see any impossibility in the way. But that is a matter of detail. The first thing is to get the instrument out there and see what results would be yielded by a few months of observation. If they turned out to be anything like what there is reason to expect, the establishment of a permanent observatory out there would no doubt follow in due course ; and what better place could be found than the top of the Great Pyramid, if the idea is practicable?

Very oddly, your letter reached me only a few hours after I had delivered a lecture in our town hall here on "Egypt, its Pyramids and Ancient Monuments." I take a keen interest in the pyramid question, and I can truly say that I sincerely hope that the convictions at which you and many others have arrived are correct.

If you would kindly send this letter to Mr. Bisbee, together with any remarks you may be good enough to make, and ask him to write to me on the subject, I shall be very much obliged. Of course this season is too far advanced for anything to be done now, but next, please God, the thing may be carried out. With kindest regards to Mrs. Piazzi,

I am, my dear Professor, most faithfully yours,

JEVONS J. M. PERRY.

According to Mr. Perry's request, Professor Smyth immediately forwarded the above to Mr. Bisbee, accompanying it with the following note of his own :

ROYAL OBSERVATORY, EDINBURGH, SCOTLAND, December 10, 1883.

My Dear Lucian I. Bisbee:—I return to the subject of yours and Rev. Mr. Jones' letters of last November; for my friend, Rev. Jevons J. M. Perry, has responded so immediately and enthusiastically, as see what I now enclose.

To all that, I would only seek to add my testimony, whether official or private, that he is an astronomical observer of the highest acuteness, accuracy and sympathy, by nature ; that the telescope which, by great efforts on his part pecuniarily, he has at last possessed himself of, is really in its way, and with his handling of it, a pearl of great price—a silver-on-glass reflector of eighteen inches aperture—so that, take it and him all in all, his observations with it through a season at the foot of the Great Pyramid, should quite make an epoch among astronomical observers. Now, that is what Mr. Jones and yourself seem to desire to bring about, and the only difficulty is the expense. Is there, then, to your knowledge, any rich man, or any number of men comfortably off, who may be desiring to go to Egypt next winter (1884–5), who would like to be honorably connected with a remarkable astronomical work to be performed there during their visit, and who would win their claim to it by subscribing to the expenses of removing and establishing so large a telescope, and returning it again to its home, if no opportunity of permanent establishment should turn up ? I myself would not think of asking you to press the idea upon any one ; I should be quite content with your launching it at a public meeting, either in Boston or Cleveland, or both, and writing to Mr. Perry direct, if anything turns up.

I remain, yours very truly,

C. PIAZZI SMYTH.

If this matter shall seem to you of sufficient merit, would

you kindly lay it before the next meeting of the Ohio Branch
of the International Institute?   Very truly yours,

JESSE H. JONES.

To Charles Latimer, C. E.

A REVIEW.

"PYRAMIDS AND TEMPLES OF GIZEH."—BY W. M. FLINDERS PETRIE.

We sent Mr. Beswick the book of Mr. W. Flinders Petrie
for a criticism, and the papers Nos. 1 and 2 are combined in the
present article below.   Mr. Beswick had not seen Rev. H. G.
Wood's paper before writing No. 1, but had seen it after writing
No. 2.   The reader will see that he endorses generally Mr.
Wood's view; also the conclusion of Mr. Wood as to Mr.
Dow's formula giving 9139.871 258+ as the base of the south-
east socket, which is $\dfrac{180^3}{2\sqrt{\pi}}$ —[EDITOR.

NO. I.

At length, this important contribution to the literature of
what relates to Egyptian archæology and to standard works on
the Pyramid, has been published.   The materials of the present
volume have been selected from the results of two winters'
work in Egypt.   There is little, or comparatively little, differ-
ence between the numerical results now published and those
which have appeared in the standard works of Colonel Howard
Vyse and Professor C. Piazzi Smyth.   This work is really noth-
ing more than supplementary to their prior measurements and
descriptions.   It gives fuller information about a few of the
principal parts of the Great Pyramid, and professes to include
a more exact measurement of the whole exterior.   The major
portion of the book is taken up with matters relating to the
second and third pyramids, the granite temple, and other

lesser works, and the methods and instruments used in the investigation and survey.

Our interest in this work is confined exclusively to the chapters relating to the Great Pyramid. Chapter six contains a description of work in relation to the outside of the Pyramid, and gives the materials in detail for the discussion of the original size of the base, the casing, *in situ*, upon the pavement in the middle of each face, the rock-cut sockets at each corner, the levels of the pavement and sockets, and the mean planes of the present core masonry.

The conclusions of Mr. Petrie differ somewhat from those who have preceded him, and these conclusions mainly rest upon his conception that the true datum line, or zero of levels, should be "a considerable flat-dressed surface of rock at the northeast corner, which is evidently intended to be at the level of the pavement." (p. 41.) From this zero point the levels around the Pyramid were taken. His datum line is not the rock-level upon which the base rests, but the level of the pavement which surrounds the base.

Then, again, he claims that the line joining the sockets is not the true base line of the outer casing at the foot of the Pyramid. He says: "I found that the casing on the north side lay about thirty inches *inside* the line joining the sockets.—"(p. 37.) He searched again and again for any flaw in the calculations. All his check measures agreed in the same story, and when reducing his observations to give the mean form of the core planes at the pavement level, it came out thus: mean result, case plane sides, 9001.5 inches in length; socket sides, 9125.9 inches.

Hence he says: "The sockets only show the size of the Pyramid where it was started from varying levels, which were all under the pavement; and its *true base* upon the pavement is therefore twenty or thirty inches *inside* the lines of the sockets." (p. 38.) The foot line of the casing all round the Pyramid base was *inside* the line of the sockets. His theory is "that it would be natural to allow (a margin) some free space in which to adjust the stone." (p. 38.) He concludes as follows: ' The original base of the Great Pyramid *casing on the platform* is of these dimensions:" (p. 39.)

N. 9069.4 British inches.
E. 9067.7 " "
S. 9069.5 " "
W. 9068.6 " "
———————
Mean 9068.8 " "

And in another place, more generally, he says: "On the whole, we probably cannot do better than take 51° 52′ ± 2′ as the nearest approximation to the mean angle of the Pyramid, allowing some weight to the south side. The mean base being 9068.8±.5 inches, this yields a height of 5776.0±7.0 inches," (p. 43.)

As the whole of his subsequent results rest upon this fundamental theory of the original base being about 20 to 30 inches inside the socket lines, and the true base length to be measured from the casing line as the level of the platform, it would be well to consider this point at the outset of our review.

There appears to be a fundamental mistake in the assumption that the casing stones all round the four sides of the Pyramid were inside the line of the sockets to the extent of 20 to 30 inches. For on the same page (38) he says: "This means that the sockets *were cut to receive the foot of the sloping face, which was continued right down to their floors beneath the pavement. (See* Pl. XI)."
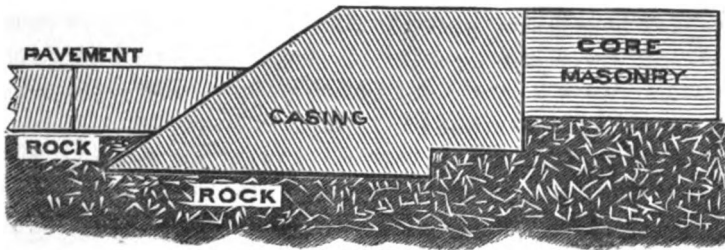
This single sentence upsets the whole theory. How could the sockets be *cut to receive the foot* of the sloping face, if that sloping face was allowed a margin of 4, 10, 20 or 30 inches? How could the sloping face be "continued right down to their floors" in the socket, if the foot of the sloping face did not come up to the outermost edge of the socket pocket? Mr. Petrie re-

fers to the plate for illustration.   Well, here it is.   But the foot
of the sloping face is *flush* up to the pocket edge of the socket
in this diagram, with no margin of 4, 6, or any number of inches.
The allowance of space by enlarging the socket for the purpose
of adjusting the stone, which Mr. Petrie urges in excuse for
this assumption, is simply inadmissable and unreasonable.   It
might do very well for blundering and unskilled workmen,
which the Pyramid builders were not.   It might do as a reason
for those who did not know where they might have to begin to
lay their first corner stones; or for builders who had begun at
the center or at the apex of the Pyramid.   Then such allow-
ance might be made, and a margin be supposed and rendered
necessary.   But for men who would begin at the bottom course
of the core masonry, and at the extreme edge of the base, we
cannot suppose that any margin at all was necessary.   In a
thousand different ways and places, all over the inside and out-
side of this structure, we have the most incontrovertible proof
that the skilled workmen employed on this building could plan
and lay out their work, and execute the same within the one-
hundredth of an inch.

Now look at the comparative results.   Mr. Petrie obtains a
mean length of base equal to $9068.8 \pm .5 = 9069.3$ British inches;
add to this the 30 inches at each end, which he has deducted
from the socket lines, and we have for length of base $9069.3 + 60 = 9129.3$ British inches.   The royal engineers of 1869 gave also
9130 British inches.   And Prof. Piazzi Smyth adopted 9130
Pyramid inches=about 9140 British inches.   The angle of the
sloping sides is given at $51° 52' \pm 2'$.   This is certainly a wide
margin, and identically the same as given by Colonel H. Vyse,
$51° 50'$ to $51' 52'$.   Prof. Smyth has adopted $51° 51' 14.3.''$ Of
course, the vertical height of the Pyramid depends upon this
angle of the face.   But Mr. Petrie has left the matter in quite
as undetermined a condition as it was before his work was pub-
lished.   He cannot tell the angle within $2'$ of error either way, or
rather within a range of $4'$ of angle.   There is not, on an aver-
age, half the certainty about his measurements as there is about
those of the Scotch Royal Astronomer.

When we come to the measurements of the passages and

rooms, the same uncertainty prevails there. And when he compares his own results with Prof. Smyth's, in relation to the length of the entrance passage, he says: "On comparing them with Prof. Smyth's measures, it will be found that his measures make the passage length about *an inch* shorter on an average." (p. 57). If this be all the error or difference that a continuous research of two years can discover, then we prefer to accept the measurements of the Scotch Royal Astronomer, until something more definite and reasonable can be offered in objection than what Mr. Petrie has presented in this work.

The entrance passage angle he gives at 26° 29′ ± 1′. In other words, there may be an error either way of 1′ of angle, or a range of 2′ of angle. This is very indefinite also. Prof. Smyth gives one of his measured angles, 26° 28′ 7″; and Mr. Petrie gives 26° 28′ to 26° 30′. The latter has not introduced any-more certainty into our elements than existed before, and his figures do not vary enough to warrant us in adopting them in preference to others. He estimates the vertical height above the ground level, based on the angle 26° 29′ ± 1′ of the mouth of the entrance passage, at 638.4 inches. If Prof. Smyth's angle, 26° 28′ 7″ be taken, it will give this vertical height above the rock-level as 638.37 British inches—only a difference of .03 of an inch. Now we have a right to suppose that, in this case, Mr. Petrie used and preferred Prof. Smyth's angle to his own.

We shall return to a critical examination of this work. Its published results have made the measures of Prof. Smyth a thousand fold more valuable and reliable than they were before. There is really nothing to alter worth altering, but what comes within the range of personal errors. And we may now go on with our labors with increased confidence, 'and with the assurance that the British unit or inch, which the International Society has adopted as its standard, is unquestionably the true inch which the builders and architect used in constructing and erecting the Great Pyramid at Gizeh.   S. BESWICK.

STRATHROY, ONTARIO, MONDAY NIGHT.

Charles Latimer, Esq.:—You will see that, in the main, I agree with the conclusions of the Rev. H. G. Wood. We radically differ in our conception of the meaning of the irregular sides of the base, and of the causes of the changes which age has produced in the dilapidations of its structure.

I have not deemed it necessary to cite all the reasons I could urge for the view I take of the original form and lengths of the sides of the base.   You will see that I hold the theory that the North and East sides were of the same length originally, and the South and West sides were of the same length originally; or that the S. W. angle was the complement of the N. E. angle.   In other words, that the square base of the S. E. socket gives the base side as given by the formula of *Mr. Dow*.   The square base of the N. E. socket gives the base as given by the formula of Prof. Smyth, only that British inches give it instead of his Pyramid inches; whilst the square base of the highest or S. W. socket gives the ancient Egyptian sacred year of 365 days.

Use Fig. 2 of Mr. Wood's article to illustrate my article, and you can draw a *chalk figure* to illustrate it at the meeting.

I am under the impression that the Society should, if possible, look towards an American Pyramid Exploration Expedition, by those whom the Society is assured of being favorably disposed, and not like Petrie, who is clearly prejudiced against the idea of the Pyramid being the source of our standard measures.   Put it in the hands of a committee to get the matter up, and let them see if something can be done.   I can furnish you with costs and expenses of travel and board there, wages, &c.

<div align="right">Yours respectfully,
S. BESWICK.</div>

<div align="center">NO. II.</div>

There is abundant proof in Mr. Petrie's work that the British inch was the only one used in the construction of the Pyramid. There were not two kinds of inches; for when the dimensions of the entire Pyramid are expressed in British inches, the numbers are identically the same as are used to express the radius divided into seconds of arc, being some multiple or fractional part thereof.   This is true of the vertical height and length of the base, also heights, widths and lengths of passages and rooms in the interior.   And as this is not true of any other unit, the concurrent proof of all these lines of construction in the Pyramid is a demonstration that the Pyramid was designed to represent circular and circumference relations, when expressed in terms of the British inch.

Mr. Petrie's measurements and researches at the Great Pyramid clearly demonstrate that the builders have embodied the astronomical standards of time in this wonderful structure, by which they regulated their calendars for the civil or vague year, and the astronomical or true tropical year.   The civil or vague year of 365 days was of more practical use and consequence to the great mass of the Egyptian people than the astronomical or true standard year of 365.2422 days.

From time immemorial the civil or popular year of 365 days was called by them the "sacred year."   The oath imposed on

Egyptian Pharaohs, "that they would not intercalate any month or day, but that the sacred year of 365 days should remain as instituted in ancient times," evidently had for its object the employment of both the sacred year of 365 days and the true tropical year of 365.2422 days for a counter-reckoning in present and future records, whilst the oath itself bears testimony that the civil or sacred year of 365 days was instituted in very remote times, for the convenience of civil reckoning. By means of this "sacred year," the priests and the entire nation were enabled, on account of its annual reversion, to carry the same festivals through every season in the year in regular undeviating succession. The Egyptian astronomers were, however, aware of the necessity of an additional quarter of a day, to equalize the standard tropical year with this civil or sacred year of 365 days.

They therefore created a sothic period, consisting of 365.2422 days, as their true standard year. They knew that, as these two years began on the same day, at the epoch of Menes, 2782 B. C., a cycle of 1461 civil years, or 1460 sothic years, must transpire before the same circumstance could occur again. Thus:

365 × 4 gave civil year every 1460 sothic years.
365.2422 × 4 " sothic " " 1461 civil "

Thus 1460 fixed years were equal to 1461 sacred civil years, there being 533,265 days in each series. Such was the ancient calendar of the Egyptians, even so far back as the epoch when the Great Pyramid was erected, in relation to their two standard years—civil and astronomical. I now proceed to draw some conclusions from the Pyramid itself, in relation to these two standard periods of time.

W. M. F. PETRIE'S MEASUREMENTS.

The four corner sockets of the Great Pyramid were re-examined and remeasured by Mr. Petrie. He was fully aware of the absolute necessity of determining the base lines, if possible, by actual inspection and the best methods; for any conception of its geometrical construction must rest upon the scientific determination of its base lines. The four sockets are cut in the

natural rock at varying depths. Each socket has been leveled with accuracy, but they have not all the same level. The southeast socket is the lowest, then the northwest, northeast and southwest, in the order here named. The lowest datum level, which is the true level, is that of the southeast. The four sockets mark the site of the four corners of the building. And whilst the base is not absolutely a perfect square, it is so little short of being such, that the eye could not detect its amount of deviation.

The enclosed diagram will illustrate the result of what Mr. Petrie has proved, beyond a shadow of doubt, to be the present value of the Great Pyramid's base.

Fig. 1   Fig. 2*   Fig. 3
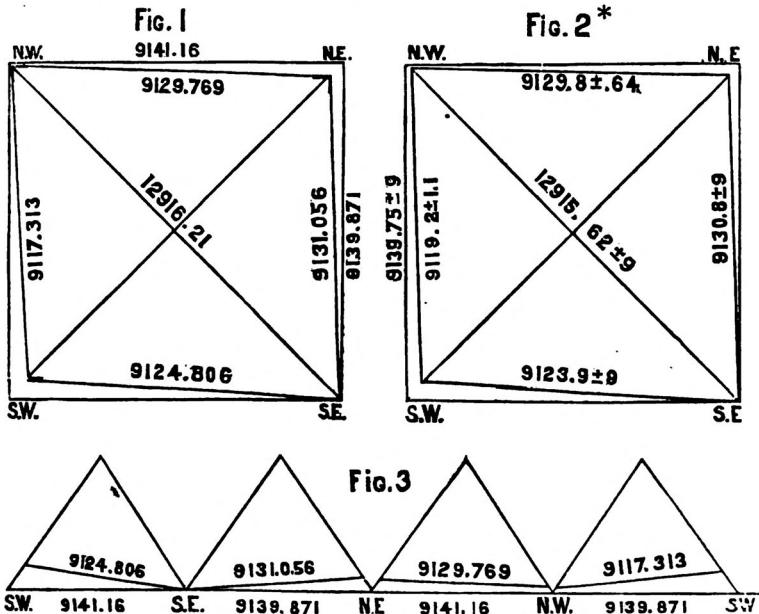
The following are Mr. Petrie's measures :

East socket line,			9130.8
North	"	"	9129.8
South	"	"	9123.9
West	"	"	9119.2
Mean	"	"	9125.9±.65

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* In Fig. 2 the decimal in each case after the plus or minus sign should be .65

with a diagonal from S. E. to N. W. of 12915.62±9. The southeast is the lowest socket and farthest from the axis of the Pyramid. And if we compute the line of facing which must run from the vertex to the northern base at an angle such as Mr. Petrie gives, 51° 52′ ± 2′, it will strike the base line at a distance of 9139.87 inches from the southeast corner of the southeast socket. This is exactly what we have all along expected from theory would be the case by actual measurement.

But this is the side of a true square; and the Pyramid is not a true square. Therefore the side is not 9139.87 British inches, but 9130.8±.65 inches for the east side from S. E. to N. E. sockets. A true square, drawn from this lowest base, would be a square of 9139.87 inches, expressed by the formula:

$$\text{Base } \frac{180^2}{2\sqrt{\pi}} = \frac{16200}{\sqrt{\pi}} = 9139.871258 +.$$

There has evidently been a settling down of the whole south side of the Pyramid in a westerly direction. The north has been little affected, and the east and west. The main warping has been on the southern side of the Pyramid, in a westerly direction. And this is somewhat strange at first sight, because the highest socket and firmest base is at the S. W. corner. We should naturally have supposed that the warping would have been in the direction of the lowest base socket., at the opposite corner in the S. E. The settling, if any, and there was a little, would have been in that direction. But whatever may have taken place in this respect has been the result and effect of a strain from warping exclusively. Warping has been the efficient cause, and settling has been one of the effects. And this warping 'has been mainly on the south side of the Pyramid towards the S. W. corner.

The fact of its being the highest base proves this; for the rock has its highest ridge running in the direction of the diagonal from N. E. to S. W., and the warping strain has been all from the E. towards the higher ridge of rock at the S. W. socket. In the middle of the S. base line, the rock level is 5.6 inches lower than the northern base; and the middle of the W. base line is 1.7 inches lower than the opposite eastern

thus proving that the warping strain was on the south side of the Pyramid and in the direction of the S. W. corner.

Undoubtedly this result must have arisen from the action of the sun on the southern side of the Pyramid. Its direct rays acting upon this immense mass of masonry for thousands of years, were quite competent to produce this result. And if solar action produced any warping result at all, its maximum effect would be felt and seen on the southern side almost exclusively, for all other minor effects would only tend to follow in the direction of the greatest strain and where the maximum results were taking place. The total effect on the S. side of the Pyramid, from this cause, appears to have been but a few inches in the increased length of the southern base line.

SYMBOLISM OF THE BASE.

I. The four sides of the base are each slightly different in length, so that the base is not a perfect square. There is no doubt a deeper significance yet to be discovered in the arrangement of the side lengths of the base. If we deduct the warping of the southern base to the extent of 3.7 inches, the length will then be 9120.2 inches instead of 9123.9 as given by Mr. Petrie for its present length. The sides will then have the following significance:

N.	9129.8	E.	9130.8
S.	9120.2	W.	9119.2
Mean	9125.0	Mean	9125.0

Or the total value of the four sides of the base will be:

N.	9129.8
S.	9120.2
E.	9130.8
W.	9119.2
Total	36500.0

In other words, the cycle, which is thus symbolically expressed, is clearly that of the sacred year of 365 × 100 years. I notice in the last number of the INTERNATIONAL STANDARD, p. 499, the Rev. H. G. Wood says: "The sum of the four theoretical socket lines we have presented is 36502.944 inches.

II. The E. and W. sides would be the least affected in their length, and the N. and S. sides would be the most affected, because the warping strain was from E. to W., thereby lengthening the southern base and shortening the northern base by being pulled askew. Mr. Petrie tries to make a point against Prof. Piazzi Smyth, in relation to the foot of the casing. He claims the casing line did not come up to the socket, but the line was warped, and the base line more or less pulled from the socket sides. Mr. Petrie's east socket line is 9130.8. The true value is doubtless 9131.05, or about one-fourth of an inch=.25, warped from its true value. He says, p. 40, that there is a small mean error of two-thirds of an inch=.65, for errors of the sockets and triangulation. And one-third of this mean error would change his 9130.8 into 9130.8+.25=9131.05, which is simply one-fourth of the grand cycle of 36524.22 years, the standard astronomical year of the Pyramid builders, and of the modern astronomers of to-day.

Mr. Petrie makes the N. socket line 9129.8 inches. But the side has been warped by the strain on the southern side to the extent of 1.25 inches—a very small item, and only double the amount of error allowed by Mr. Petrie. The true value of the N. base should be 9131.05 inches. The warping on the N. side being from the N. E. angle westward, the base line would be diminished to the extent of 1.25 inches, and the socket-stone removed that much from the socket side, and the length reduced to 9129.8 inches as found by Mr. Petrie. Prof. Piazzi Smyth and Mr. Petrie both found the end walls, east and west of the King's Chamber, tilted .82 inches toward the S. W. angle; thus lessening the northern base line 1.26 inches on the N. E. and increasing the southern base line on the S. W. end.

On every side of the King's room the joints of the stones have separated, and the whole chamber is warped and stretched and made larger. Every roof-beam is broken across the S. side. The massive roof-beams are either cracked across, or torn out of the wall, more or less, on the S. side, and the construction chambers above have sunk bodily towards the S. The amount is but small—an inch or two—but increases in extent towards the S. W. corner, away from the center. The S. E. corner

has warped so badly towards S. W., that the wall is pulled apart and cracked, and a large opening or fissure shows plainly that the strain has been westward from the S. E.   These results tell conclusively that the direct action of the solar rays for thousands of years upon the S. side of the Pyramid has expanded and warped this side, which has sustained almost the whole burden of the solar action upon this immense pile of stone, year after year, from the most ancient times.

The E. and N. sides appear to have been originally alike, each being 9131.05 British inches in length, and probably were designed to indicate the standard astronomical year of 365.2422 days, by which the civil, vague or sacred year—known as the civil calendar year—was regulated.

The W. and S. sides opposite thereto, forming the two sides of the S. W. angle, were originally 9118.95 inches in length, and were designed to represent the complement of the opposite sides, north and east, to make up the perimeter, and change the vague civil year of 365 days into the standard fixed astronomical year of 365.2422 days, represented by the two sides of the opposite N. E. angle.

So much for the significance of the actual sides of this irregular base of the Great Pyramid.   The actual square base, when drawn out from the S. E. corner base and socket and carried all round the four sides, will afford us some additional instruction.   The E. socket-line, measured by Mr. Petrie, is the longest, being 9130.8±.65.   But if only one-fourth of an inch=.25 be allowed, or only one-third of the error of measurement allowed by Mr. Petrie be taken, the true base-line would become 9131.05 inches, or the identical number in British inches that make up the value usually given by Prof. Piazzi Smyth.   But extend the line at right angles, and the east line base becomes 9139.871258 British inches.

So with the S. base line.   Mr. Petrie, on page 206, gives 9122.5 inches for this line, as given by the Royal Engineers' survey, and in a note he says: "This is stated at 9140.   Now the outer W. edge of the socket-block at the S. W. is 17.5 beyond the drawn line which defines the socket, and it is therefore about 9140 from the S. E. corner."   So that the base line

of the S. from the outer W. edge of the S. W. socket-block is 9140, or rather 9139.871258 inches also.

And, indeed, this is the actual and true base of the Great Pyramid. The perimeter of a true square base is equal to 36559.485 inches, or 9139.871258 inches to a side. It also represents a circular area with a radius equal to that of the actual width of the King's Chamber, and consisting of precisely the same figures as those which are now used to express the radius of the earth's orbit, divided by 1,000, or $\frac{206264.8}{1000} = 206.2648$. This foundation or datum line, formed into a perfect square, is that which springs out of the S. E. socket-level, the lowest in the Pyramid.

The datum line of the N. E. socket-level, which is 11.4 inches higher, would give a square base equal to 36524.22 inches, forming the true astronomical standard year. We may now see that there was no necessity for the use of two kinds of inches.

The datum line of the S. W. socket-level, which is 16.9 inches higher than the S. E. socket-level, would give a square base of 36500 inches, with sides whose length would be 9125 inches. The square of this S. W. base would represent the civil or sacred year of 365 days, which every Egyptian Pharaoh was compelled to swear, at his coronation on ascending the throne, that he would preserve it in all its ancient integrity.

In conclusion, taking the work of Mr. Petrie for a complete and honest record of actual and careful measurements, made on the spot by a competent civil engineer used to the instruments necessary for the work, and extending his measurements over all the points required for a complete settlement of the many vexed problems which have been raised and formulated since Professor Piazzi Smyth was there, we cannot express our thanks too warmly for the complete opportunity his work has given of vindicating the Royal Astronomer of Scotland in relation to his measurements and the main elements of his theory of the Pyramid, and the skill and wonderful science of ancient times.

P. S.—To be a little more explicit, I would say that the ob-

ject which the builders had in view in making the two sides of
the N. E. angle equal in length, and the two sides of the S. W.
angle also equal in length, was:

(*a*).   Geometrical.   It was so built that its *height* would be
to *one-half* its circumference, as diameter is to circumference
of a circle.

(*b*).   The height would be to the two sides of the N. E.
angle as 5813+ is to 9131.05×2=18262.10, giving a year of
365.2422 days.

(*c*).   The height would be to the two sides of the S. W.
angle as 5809+ is to 9125×2=18250, giving a year of 365
days, and better known as the sacred or civil year of the
Egyptians.

So that the Great Pyramid not only embodies in its geomet-
rical structure a method of quadrature, but the actual values of
the two standard measures of time, known as the civil or pop-
ular sacred year of 365 days, and the astronomical or standard
fixed year of 365.2422 days, used for chronological and scien-
tific purposes.   By this geometrical structure of the base, the
architect has settled the disputed point which has long disturbed
the ranks of the Pyramidists in relation to the use of two
inches by the builders.   The architect has given the standard
year of 365.2422 days in British inches only, and has devoted
the N. E. angle and its two sides to the measurement of its
value, whilst the S. W. angle and its two sides have been also
given in British inches for a sacred year of 365 days, then in
popular use.   And the ancient Egyptians were content with
this one invariable, natural and convenient standard in the reck-
oning of time, and by their adoption of this historical and
official year of 365 days they have afforded the only ex-
ample of a practical chronology, free from all obscurity or
complication.

In the Rev. H. G. Wood's excellent article on the "British
Mile," which appeared in the last number of the INTERNATIONAL,
pp. 497-498, appears the following passage: "The south
socket line, 9124.806, would strike the southwest sloping corner
at the level of 20.82 inches above the southeast socket floor, and
the north and west socket lines, 9129.769 and 9117.313, would

meet in the northwest sloping corner within one inch of each other. Mr. Petrie gives 16.9 for the difference of level between the S. E. and S. W. sockets. *Here is a discrepancy of four inches between fact and theory.* Our theory would imply a settling of the S. W. corner to the amount of this discrepancy."

There is a discrepancy of 3.92 inches it is true, and Mr. Wood is perfectly correct in saying that the south socket line would strike the S. W. sloping corner at the level of 20.82 inches above the S. E. socket floor. But I would suggest that he is not correct in his theory, that this discrepancy between Mr. Petrie's 16.9 inches and Mr. Wood's 20.82 inches implies a settling of the S. W. corner. There has been no settling in the foundation—none whatever. How will you explain the difference if there be no settling? In this way. To make up this difference all the levels of the courses on the S. W. corner are about an average of from 3 to 4 inches higher than the S. E. and the N. E. corners. Take the six uppermost courses as they now stand for an illustration:

N. E.	S. W.
5407.9	5409.2
5385.7	5386.8
5362.9	5364.3
5341.3	5342.9
5319.2	5320.9
5295.7	5298.2

The S. W. courses of the angle are really higher on an average to meet the case cited by Mr. Wood, and to make up the small difference he suggests. Had there been a settling of the S. W. angle of about four inches, *the levels of the courses forming the angle would have shown it.* But instead of being of a *lower* level the courses of the S. W. angle are actually *higher* by the average amount of the difference suggested. The fractures, cracks and displacements in the Great Pyramid are the result of *warping* by the action of the sun on the south side and southwest angle, and not of settling. Had there been a settling of the S. W. corner, all the courses in the angle would have had a lower level than the S. E. and N. E. courses instead of a higher

level, as we now know them to have.   This fact is conclusive, we think, if Mr. Petrie's figures are reliable.

<div align="right">S. Beswick.</div>

THE FIRST MERIDIAN AND THE METRIC SYSTEM.

At the last sitting of our Academy of Sciences, Mr. Faye communicated his principal decisions adopted at the session of the International Geodesic Association, assembled at Rome last October with the friendly and courteous support of the Italian Government.   The conference had added to its usual programme the questions broached of the day :

1st. The unification of the meridian of departure (starting-point) for geography and navigation.

2d.   The propagation of the metric system lacking the positive support of some great powers (England, America, etc.) After having accepted for first meridian that of Greenwich, the conference expressed the desire that the universal time (hour) should not be the civil time, but the astronomical time of Greenwich.   It desired to mark the longitudes of o a 24 towards the east, and requested that prescriptions should be introduced and explained in the public schools, under the same title as the metric system.   This last desire of Mr. Faye's amounts here to enthusiasm.

A high sense of sincerity in this regard animated all the members of the conference, and it was a striking spectacle to see the civil and military representatives of almost all the civilized countries of the world rise under the arches of the Capitol to address to England, and of course to France, the following invitation :

" The conference hoped that if the entire world should agree upon the unification of the longitude and hours in accepting the meridian of Greenwich as point of departure, Great Britain will find a motive on her side to make a move in favor of the unification of weights and measures in adhering to the Convention of the Metre of May, 1875."   Let us say in the first place, that the reasoning of Mr. Faye offends by its base-

ness. What! has France been so completely vanquished in two important points? The conference rejected its first meridian, which, with us, in the words of Mr. Faye, is connected with immense works with secular traditions which, so to speak, form part of the scientific individuality of France. In the second place, the conference adopted for the universal hour the astronomical hour of Greenwich, while in France, the astronomers themselves, at the time when the Republican Calendar was instituted, had adopted the civil hour, the hour of the whole world. With these two defeats Mr. Faye can now hardly expect that England and America—nations full of good sense—will adopt the French metric system—the most incredible of revolutionary extravagances. The metre, it would appear, is the ten millionth part of the quadrant of the meridian ; but the meridians are always unequal, because the earth, according to the forced admission of the astronomers, is not a regular ellipsoid, and it has even been demonstrated that in Prussia the shape of the world is very irregular. The ten millionth part of the quarter of the meridian then means nothing ; and to give it a meaning, it is necessary to add that the quarter of the meridian mentioned is the meridian at the Belearic Islands. And why Dunkirk? Besides, the measure of this arc of meridian is a colossal operation, and requires a long and laborious triangulation, entailing enormous expenses, and impossible to bring to close calculation without error ; and as a fact, the length of the metre deducted from the triangulations between Dunkirk and Fenneentun displays a notable error. It would seem to be the animus of Republics to construct at great cost immense levers to raise a straw. It would have been far easier to take for unit of measure the length of pendulum and seconds at a given longitude or latitude. Besides, to substitute for the system of ancient measure something so abstract, so transcendent as the metre is against all the traditions of humanity —a necessary consequence of the revolutionary spirit carried to absurdity. Moreover, the metre is a measure entirely too vague, which it is impossible to handle without deforming, even when it has been constructed in hard metal—lithrage (?) of platinum is generally adopted by the International Commis-

sion of Weights and Measures—a Commission whose long labors cost France much to arrive at nothing, as Mr. Faye himself acknowledges. It is time; high time, that a blow fatal to the metric system should be struck, and that it should cease to exist, like many other outgrowths of the Revolution ; and that the unit of measure, adopted by the whole world be that of the Grand Pyramid, not a decimalized curve pretended to be equal to the ten millionth part of the quarter of the meridian essentially variable, but to the ten millionth part of the semi-polar axis of the earth, a grand cosmical unit and especially the same as that of Moses and Solomon.

F. MOIGNO.

THE MOON'S MEAN PERIOD, AND THE ANGLE OF ASCENT OF THE GRAND GALLERY OF THE GREAT PYRAMID.

In the course of my Pyramid investigations, I obtained, some time ago, the following equation for the moon's mean synodical period, e representing the earth's equatorial diameter, and 36525.95983 being 100 times the length of the anomalistic year in mean solar days:

$$\frac{7e}{\sqrt[4]{36525.95983 \times 40\sqrt{2}}} = 29.5305882 \text{ days.}$$

This equation may be put into the form,

$$\frac{4e}{\pi\sqrt{2}} \times \frac{7\pi}{\sqrt[4]{36525.95983 \times 160}} = \text{moon's mean period.}$$

The first factor, $= \frac{4e}{\pi\sqrt{2}}$, the diameter of a circle having a circumference equal to the sum of the sides of a square inscribed in a circle whose diameter equals the equatorial diameter of the earth.

The second factor, $\dfrac{7\pi}{\sqrt[4]{36525.95983 \times 160}}$ resolves itself simply into the square of the sine of an angle of 3° 41′ 24″.82, which is so close an approximation to the difference between the lati-

tude of the pyramid, 29° 58′ 51″, and the mean of Prof. Smyth's measures of the angle of ascent of the Grand Gallery 26°17′ 28.3″, as to leave little doubt that the true angle of ascent is very nearly, if not exactly, 26° 17′ 26.18″, or only 2.1″ less than the mean of Prof. Smyth's measures. It became, therefore desirable to ascertain, if possible, whether the true angle of ascent could be determined independently from the Pyramid measures, or from the dimensions of the earth as derived from these measures; and ultimately it was found that if $a =$ the area of a section of the earth through the polar axis, $d =$ the mean diameter of the earth, and $d',=$ the diameter in the latitude of the Pyramid, then $\dfrac{\sqrt{a}}{d+d'} =$ sine of 26° 17 ′26.″47, or less than three-tenths of a second of arc greater than the value obtained from the equation for the moon's mean period.

The dimensions of the earth used in the calculations were:

Polar Diameter, 7891.4141 P. miles·
Equatorial, 7918.0138 " "

The latter number differs 0.0036, miles or about 19 feet from the value given in my paper, "The Great Pyramid and the Dimensions and Figure of the Earth," in the *Banner of Israel*, No. 318, p. 52, and was obtained by the use of the following equation:

$$\frac{1}{40\ \sqrt[4]{412.1318893}} = \frac{1}{297.6725} = \text{ellipticity of the earth's}$$

figure.

It will be seen that in this equation I have employed the corrected length of the King's Chamber given in my communication at page 346 of the INTERNATIONAL STANDARD, and I may here remark that the two equations on the same page may be better expressed by substituting the length of the chamber in original British instead of Pyramid inches, and by reducing the + 2 in the first equation to + 1 and striking out + 1 in the second equation.   JOSEPH BAXENDELL.

December 11, 1883.

RESEARCHES FOR THE ARMY OF PHARAOH IN THE RED SEA.

This glorious undertaking, which has already attracted the attention of the whole civilized world seems to become more and more probable every day. The chief point was to determine exactly the course pursued by the Hebrews in their exodus, and the precise point of their entry into the Red Sea. The excavations recently undertaken by the English Society for Explorations in Egypt have already confirmed in many respects the learned study of M. Le Cointre. In discovering the city of Pithon, says Mr. Manitto, the learned professor of Geneva, in his reports, one of the most interesting spots of Biblical history was found. In discovering that Pithon and Socutep are really but one and the same, a well settled point was established in the itineracy of the exodus, and the question of the true direction leaves the realms of conjecture and becomes a reality. In discovering that Pithon was built by Rameses XIV. is found the name of Pharaoh, the grand constructor who oppressed the Israelites to use their labor. In this way is established the first synchronism between Biblical tradition and Egyptian history. In continuing its explorations the society found at the same time the ruins and exact position of Pi-ha-Hiroth and Beelsephon and all doubts concerning the journeyings of the Hebrews will disappear, and the opinion of Mr. Le Cointre, so natural and well founded, will be deprived of all objections.

In the second place, the cutting, to-day admitted in principle, of a second Suez Canal, a canal which will inevitably be excavated into the Bitter Lakes, will necessitate excavations which actually place in evidence the army of Pharaoh without its being necessary to organize a special enterprise, which would require considerable capital. I spoke on this matter to M. de Lesseps and received from him very favorable promises. This coincidence appears truly providential, and I have reason to believe that my project, so strange at first, is a happy inspiration.

Finally the American International Institute, whose chief aim is to bring to light the treasures hidden in the Great Pyramid of Gizeh, writes me, through their indefatigible president, Mr. Charles Latimer, that they are on the eve of organizing an expedition to Egypt, of savans, charged to study better than has ever been done heretofore that incomparable monument, for so long a time regarded as one of the seven wonders of the world, and to take anew innumerable measurements—already taken by Mr. Piazzi Smyth, with so much care—and also to include in their programme other discoveries suggested by me.

<div align="right">F. MOIGNO.</div>

NEW MEASURES OF THE GREAT PYRAMID BY A NEW MEASURER.

DESCRIBED BY C. PIAZZI SMYTH, ASTRONOMER-ROYAL FOR SCOTLAND.

PART I.

ON being recently informed by a friend that Mr. Flinders Petrie's long-expected book on the Great, and other, Pyramids in Egypt was out at last, I not only sent for a copy of it,[*] but ordered one at the same time from Mr. R. A. Proctor's lately compiled volume, entitled "The Great Pyramid." The latter work arrived first, and I opened it immediately, especially to see what could possibly have formed the ground of its author's serious accusation, which I had heard of already from several sides, to the effect that I, a public officer of Government, had discreditably brought out results for the Great Pyramid, " by what school-boys call the method of fudge." The book, however, has no index; its table of contents is comprised in twelve lines, and though I read till I was wearied in the mass of got-up printed pages which follow, it was not my fortune to alight on the indictment alluded to, nor to learn anything new and really true about the Great Pyramid. But I did learn not a little about Mr. Proctor's overweaning notions of astrology, and the extraordinary assurance with which he can charge upon others the holding of religious, or rather most anti-religious, opinions which they have never given utterance to, and consider extremely offensive. In short, the book is mainly Mr. Proctor publishing himself; and who can prevent him doing that ?

But Mr. Flinders Petrie's book proved, on its arrival, to be a very different affair; far larger, more closely printed, full of figure-work and most original diagrams, and containing the quintessence of many years of hard labor; first, in silent preparations of instruments, books, literary knowledge, and mechanical experience; then in two seasons' active work at the Great Pyramid itself; and lastly, in as long a period of arranging, theorizing on, and printing the chief results of his almost innumerable measures in line and angle, interspersed with antiquarian disquisitions and Egyptological interpretations of a very advanced order indeed.

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[*]The Pyramids and Temples of Gizeh, by W. M. Flinders Petrie, Field & Tuer, London.

The battery of scientific measuring instruments which he took out with him was more extensive than anything before known in that region, and had been in large part prepared for the occasion by his own hands, with an acuteness and manual dexterity which cannot be too highly commended; while his subsequent use of the apparatus at the Pyramid, and his quickness in detecting minute errors in the work of the ancient Pyramid builders is clever, clever, oh! exceedingly clever. Immense advantage, therefore, can hardly but accrue to our knowledge of the Great Pyramid by what he has been doing. It is, in fact, the very outcome with time which I have been longing for ever since my own work there in 1865. And if my measures then were more numerous and detailed than those of most of my predecessors, it is exactly as it should be now, after fifteen years interval, when a smart young scientist, blessed with easy money—means, and abundance of leisure, as having no professional occupation, follows me in all my steps, even to living in a tomb on the Eastern side of the Pyramid hill; exactly, I say, as was to be expected and desired, that his measures should be far more numerous, more minute, and in some points more accurate than mine. Many of his figures, therefore, I accept at once with thanks, whether in addition to, or in place of, mine; and if there are others where I still prefer my own observations, I shall not attempt to defend them in the present place; but hasten on to say and set before the *Banner* public how the Great Pyramid's so-called sacred and scientific theory looks, when examined by the light of these latest mensurations just taken by a very, very sharp individual; and who now seems, both outwardly and inwardly, to rejoice in thoroughly disbelieving the said theory, and even considers he has killed and buried it all!

For the further discovery of the truth, this latter feature of the new authority is of inestimable advantage to others, whatever it may be ultimately to himself; and can by no means be lost sight of. Wherefore, although Mr. Flinders Petrie now bows to the community, *first*, as bearing the surname of his eminent father, Mr. Wm. Petrie, the discoverer of the grandest addition yet made to John Taylor's Hebrew-sacred, anti-Egyptian theory of the Great Pyramid—*viz.*, its reference to, and measure of, the sun's mean distance from the earth; and *second*, as the author of two treatises—one on "Inductive Metrology," and the other on "Stonehenge"—it is to be regretted that he did not also acknowledge himself to be the author of a certain 'Diagram of the Great Pyramid,' much advertised in and about 1877. For thereby *Banner* readers would have been prepared for much of the method of the present book : as *they* have by no means yet forgotten how they innocently purchased the said 'Diagram,' expecting from the specious terms of its announcement to find there a full demonstration of the truth and latest developments of the John Taylor Pyramid theory ; but, on unrolling it, found an interior title setting forth that its object was, on the contrary, to show that "the Great Pyramid's passages are *not* chronological, or not as taught in the so-called time-passage theory."

The spirit of that commencement on the Great Pyramid subject seems to have gone on intensifying in the young author's mind with the years that followed, until in his present book one looks in vain for any trace of respect for Scripture insight into early human history, though finding extraordinary veneration for almost anything inscribed by idolatrous Egyptians ; and remarkable aptitude, too, for entering into such matter and discussing it on equal terms with the highest of the modern Egyptologists themselves. Let us hasten, however, to see, first, how the *exterior* of the Great Pyramid looks by the light of this new authority.

OF THE SHAPE OF THE GREAT PYRAMID.

The first point for practical knowledge touching any regular Pyramid is its shape. That is wrapped up in the expression for the one angle of each of its sides ; and there John Taylor's deduction for the Great Pyramid from Howard Vyse's measures remains untouched. For Mr. F. P. declares his own direct measures of it to give, with remarkable certainty, for the angle of rise of its sides, $51^\circ 52' + 2'$; and this includes John Taylor's π angle, while it excludes all the other principal Pyramids of Egypt so far as Mr. F. P., or any one

else, has measured and remeasured them. There is not, therefore, known a single other Pyramid throughout Egypt which has the same angle of shape as the one and only Great Pyramid; and that an angle profound in its meaning through pure mathematics and practical physics as well. Said angle was also constructed at the Great Pyramid with a degree of perfection and solidity in the ''casing-stones'' which cannot fail to draw the respect of all well-educated and good scientific men; for, says Mr. F. P. (fully confirming thereby the praise of Colonel Howard Vyse, long since published):—

''Several measures were taken of the thickness of the joints of the casing stones. The Eastern joint of the Northern casing stones is on the top .020, .002, .045 (of an inch only) wide, and on the face .012, .022, .013, and .040 (of an inch) wide. The next joint is on the face ·011 and ·014 wide. Hence the mean thickness of the joints there is .020; and, therefore, the mean variation of the cutting of the stone from a straight line and from a true square, is but ·01 on a length of 75 inches up the face, an amount of accuracy equal to most modern opticians' straight edges of such a length. These joints, with an area of some 35 square feet each, were not only worked as finely as this, but cemented throughout. Though the stones were brought as close as 1-500 of an inch, or, in fact, into contact, and the mean opening of the joint was but 1-50 of an inch, yet the builders managed to fill the joint with cement, despite the great area of it, and the weight of the stone to be moved, some 16 tons. To merely place such stones in exact contact at the sides would be careful work; but to do so with cement in the joints seems almost impossible.'' In fact, there never were such casing stones as these, so large and so marvellously accurate, erected anywhere else, whether in Egypt or any other land, either before or since; while to contrast them, the earliest positively known examples, with the casing stones of any of the subsequent Egyptian Pyramids—miserably executed at last—must cut most poignantly to the heart all the advocates of progressive development among the rationalistic philosophers of our day.

NEXT OF THE SIZE OF THE GREAT PYRAMID.

And here Mr. F. P. has something very new; for one of the two widely diverse lengths for the base-side which he brings out, is far shorter than any that has appeared yet from the researches or measures of all other persons, being only 9069 British inches (p 39). This short length has been obtained by his being the first to refer to the surface of a certain raised pavement, a portion of which is openly visible on the north side, while similarly elevated portions on the other sides are supposed to have been sounded by sinking temporary narrow and dangerous holes down through the huge rubbish heaps lying upon these sides; and the natural consequence of measuring a Pyramid with sloping flanks on a higher level is, of course, to get a shorter base-side length than those who measured it at a lower level.

Now such a lower level is authoritatively offered at the Great Pyramid by its four corner sockets sunk into the rock; and ever since John Taylor's happy identification of the passage in Job. xxxviii. 6 (marginal translation) with the building of the Great Pyramid, the majority of explorers have been firm in maintaining that the socket-defined corners of the base are the architect's fiducial points for measure. Measuring, therefore, upon them, but always under extreme and gratuitous practical difficulties, different persons have obtained varied quantities, between 9,110 and 9,168; while Mr. F. P., measuring with greater accuracy, confirms their honesty by arriving at 9,126 British inches.

Of the two lengths, therefore, which he now gives, suppose, for the purpose of comparison with all mere mundane pyramids, we take the shorter, which is the shortest possible to be attributed by any one to the Great Pyramid—viz., the pavement-surface base of 9,069 inches. Then, as the second pyramid only claims a base-side length of 8,475 inches (p. 201), and all other known pyramids fall rapidly below that, the Great Pyramid is left the *facile princeps* of all human architectural creations of that kind.

But for grander comparisons of the Great Pyramid with nature, we can take no other

than the socket-defined base-side length; and that, according to Mr. F. P., is 9,126 inches long. How, then, does such length answer to the theory commenced by John Taylor?

That theory for the last fifteen years has claimed three illustrations—*viz*: (1) The number of days in a year, in terms of a standard of linear measure, of a length equal to one-ten-millionth of the earth's semi-axis of rotation. (2) The elder William Petrie's magnificent theorem of the Pyramid-sehwn sun-distance; and (3) The diagonal representation of the cycle of the precession of the equinoxes, at the rate of an inch for a year. Not that any person thought that one and the same exact number or length could express each and every one of these three different things perfectly, but that they all converged so closely as to lead, in conjunction with other features of the building, any properly regulated and instructed mind to believe both the triple indication to have been intended, and to have been made practically suitable to each case by small additions or subtractions to the one grand and over-all 9,126 base-side length. Now there are precisely such differences—well attested, and which no Egyptologist has yet explained—between one socket and another, in both shape and size; differences, too, quite large enough to cover all the errors which modern science might be inclined to suggest in the Pyramid numbers for each of the three presentations.

Whether such a use was really intended by the supposed divinely inspired architect, in a primeval age, it is out of our power to ascertain positively now; but the following little illustration may be picked up on page 206 of Mr. F. P.'s new book, showing the power of the sockets to effect such adaptations; for there we read that, whereas the R. Engineers in 1874 did measure the South side of the socket-base of the Great Pyramid and publish it as 9,140 inches long, he, venturing to consider that the socket mark they measured from was not the right socket mark for that purpose, subtracted 17.5 inches from their measure and republishes it as 9,122.5 inches only !   •

But we may readily excuse a little deficiency in these more recondite details, in reward for two, if not three, excellent things which Mr. F. P. has performed, touching far larger questions of the Great Pyramid, and most violently disputed hitherto by both Egyptologists and rationalists, touching its age and place with reference to other Egyptian monuments, and also its astronomical emplacement.   •

To all those who hold John Taylor's views, and have recognized in the "sudden, as well as earliest, appearance" in history of the best and mightiest building throughout Egypt a something quite different from the unassisted ordinary course of human progressive development—a severe blow and dire discouragement were administered a few years ago by M. Mariette Bey and other Egyptologists when they announced the discovery of a most ancient hieroglyphic tablet, setting forth that that biggest of idols, the Sphinx, was far older than the Great Pyramid ; and that the latter building was devoted in its origin to the worship of Isis, Osiris, Khem, Bast, and all the rankest idolatry of the latter days of ancient Egypt. The disturbing tablet was accordingly set up with all honor in the Khedive's museum at Boolak, and influenced doubtless the minds of many European visitors.

But on his pp. 156-7, Mr. F. P. relates that by aid of further excavations on the pyramid hill, at the same ruined building where the first inscription was found lining the walls of an interior room, others have been met with, showing indubitably that they were all the work of King Petukhanu of the twenty-first dynasty, or 1,500 years at least after the building, completion, and sealing up of the Great Pyramid, near the beginning of the fourth dynasty ; that they are of no authority for any earlier time than their own ; that no trace of a Sphinx in statuary, tablets, or inscriptions is to be found in any of the genuine remains of the old empire, or on anything until the Hykses period, say of the tenth or eleventh dynasties ; and that these Boolak museum inscriptions are modern concocted stories wretchedly scratched into stone, "a degradation," he says, "of the decadence of

the twentieth," for the merely mural decoration of a small temple of the usurping twenty-first dynasty.

Mr. F. P. does indeed also most frankly admit that when Cheops (Khufu or Shofo) of the fourth dynasty began his unequalled "Great Pyramid," the hill of Gizeh was bare and unoccupied by any building. He had the free choice, therefore, of that hill's top, and it was the most striking site presented for a grand monument by all the line of country for leagues and leagues on that side of Egypt. This must have been especially the case for the Northern precipitous brink of the hill, close to which Khufu laid the foundations of his monument. All the other subsequent Gizeh pyramids had therefore necessarily to be built to the southward of his, a circumstance which has led many writers to enlarge on northerly position indicating a superior age amongst pyramids.

One notable exception, however, existed to this theory, in the so-called pyramid of Abu Roash, N. N. west of the Great Pyramid by a good many miles. That was a most patent fact to everybody, in so far as something like a commencement of a pyramid was certainly visible there; but if only a commencement, then, argued many persons, that mere flat pedestal could not be called either logically or mathematically a pyramid, and did not interfere with the Great Pyramid being the northernmost of all the real pyramids of Egypt. But Mr. F. P. ingeniously overturns that argument by further facts, and yet brings them to bear, and still more powerfully, towards the same end as before.

By examination of the ruins, or remnants, rather, he deduces that that Abu Roash pyramid must have been completely finished as such in figure, cased with granite, and furnished with a sarcophagus, mummy, and statue of a king, but of one who was not only *later* than Cheops of the Great (or first) Pyramid, but subsequent to King Mencheres of the third pyramid of Gizeh. He was, in fact, King Men-ra; and who, objecting to build a fourth pyramid at Gizeh, because, if in the line of the first, second, and third, it would have been off the hill southward, struck out in a new quarter, on the high land in the northwest, now called Abu Roash.

But it proved somehow to be the worst place that ever man chose to build his would-be immortalizing monument upon; for, from a very early period of Egyptian history, that unhappy building became the object of the most inveterate attack and despoil (see Mr. F. P.'s pages 140—142, 151, 152). The granite casing was stripped off, broken to pieces and carried away; the core masonry pulled to bits and removed; the carefully lined chambers, the granite sarcophagus and the diorite statue were all turned out into the open. "Everything," says Mr. F. P., "has been smashed with the greatest care. The wrought granite has been mainly burnt and powdered, and the surfaces of the statue were bruised to pieces before it was broken up, with a vehemence of destruction, and patient, hardworking vengeance" which it is difficult to account for. Through the times of the Ptolemies the wrecking went on, and is even being prosecuted still "at the rate of 300 camel loads a day during the season;" until, of an ancient pyramid more than 300 feet broad at the base, almost the entire substance has been bodily removed. And in a very few years more the Great Pyramid on its hill of Gizeh will look forth over the expanse of the delta northward, without even a shred of a rival, even of a subsequent age, to dispute its preeminence in that world's surface central position it fills so well, and has filled so long.

Some persons have indeed attempted to connect the Great Pyramid southward and backward with the smaller and later pyramids on the Gizeh hill by imagining a concerted scheme of exact geometry amongst them; but Mr. F. P. shows (page 125) by most careful measures that the angles and distances have no regularity or exact relations; and that "from the nature and appearance of the ground, and the irregularity of the peribolus walls, it would not seem likely that any connection had been planned."

But with respect to the astronomical emplacement a most remarkable result is brought out. I had already set forth that there is a defalcation in the latitude of the Great Pyramid, as required by theory and given by observation; and that it would imply a change in

the same direction, and not greater in amount with the time, than a certain minute alteration of a not very clearly or as yet generally acknowledged kind, that must have been going on during the last hundred years in Europe, *teste* the Royal Observatory, Greenwich. Also that there is an error of something like 5' in the orientation of the socket lines and passage planes of the Great Pyramid, which may have its explanation in the same way by a slow movement of the axis of rotation of the earth. But the idea was scouted fifteen years ago by the great mathematical physicists of our time, who had proved the fixity of the earth's axis of rotation within itself '' to be equal to the stiffness of hammered steel ; " while rationalistic scientists pointed with delight to the demonstration they said I had myself furnished, that the Great Pyramid hill, not being in the required latitude, divine inspiration could not have had any hand in planning and procuring the erection of that building ; for God, added they very confidently, would have taken care to provide a hill in exactly the right place, and not have been content to use one which was merely the nearest to it.

Yet now Mr. Flinders Petrie remarkably confirms and extends my view, that though the hill is not in the required latitude now, nor the building correctly oriented by full 5' of angle, yet both features may have been correct at the time of the Pyramid's foundation, to at least 12" of space, or a smaller quantity than is usually reckoned visible to the unassisted eye ; and he even ventures (page 127) to approximately compute the force of unbalanced ocean currents which are at work at this very moment, and finds them sufficient to produce the effect observed. Wherefore here, through means of the Great Pyramid, is brought into view a slow movement of the earth's axis of rotation, which modern science ought to have discovered of itself long ago, and will have very soon to make some remarkable confessions about.

Enough, however, at present of the *exterior* of this most unique building ; for its still more important *interior* under the same new light illumination awaits us.

(*To be continued.*)

GENEALOGICAL STONES IN THE GREAT PYRAMID.

How far the Pyramid can be fairly accepted as an exhibit of standard weights and measures is a question that may not be settled in the present generation without a most vigorous prosecution of its study. Were the question only a problem of curious inquiry as to the degree of scientific knowledge attained by its builders, the practical spirit of our day would be slow to see wisdom or profit in the labor. But already enough has been developed to arrest, if not logically controvert, the commonly received opinion that the huge building on the border of the Lybian desert is only the mouldering head-stone of a dead king.

In the midst of theories fanciful or true, a man comes back from a two years' investigation of it who appears to have no

sympathy with them that think they can see evidences of religious thought and historic detail in the arrangement of its stones and structural lines. His facilities for accurate measurement exceeded those of any of his predecessors. We may therefore be quite sure that the results he gives were not gathered for the support of religious fancies. His work is purely scientific. It is not designed to exhibit the intentions or chief purpose of the architect. It simply shows what knowledge of geometry, what constructive genius and exquisite skill men had 4,000 years ago.

So far as Mr. Petrie's measures are correct, they must prove of great service in any theoretical investigation of the original purpose of the Great Pyramid. His allowance for errors of triangulation, etc., leaves abundant room for speculation. His measures confirm with mathematical exactness the opinion held by Pyramid students that the side of the base plane of the Pyramid is within a small fraction of 9140 inches ; that its extreme height is very nearly 5819 inches; that the mean angle of its passages is 26° 19' ± 40" and that the mean altitude of its sides is 51° 51' 14". Many other of his measurements are available in the support of theories. What theories have been constructed out of pyramid measures we need not pause to rehearse. What we desire especially here is to draw attention to the fact that the latest and most extensive measurements made of the Great Pyramid abundantly strengthen the belief that the lines, proportions and relations of the various parts of the huge structure have a meaning worthy of careful and laborious study. It has been called a " Book in stone" and it appears worthy the title.

Strong evidence has been given to show that it is an exhibit of the earth's measurement, its equatorial diameter and polar axis. Strong evidence has been given to show that it represents the size and form of the earth's orbit, and the time of its annual revolution around the sun. The date of the building appears to be recorded in the mean altitude of its passages, The question, to what extent is time represented in the details of the structure, is open. Certain coincidences of years and measures cannot be denied. They are facts, whether the coin-

cidences were designed by the architect or not. The lines and proportions are closely and unmistakably related to geometry, geology, astronomy and chronology, whether purposely or by chance.

The following scheme or system of coincidences is offered in the hope that if the Pyramid is really a book in stone, some one may be found to interpret the stones according to the facts of history.
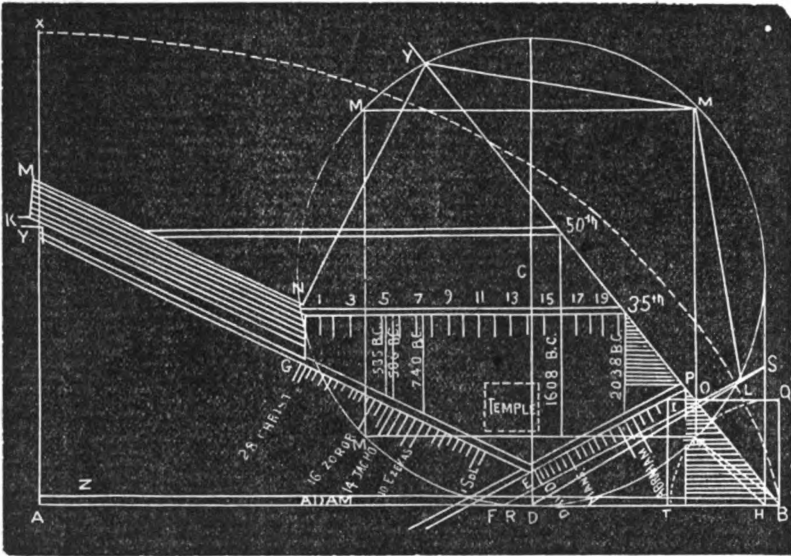
The long curve BLX in the diagram is a cycloid. It is traced by a point in the circumference of the circle, as the circle is rolled along the base line BA. Its length equals 2 AX, = 5818.8. BA equals one half the circumference of the circle = 9139.871 ÷ 2 = 4569.98. AD = 29° 58′ 42″ of the circumference of the circle multiplied by 2. I is distant from B horizontally, 670.2 inches = HM + HB, and vertically 652.94 inches = BM. EI = (10 p)² = 986.96. EG = (100 p)² ÷ 8² = 1542.12. GV = 600 p = 1884.9. The angle YBA or slope of the Pyramid is 51° 51′ 14.3″. The altitude of EI and EV is 26° 19′ 34″ the original slope, we believe, of the passages.

The levels above the base plane, according to this diagram, are as follows, compared with Mr. Petrie's measurements :

The base plane AB is on the level of the southeast socket. The pavement line Z on the north side is 40 inches above the base plane. The present north end of the entrance passage floor is at I, 652.94 above the base plane. Mr. Petrie's station mark level near I is 611.2 ±.1 above the pavement line. Adding for difference in position of station mark 1.65, also for pavement thickness 40, and for southerly tilt or settlement .1, we have a total of 652.95 ± .1.

The intersection of the floor lines of the diagram at E is 215.22 above the base plane. Mr. Petrie's level of this point is 692.95—987. × sine 26° 26′ 42″ (= 173.4) + pavement 40. + settlement 1.82 = 215.22.

The south end of ascending floor line EG is 899.12 above the base plane. Mr. Petrie's level of this point is, end of passage above pavement 852.6 ± .3. Deducting for difference of 4 inches in position of the points of measurement, 1.24, and adding for pavement 40, and for settlement 8.76, we have the level, 899.12 ±.3.

The intersection of the floor line and south wall line of gallery at V is 1735.03 above the base plane. Mr. Petrie's measure is, level of ditto above the pavement, 1689.0 ± .5 Adding for pavement 40, and for settlement 7.95 and deducting for difference in the total length of floor line 1.50, we have 1735.45.

The angle N of the inscribed pentagon is at the level of the top of the 35th course, 1227.15 above the base plane. Mr. Petrie's measure is, top of 35th course, 1187.4 above the pavement. Adding for pavement 40, and for settlement .4, we have 1227.8.

The floor of the king's chamber coincides with the top of the 50th course. Its level above the base plane is: intersection of floor line and south wall of gallery 1735.03 + 3.8 = 1738.83. Mr. Petrie's measure is: chamber floor above the pavement 1692.8 ±.6 + pavement 40 + settlement 7.95 — difference in points of measurement, 1.4 = 1739.35 ± .6; top of 50th course 1697.6 + pavement 40 + settlement at the begnning of the course 1.6 = 1739.2.

The point I is inside of B 670. 2.* By Mr. Petrie, I is in-

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* In the last number of the "Standard" this distance is erroneously given as 652.94.

side of the casing at the pavement 635. 1, + 31 .4 for pave-
ment; + (3. ?) for wear : total, 669.5.

The horizontal distances from the north end of the basement
sheet, or I the present beginning of the entrance passage floor,
are as follows : The intersection of the floor lines at E is distant hor-
izontally 884.59. Mr. Petrie's measure is : horizontal distance be-
tween E and G 883.67, difference from settlement + .75 = 884.42

The intersection of floor line and south wall line of gallery is
distant horizontally 3956.19. Mr. Petrie's measure is : E to V
horizontally 3960.6 ± .9, for difference from settlement — 1.85
for difference in length of floor lines — 2.5 = 3956.25 ± .9.

It will be seen that, on the supposition of a southerly tilt of
about 6′ having taken place since the Pyramid was built, the
agreements, at the several points indicated, are within the frac-
tion of an inch. The differences are so small that they cannot
affect the coincidences of a chronological character which we
shall now point out.

Genealogical tables from Adam to Christ are given by St.
Matthew 1st chapter, and St. Luke 3d chapter. The coinci-
dences depend upon the order and position of the courses and
floor stones already determined in the Pyramid, and the order
and number of the generations named in the tables. The coin-
cidences will also be found between the dates of certain epochs
of Hebrew history, and corresponding distances laid off on the
35th course as a measuring line of time. The dates are accord-
ing to the chronology adopted by George Smith, F. S. A., in
' Patriarchal Age,' and 'Hebrew People.' Courses of masonry
above the pavement are indicated in the diagram by horizontal
lines terminating in the line BY. Floor joints are shown by
the short lines below the passages. The marks on the 35th
course in the diagram denote centuries B. C., one British inch
for a century.

If Adam be symbolized in the pavement or foundation course,
the 19th course above the pavement, which marks the entrance
passage, coincides with the position of Terah, the father of
Abraham, he being the 19th generation after Adam. Next
above the entrance are two small courses. If both these be as-
signed to Abraham, the 34th course will coincide with David in

the table of generations. The 35th course, which is of remarkable thickness for its position, may have its own special significantion—as it coincides with the upper course of the grand gallery. Turning back now to the entrance passage, we find vertically under the beginning of the 35th course two nearly vertical joints in either wall of the passage. They are the only approximately vertical joints in the passage, and appear to mean something. The length of the 35th course inwardly to the gallery is 2038 inches. If the two floor stones of the entrance passage, which coincide vertically with the beginning of the 35th course, be assigned to Abraham—the 1st symbolizing his natural line, the 2d the beginning of the covenant line—it will be found that Naasson, or the 9th generation from Abraham, falls between Prof. Smyth's 13th and 14th floor joints, and that this is horizontally distant from the beginning of the 35th course 430 inches, and 1608 inches horizontally distant from the grand gallery. Now, Naasson was a prince of the house of Judah in the 2d year of the Exodus, which occurred, according to George Smith, 1608 B. C., and 430 years before the exodus the covenant with Abraham was confirmed.—Gal. iii. 17. Again, David is the 14th generation from Abraham. The corresponding floor stone is between joints 18 and 19. The next stone is in the angle of the entrance and ascending floor lines; it may indicate Nathan, the beginning of the priestly line of David. If these coincidences signify any thing, we might be justified in anticipating the discovery of another chamber, near this point, symbolizing the Temple of Solomon. Directed by the next floor stone to the ascending passage, the first stone above the granite plug would coincide with Solomon in the table of generations. There are 28 stones in the ascending passage, agreeing with the number of generations from David to Christ, Matt. 1. Three important epochs occur in this regal line—1st, the beginning of the captivity of Israel 740 B. C., in the time of Ezekias, of the house of Judah, the tenth generation after David; but the 10th stone is 740 inches horizontally distant from the gallery; 2d, the captivity of Judah, which took place in the time of Jechonias, 586 B. C.; but Jechonias was the 14th from David, and the 14th stone of

this passage is 586 inches horizontally distant from the gallery; 3d, the end of the captivity was 535 B. C., in the time of Zorobabel; but Zorobabel was the 16th from David, and the 16th stone of this passage is 535 inches distant horizontally from the gallery.

We may not be able to say positively that this series of coincidences was designed and planned by the Pyramid's architect, yet it may give ground to believe that such was the fact. Chronologically the period extending from the era of Abraham's entrance into Canaan to Christ, is spanned by the 35th course and the years are numbered by inches along its line. No other course will serve this purpose.

It is suggested that if the floor stones symbolize the generations from Abraham to Christ, the grand gallery may symbolize in its seven-fold structure the kingdom, or Church of Christ, the dispensation of spiritual gifts. The author of The 'Tower of Egypt,' appears to think that the apostles (12) and prophets (16) are symbolized by the 28 ramp stones or benches on either side of the gallery. What it all is who can tell? Either the Pyramid is a wonderful structure, or a curious bundle of coincidences not easily accounted for without reasonable purpose and design.

<div style="text-align:right">H. G. Wood.</div>

THE LOGIC OF THE PYRAMIDS.

BY CAPTAIN R. KELSO CARTER.

At the very beginning of this article we appeal to the honest mind to assume the position of an intelligent juror; that all previous opinions and prejudices may be laid aside for the sake of impartially considering the evidence to be presented. Could all men's minds be reduced to this coolly critical condition, we would have no fear for the ultimate result, for we expect confidently to show that no subject in all science, not capable of the most absolute mathematical demonstration, stands upon ground one-half so solid as the Biblical and prophetical interpretation of the Great Pyramid of Jeezeh. The argument for the inspiration of its builder is the grand argument of design. Let us apply it to the facts. In the Indian Ocean there is sometimes found a curious coral formation known as Neptune's cup. When completed it is a perfect goblet with base, slender stem and swelling bowl, and yet it is constructed by many thousands of insects, each working independently of the rest, building its own tomb and leaving its little body as a unit in the general structure. Man looks upon this marvelous production and exclaims: "There must be

an inspiring and superior intellect which has, unknown to them, directed their labors; no human agency did it, God must have controlled its growth." The ablest infidels of this, or any age, stand dumb before this silent witness, and the world acknowledges the power of divinity.

An engineer (Mr. Petrie) sits down, and, with pencil in hand, examines the diagonal vertical section of the Pyramid. This section is a triangle, and he finds that for every ten feet of the base the sloping side rises to the height of nine feet. This appeared to him to signify the raising of ten to the ninth power, and having done this he reasoned that the thing appeared to be connected or to culminate in the altitude of the Pyramid; multiplying this altitude by his former number, he expected to obtain the distance of the sun from the earth, for, said he, this altitude points towards the sun. To his chagrin the number resulting appeared too small; but a few years have changed this opinion, and the number 91,837,497 miles stands to-day as the best of all attempts to measure that important distance. The number of days in the year, the number of years in the great precessional cycle; the diameter of the earth; its mean density; its actual volume and entire weight are, with many other scientific values of the most vital importance, all indicated in the measurements of the Pyramid, and nearly always indicated in a way that directly points to the result as the ten rising to nine and connected with the altitude pointed to the sun's distance.

There is a kind of plant known to botanists which lives by catching living creatures in its sticky embrace, folding around them and deliberately digesting them. The famous theory of evolution receives from this one fact its death blow; for if that plant had evolved from a lower species there must have been a point where it passed from the character of a soil-nourished and air-nourished organism into a flesh-nourished one, and during the progress of that transition it would inevitably have starved to death. So if the builder of the Pyramid had stopped its construction at a certain point, leaving a flat top for use as an observatory, etc., the element of altitude would have been wanting and the whole theory would fall to pieces. But better, we contend, and desire the most able mathematicians to notice the claim, that the construction of any building, with its measurements so marvelously interrelated, was, is, and ever will be an impossibility for the unaided mind of man. This is a vital point, and we insist upon it fearlessly. We contend that no man could possibly have framed so complicated and involved a series of numbers into any homogeneous structure. This will be obvious to every mathematical intellect when we remember that if the builder had taken any other height than he did, the whole thing would have been thrown out of harmony; if he had taken any other base length whatever, the same confusion would have resulted. If you alter a single important line in the entire Pyramid, even a few inches, the plan is at once destroyed. Now let our juror remember that there is a legion of such lines, that every single arc is vital and that every single one had to be thought of before hand: and its necessary relations to the others duly considered. The problem is about this. We will allow that it is possible to find a set of several hundrednumbers which, when duly arranged according to a definite but totally unknown plan, will give in several hundred ways a score or more of measurements applicable to the earth, sun, orbits of each, times, seasons, etc., etc. Not one of these necessary first numbers is known to the architect; he is also utterly ignorant of the plan necessary to be followed in order that the numbers, even when found, may be arranged in a way that will be significant of the operations to be performed; he only knows the bare resulting or final numbers (modern science does not even allow that the old architect knew more than a very few of these). Where are the leading mathematicians of the world? Let them step forward and accept the challenge. Suppose we reduce the conditions. Very well, there is no fear. Take the King's Chamber and the red granite coffer contained in it. We unhesitatingly defy any living mathematician to construct a chamber and coffer that shall show such wonderful and various inter-relations as these do with each other and with the

great earth numbers. It is a problem with all the quantities unknown—who will attempt it? We will even go still further and say that it is our deliberate conviciton that no man can make a box like that coffer without knowing its dimensions. We mean, let a scientific genius be told to construct a box which should have the same cubical contents as the contents of its sides and bottom, and in which the measurements of every side and edge, etc., should have curious inter-relation with nearly every other—candidly, now, could he do it? Let the force of irresistible logic be felt. How under the sun would he begin? He would have to experiment, of course. At first he would have to try to see how thick the.sides must be to have the same contents as the open space inside. If any one thinks that is easy to work out, just try it. Suppose he manages to obtain this, to his disgust he finds that the length of side and thickness of same will not give 3.14154, which it *must* give according to the conditions. Away goes all his former work in an instant and he begins to try other dimensions. Now, when we remember that he may take any length for his box, from half an inch to a million inches, and that only one certain length out of that number is the right one, who would not immediately shrink back appalled at the frightful chances against him? And when we add the fact that even if he gets the right length, he may select a vast number of side breadths which may fill one condition and not another, and that he cannot possibly know that a single thing is right until he has entirely completed the box and tried all the relations ; who will object when we hold up the coffer alone as an absolutely impossible problem. Yet this coffer was made and it does fulfill all the manifold conditions without a single failure. Let the argument of design be heard. We ask :

Who made Neptune's cup?

Who made the carnivorous plant ?

Who made the coffer of the Pyramid ?

—*Heir of the World.*

(TO BE CONTINUED.)

THE RISE OF THE ANTIPODES.

BY C. PIAZZI SMYTH, F. R. A. S., ASTRONOMER-ROYAL FOR SCOTLAND.

Winter came on us rather unexpectedly three nights ago. The day had been pretty cold, but clear ; so that when the 8 P. M. postman handed in his budget of letters, we were not a little surprised to find them dripping with sleet, and plastered with snow; while the poor man anxiously explained that he had been taken unawares himself; and not having his *cape* with him, had been unable to defend his paper charge from the sudden storm.

But he had another thing of the unexpected also to tell; for he had a shilling to demand on one of his letters, insufficiently stamped in Australia !

I did not know the handwriting ; but there was something heartfelt and earnest about it, so I paid what was due, and then became legally possessed of the missive. Now, years ago I had discussed with a poet what a subject for his highest art would be : "The Book" —*i. e.*, the Bible—and the successive steps of human progress in proportion as the people at large made intimate acquaintance with said Book, in, and for, and by itself alone. How grand all the workings of our own country throughout the Reformation ! first, in throwing off the Latin services of the Roman Catholic priests, and then in the Independents, Presbyterians, and Fifth Monarchy men, resisting the semi-Papacy of Anglicanism, and, if necessary, fleeing to America rather than endure it. But the greatest effects, I urged, are

still to come, and from the antipodes; for there large reading and thinking populations are growing up under climatic circumstances very like those of Palestine, holding fast to the Book, and free of our burden here of keeping up old Roman Catholic cathedrals in bright and expensive repair.

So I broke the seal of the drenched letter, wondering, and read as follows from a perfect stranger:—

"DEAR SIR,—I have been perusing with exceeding interest the later editions of 'Our Inheritance in the Great Pyramid,' and I am now going to try to steer you in the right track for calculations of sacred time.

"If the Great Pyramid is a built prophetic monument of Messianic times, it must be in perfect harmony with the written Scriptures. Now the June and December solstices never did, and never will, begin the Hebrew year; it was always either the March or September equinox. Beginning the year in January is a Gentile absurdity, and it is a Pagan idea to say of Christ that He was born in December. He was born about, or at, the September equinox (when shepherds were in the open air watching their flocks at night), began His preaching in a subsequent year in the same month, and ended three and a half years afterwards at the Spring or March equinox; and my special object in writing about this matter is, to point out that all God's ordinances to His people Israel count from the new moons nearest the two equinoxes. And there are two of those ordinances relating to events—one past, and the other to come—more important to Christians than all the rest.

"First, that of Exodus xii., and wherein all sections of Christianity now agree that the slaying of the Paschal Lamb then enjoined was the type of the future slaying of God's Lamb; and was observed by the House of Israel on the ordered day of the full moon nearest the March equinox in each year, for near 1,600 years, until the event itself took place.

"But at this point the Christian world has fallen into a gross error in promulgating the idea that our Lord was crucified on a Friday. His own prophecy respecting His three days and three nights in the bowels of the earth is stultified by this teaching. Now the Jewish mode of reckoning is evening and morning to make one day; hence Friday evening and Saturday morning make one day, then Saturday evening and Sunday (Easter Sunday) morning would make the second day—a day short! Therefore it is plain, if we believe Christ, that He was crucified on the Thursday.

"Then you will say, What about the Sabbath? Friday is not the Jewish Sabbath, and Christ was crucified 'in the evening before the Sabbath!'

"But here we come on another error of the whole Christian world, in confounding the phenomenal Paschal Sabbath with the ordinary seven days' Sabbath. This latter begins at sunset on Friday evening, and ends at sunset on Saturday evening. But in the year in which Christ was crucified, the Paschal Sabbath, or full moon at the March equinox, took place (as I believe) exactly one day before the ordinary seven days' Sabbath, or on the Thursday evening.

"Wherefore see the truth of Luke xxiv. 21: 'Yea, and besides all this, it is now the *third* day since these things came to pass;' and in Matthew xxviii. 1, the word Sabbath is plural in the original.

"Now if the feasts of Israel have, as above, truly and exactly typified the (to us) past death of Christ in the slaying of the Paschal Lamb, should we not naturally expect that Christ's future return would be typified in the same manner?

"There is not a shadow of doubt about it; and that particular feast is most easily recognized. The Feast of Trumpets is the annual type of Christ's return, and is held on the first day of the seventh moon, or the new moon nearest the autumnal equinox. That feast was held annually on the particular day enjoined, and when the trumpet was blown the princes of Israel assembled together before the tabernacle of God. Now the New Testament informs us that Christ Himself shall descend from heaven with a shout—a

chief messenger's voice—and with the trumpet of God, and the dead in Christ shall rise first—with a gathering of the princes of Israel before God! Here is type and anti-type in such beautiful harmony that I often wonder how it is the learned cannot see it."

For me to write back that the Great Pyramid began its year of man's religious chronology with the pleiades on the meridian at midnight in the *autumnal equinox* of the year, was so far testimony in the right direction, but very unequal to the volume poured forth by the Antipodean, and of which the above quotations are but a small part.

IS THE GREAT PYRAMID A PROPHETICAL RECORD?

BY JOSEPH BAXENDELL, F. R. A. S.

In Nos. 270 and 273 of the *Banner* I gave reasons for concluding that the generally accepted A. D. reckoning is incorrect, and that the birth of Christ took place 2.09 years previous to its commencement, and that consequently the first arrival at the southern end of the grand gallery in the Great Pyramid occurred in the spring of 1880, since which time events of a most unexpected and trying character to Great Britain have taken place, which, if not wisely and resolutely dealt with, threaten to result in a dismemberment of the empire. It is, however, remarkable that although the date of the birth of Christ which I obtained has not, so far as I know, been accepted by any pyramidist or Anglo-Israelite, no one has proved that it is erroneous, or shown that any other reliable date can be derived from pyramid data. Although I have contributed several papers to the *Banner* on the mathematical and astronomical relations shown in the Pyramid, I have always felt that a large majority of its readers would be much more interested with papers on its prophetical indications, and as my slight efforts in this direction have not been favorably received, I earnestly hope that other pyramid students will take the matter up and give us the results of their investigations in the new volume of the *Banner*. If, on the other hand, it can be proved that there is nothing prophetical in the Pyramid, then how can it be shown satisfactorily that it is "an altar to the Lord in the midst of the land of Egypt, and a pillar at the border thereof to the Lord, to be for a sign and for a witness unto the Lord of hosts in the land of Egypt" (Isaiah xix. 19, 20)? Can it have been erected for no other purpose than to preserve the ancient Hebrew measures, and to reveal some of the elements of the solar system?

Whether my results are correct or not, it is somewhat remarkable that, assuming them to be correct, I had calculated that the second arrival at the southern end of the grand gallery by a line drawn from the foot of the great step to the entrance into the narrow passage leading to the ante-chamber would occur about the middle of September, 1882; but the note by the editor to my paper in No. 273, March 22d, 1882, stating that my "theories had to be proved elsewhere," prevented my sending a notice of this test result to the *Banner*, and it therefore remained to be seen whether any event of importance in connection with the responsibilities and duties of Israel would occur about the time indicated. Of course all the world now knows of the battle of Tel-el-Kebir, and the capture of the rebel chief, Arabi, which occurred respectively on the 13th and 14th of September, 1882, and which at one time made the land of the Great Pyramid, of the Pharaohs, and of the long bondage of Israel, practically a part of the British Empire. Now here we have two events agreeing in the times of their occurrence as nearly as could be reasonably expected

with the results of calculation: the first being the sudden and most unexpected adoption of a course of policy which has never before been adopted in this country, and the second the practical annexation of a land which, next to Palestine, is more interesting to Israelites and Bible students than any other on the face of the earth. Are these facts to be explained by the very convenient theory of coincidences so often called to their aid by baffled opponents in questions relating to the Pyramid, but rarely or never admitted by them to be applicable to questions of science, or other matters? Will any of these gentlemen possessing the necessary mathematical qualifications favor the readers of the *Banner* with a calculation of the probabilities against my two dates agreeing so closely with the occurrence of two events of so much importance in the history of the British people?

The Observatory, Birkdale, Southport, November 7th, 1883.

—*From the Banner of Israel.*

A FEW WORDS FROM ABBÉ MOIGNO.

In response to a circular recently sent out by Mr. Arthur Reade, who has been collecting information as to the habits of literary men in regard to stimulants, Abbé Moigno gives an interesting and characteristic record of his experiences. The letter appearing in his paper, *Cosmos Les Mondes*, states that he has published 150 volumes, small and great; that he scarcely ever leaves his work table, and never takes a walking exercise; yet he never has a trace of headache or brain-weariness, or constipation, or any form of urinary troubles, etc. He never has recourse for his work to stimulants, coffee, alcohol, tobacco, etc., a statement which the sequel shews to need qualification. Snuff-taking he has sometimes practised, but he vigorously condemns it. He has learnt twelve different languages by a method of his own, and with regard to his acquirements in philology and chronology, he says: "I was one of the most extraordinary personalities of my time, and Francois Arago sometimes laughingly threatened to have me burnt as a sorcerer." On one occasion when in Munich for a few weeks and spending his evenings with Bavarian savants, who each smoked four or five cigars and drank two or three pots of beer daily (Steinheil, the most illustrious, boasted of smoking 6,000 cigars a year), the Abbé came to smoke three or four cigars a day. He had also anew taken to snuff, so that when preparing his calculus of variations, a very difficult mathematical work, he would empty his snuff-box (which held twenty-five grammes) in a day. But one day he was surprised to find himself painfully unable to recall the meaning of foreign words, and remember dates with which he had been familiar. Thereupon he formed a heroic resolution, and since August 31st, 1863, when he smoked three cigars and took twenty-five centimes worth of snuff, he had, up to the 25th of June, 1882, touched neither. This was, for him, a complete resurrection, not only of memory, but of general health and well-being; he has had indefinite capacity of work, unconscious digestion, perfect assimilation of food (of which he can take more,) etc. He goes to bed at nine and rises at five "full of vigor." The Abbe is over eighty.

—*Scientific Californian.*

LETTERS.

LETTER FROM L'ABBE F. MOIGNO.

My Dear Sir :—I received yesterday, at a late hour, your kind letter.   Thanks.

Do not feel anxious ; I am undergoing an eclipse—but even the sun experiences that. My dear journal has been taken away from me by a *confrere.*   Although I have not withdrawn my name, I am an entire stranger to *Cosmos Les Mondes.*   But the moon will continue her course and the sun shine with new lustre, even sooner than I could expect. Courage!   Confidence ! !

Nothing will destroy my faith in the Great Pyramid.   I shall soon be in a position to publish my French translation of "Our Inheritance."   It will cost me much, but God will help me.   I shall give to the book the title of "Splendor of Splendors."   It will be my seventh and last volume of my "Splendors of the Faith," which will have cost me seventy-six thousand francs, paid by me, a poor priest.   The miseries of Mr. Petrie will not frighten me no more than the reverses of Mr. Proctor, whom it is time to pass in silence.

Thanks for what you tell me of the country of Moses.   Have you learned that the second canal of Suez will cross the Bitter Lake, and that M. De Lesseps has informed me that the diggings shall be made in such a way as to disclose the remains of Pharaoh's army?   Now we shall not be obliged to have capital, and the Great Pyramid will see these eloquent relics grave our museum.   Yours forever,

F. MOIGNO.

LETTER FROM E. C. FRISBIE.

HARTFORD, CONN., January 19, 1884.

Dear Sir :—Yours at hand.   Have sent 234 of the following circular to the drug trade of this State.   Received 114 replies.   With a very few exceptions they are *decidedly* unfavorable to the metric system, and while a few show themselves quite familiar with the subject, and favor it for chemical and analytical work, they do not think it practical for the drug trade as a whole.

Yours truly,

E. FRISBIE.

" HARTFORD, CONN., January 14, 1884.

"*Dear Sir :*—Do you have need to use the Metric System when compounding prescriptions ?

"Do you have a scale adjusted to the Metric Standard ?

"What is your opinion of the Metric System as relates to the drug business?

"Do you often find inaccuracies in physicians' prescriptions when written by this system?

" Please mail me immediately a full and careful reply to each question.

"This is important and calls for immediate action.

"It is my purpose to bring this subject before our Association at its meeting in February, and your reply will greatly aid me in furnishing data upon which to base my argument.

"Yours very respectfully,

"EDWARD C. FRISBIE."

EXTRACT OF LETTER FROM THEO. GRIBI, ELGIN, ILLINOIS.

I was deeply interested in the conclusion of Mr. Jacob M. Clark's "Metric Analogues." There are some thoughts advanced there with respect to the interpretation and inspiration of prophecy which are very weighty. But the most important feature of the Great Pyramid for future investigation seems to me to be the "Granite leaf." I do not share the extravagant hope of finding plans and records of the Pyramid therein, nor do I think that the removing of the wainscoting of the ante-chamber would reveal any secret passages or chambers, as Mr. Thomas Holland, of London, in No. 5 of the Magazine suggests. Such a presumption as the latter is not born of a comprehensive view and appreciation of the general architecture of the structure. The ante-chamber, with all its details, whatever they signify, is evidently a *finished* room, full of meaning, full of harmony, which the removal of any of its details would seem to destroy. If any undiscovered chambers and passages exist—which I doubt very much—I think the entrance to them will be found elsewhere. It is different with the supposition that there is something treasured up between the stones of the granite leaf. Here every architectural feature of it, its very position in midroom, points toward it, and surely it is highly presumable that the architect should have left somewhere at least, a copy of the standard or standards employed in the building, if indeed the preservation of that standard was of paramount importance to him. But records or plans of the building I scarcely think will be found even here. In my estimation the finding of any such documents would materially damage the theory of its inspired origin, nay, it would forever banish it from my mind. As, I believe, I said in a former letter, the Grand Pyramid would not appear half as divine as to its origin, purposes and intent if it were covered all over, outside and inside, with hieroglyphics extolling all its wondrous relations and commensurabilities. The inspired origin of human records has been impeached, but the records of the silent universe cannot be impeached, for its harmonies speak louder than words. As to the "Ballard theory of pyramid solution," I fear that it will go no further than to prove the fact of its (the pyramids') comprehensive geometrical design. There is not enough data to show that the pyramids have ever been used for any purposes other than as tombs; yet this does not militate against the fact that the Great Pyramid is eminently fitted and located as a central point for a grand geodetic survey and may be used as such yet. To my mind, the Great Pyramid, aside from the possible uses which it may serve in the future, is a great parable which has tested the wisdom of the world for ages, and will still continue to test it, as a touchstone, until it has exposed all the dross that is in that wisdom. Men of every belief, religious, scientific and practical, have come and rubbed their intellects and *opinions* against it, and the Pyramid has tested them; yea, many of them have been "weighed in a balance and found wanting," and it behooves every man before attempting to unlock its mysteries to make sure that he has the right key in his hand.

————

LETTER FROM THEO. FABER.

Dear Sir:—The receipt and perusal of your 'Appeal' inspires the writer to an effort to contribute, if possible, "a mite" of valuable suggestion in the line of the noble object of your society, which the 'American nation' will learn to appreciate more and more by closer investigation into the comparative merits of the respective two opposing systems of "geometrical measuring," namely, the "anti-metric" and the " metric" system, the latter of which, certainly in *appearance*, would *seem* to indicate material advantages which, however, utterly vanish on a closer comparison. For instance, how many 'decimals' have already been added to the orthodox infinite ratio 3.14159 + ... ? Ask your member Mr. S. C. Gould, of Manchester, N. H. He verbally informed the writer, not long ago, that 707 decimals had thus far been added to that ratio ! Imagine, now, the time and

labor required to use that number of figures for "a square root!" And then suppose that what such immense array of 'decimals' was intended to accomplish in the way of a mere *approximation* of sought for result, could be gained, with absolute perfection, in every case, by a simple *finite ratio*, in place of the *infinite*, which of the respective two methods will command final universal preference all over the world?

Of course, so long as the "grand problem," the solution of which, for all ages past, has been intensely sought after by 'science,' and especially by astronomy—remained *strangely* unsolved, none other but an infinite ratio could possibly have afforded any satisfaction at all; but the moment the final solution of the great problem looms up in an irrefutable form—such that by the use of a simple ratio, such as 9:8, the *exact area* of any circle so ever of a given diameter can instantly be found—the use of the decimal fraction, in geometrical measurements, becomes the *opposite of exact!* And, if the anti-metric system *proves its superiority* in obtaining the ends sought for, would it not imply *treason to common sense* to cast it aside in favor of the opposite system? But who can value, in all its extent, the beneficent nature of the great discovery so long searched after in vain?

What a glorious opportunity is here offered to your society to take a *manly* stand on the side of *truth* versus ancient error, which latter has been strangely propagated up to our days. *Truth* will prevail against all prejudice.

<div align="right">Your obedient servant,   THEO. FABER.</div>

LETTER FROM ASAHEL ABBOTT.

<div align="center">833 DEAN ST., BROOKLYN, NEW YORK, January 21, 1884.</div>

Dear Sir:—Are our members to join in that ignorant crusade against reason and common sense, of which we have had examples years since in our city, when we treat of the Pyramid and its measures? First, we must find eras of history or prophecy marked in the interior ways; next, we must have prophecy inscribed somewhere. And so the fictitious Christian era must be our starting-point, when all who know anything of chronology know that some silly conjecturer in the dark ages has marked it several years out of its proper place. Then the grand gallery *must* signify the Christian dispensation and its inevitable break down about the awful period of the lion in Egypt, if not the French at Moscow; then the queen's chamber must stand wide open for the Jews that have repudiated Christ; and now *mirabile dictu!* it has become the hold of the Romish communion!!! Sooth! why not stow away there the Buddhists, or the Brahmins, or the negroes of the island of Madagascar, or some other rubbish, since it must be occupied with something worthless? Meanwhile, in comes some one with a whole army at his back and tries to force it in edgewise as far as it will go. Is this children's play to go on? If so, how long will our association be likely to hold together? To roll back the torrent of atheistic sciolism from our old sacred measures is no holiday task, and can scarcely be done if the very men who associate for that purpose show that they lack common sense. We need the aid of leading Catholics, like Abbe Moigno, and of all true men, Catholic or Protestant, Jew or Greek; but, above all, we need true science, and should to the utmost eschew foolish speculation in our studies. In the Pyramid are physical truths sufficiently numerous, without lugging in our tuppeny controversies concerning things that have no relation to the matter in hand. The Pyramid is a mathematical fact; and the king's chamber, with its coffer, forms a portion of what is evidently a complex and most beautiful system of just proportions—just measures and weights. Let us use it rightly and not mingle with our studies "foolish and unlearned questions" that can but "gender strife." Let our mathematical fact, then, stand upon its own basis without mingling with it a single fancy of our own, then we shall at least *deserve* the respect of our opponents, as well as *possess* our own.

<div align="right">Yours truly, in haste,   ASAHEL ABBOTT.</div>

MOBILE, Jan. 22d, 1844.

My Dear Sir :—I have finished the copy of the STANDARD for the current month; it is excellent—every article a gem.

Particularly do I value the two portraits ; and if the faces presented there are not indicative of the characteristics of their originals, I am no judge of physiognomy.

In "Editorial Notes" it is stated that a gentleman, name not given, offered to be one of ten to subscribe $10,000 each for the expenses of "The American Metrologic and Scientific Exploration of the Pyramid."

I would like to know the gentleman, for it would be a pleasure for me to congratulate as well as thank him, for it is evident that whoever furnishes to the Institute the means of "unsealing" the pyramid mystery in these days of *unsealing,* will acquire the grateful homage of his fellow men as one of a noble line of public benefactors, like George Peabody, Peter Cooper, and their kind. When I recall to mind how munificently the merchant princes of America have always responded with their wealth to calls for aid for educational and charitable and scientific objects—and how many thousands of dollars, and the valuable lives of heroic men, have been fruitlessly expended in useless searching in the frozen zone 'of the Arctic circle, I cannot doubt but some one will be moved to give of his or her abundance, that our knowledge of this great conservatory of wisdom may be complete, and the purposes of the great architect in designing and building this encyclopædia in stone, be laid bare for the good of all men.

It may be urged—in opposition to present activity—that there is a state of war now existing in the Upper Nile country, and that the hostilities may be soon transferred to the vicinity of Cairo and the Pyramid.

I do not so view it ; on the contrary I think that the presence of an English army would be a very desirable thing and most fortunate for an exploring party, whether in peace or war. I feel assured that in the immediate future some wealthy citizen, moved by a desire to do good in some new way, will provide us the means. Lorrillard has equipped a party now at work, for Yucatan exploration, which promises to be a great success ; Bennett sent out Stanley and maintained him and his little army until his object was accomplished, Vanderbilt brought the obelisk to New York—all at much greater expense than pyramid exploration would cost—prompted by a desire to do something or produce something, by means of their great wealth, in which all their fellow citizens might share. Surely so great, so paramount an object as the unfolding the mighty secrets which a divinely inspired architect sealed up forty centuries ago—against these days of men's necessities, when the need of a new revelation of God's word and work is felt as never before—cannot go much longer unnoticed. I am confident we shall soon see the necessary means forthcoming. I wish we could exhibit the model shown at Boston at our New Orleans Exposition this year ; it would be an excellent opportunity; I will take the matter in hand if desired.

I shall soon be able to devote more time to this subject I expect, and then take hold to push the work all I can. Sincerely, W. C. COX.

CHAS. LATIMER, ESQ., Cleveland, O.

SYNOPSIS OF LETTERS RECEIVED UP TO FEBRUARY 9TH.

W. T. Alan, Greenville, Pa., has sent us some interesting notes upon the numbers 5, 7, 12 and 13, and the relations between numbers, colors and geometrical forms. We may give a paper upon these subjects in a future number.

Lucian I Bisbee, Secretary of the International Institute at Boston, writes : "The 'Model Pyramid' in the Foreign Exhibition, on which I have spent so much time and

money, was consumed with its valuable papers, books, etc., on the morning of the 5th of January. I shall begin at once to prepare new drawings for another model, same size."

J. L. Dampier, of London, Canada, says : "I am reading the last STANDARD with great delight ; each one surpasses the other with increased interest and information. I would my pen were like the pen in the dream of the Elector, when I consider this wondrous revelation of God's love and forethought in thus, as it were, coming down and tabernacling amongst us. The Pyramid is a veritable Jacob's ladder, closely connecting heaven and earth. No dream now of weary traveler with stone for pillow and sky his canopy—no dream, but an actual handling of the revelation of God."

Mrs. Rebecca N. Hayard, Kirkwood, Mo., writes : "I think you deserve much credit for creating in so short a time a magazine of such great literary value, and I congratulate you heartily upon your success."

On the same subject Adjutant W. K. McAllister, St. Paul's School, Garden City, says : "The truths so long hidden in the Great Pyramid are unfolding so fast, and are so fascinating, that I would not miss reading a single number of the STANDARD for more than thrice the year's subscription."

Arthur S. C. Wurtele, C. E., Albany, New York, writes : "The INTERNATIONAL STANDARD is improving every number, and ought to have a large subscription list. When more at leisure, I may get up an article as you suggest. All our mechanics must be with you in your efforts to prevent the useless confusion that would result from a change of standards."

J. M. Durkee, Pittsfield, Mass., sends a table designed to exhibit the analogy between the days of creation and the seven dispensations. With reference to the Pyramid, he says : " This great book of God is about to be opened ; the 'seals' are broken."

ADDITIONAL LETTERS.

L. Biden, Portsea, England.
L. F. Haskel, San Francisco, Cal.
John G. Godwin, London, England.
S. H. Reeve, South Eliot, Me.
Charles W. Russell, Chicago, Ill.
Rev. Jos. A. Seiss. D.D., Philadelphia, Pa.
Carson Sake, New York.
Joseph Massey, Royalton. Mich.

F. G. Williams, Alkali, Oregon.
Rev. James Upjohn, Neenah, Wis.
Rev. Jesse Jones, N. Abington, Mass.
Sandford Fleming, C. E., Ottawa, Canada.
Mrs. W. A. Plumptre, E. Retford, England.
Prof. Edwin Graham, Fairville, Mo.
Prof. W. A. Rogers, Cambridge, Mass.
Mrs. H. E. Godfrey, Grass Valley, Cal.

TRANSACTIONS OF THE OHIO AUXILIARY SOCIETY OF THE INTERNATIONAL INSTITUTE.

JANUARY 2, 1884.

Mrs. J. R. Smith, of New York, and L. W. Perry of Cleveland, were elected members.

A paper from the Abbe Moigno, of Paris, on the "Prime Meridian and the Metric System," and another on the search for relics of Pharaoh's army in the Red Sea salt marshes in building the Suez canal were postponed for two weeks. A paper was read from Samuel Beswick, C. E., criticising the new measures of F. Petrie and claiming that Petrie has only the more completely confirmed the measures of Piazzi Smyth and others, and concluding that they confirm more completely the theory of J. Ralston Skinner that the unit of the pyramid builders was undoubtedly the British measure of to-day.

A paper by Joseph Baxendell, English astronomer, showed the relation between the moon's synodic period, the equatorial and polar diameters, the diameter of the earth in latitude of the Pyramid, to the entrance passage angle of the Great Pyramid and also angle of the pole star, a draconis from the pole at lower culmination. He also showed that the area of a right section of pyramid divided by the area of the greatest inscribed circle is equal to the squares of the height of the Pyramid divided by the square of the diameter of the inscribed circle, which is true of no pyramid of any other angle than that of the Great Pyramid of Ghizeh.

Rev. H. G. Wood, of Sharon, sent a paper announcing an important discovery touching the ratio of the length and breadth of the base of the Great Pyramid. He says the south base appears to have settled about four or five inches towards the southwest corner. The north base line is very nearly level. This settling would account for the tilt of the king's chamber towards the south and west, described by Professor Smyth in "Life and Work." There is, however, no disturbance in the grand gallery or entrance passage.

Thomas F. Rowland, president of the New York Society, wrote that much interest is manifested by members in New York and New Jersey, and that the branch society gives promise of vigorous growth.

An English member, Mr. Lewis Biden, thinks there are great wonders in the Pyramid on the eve of discovery in connection with the raising of the granite leaf. He believes that this will be effected through the influence and probably in the presence of one of the sons of the Queen of England.

After interesting discussions and the reading of other papers and letters, the meeting adjourned for two weeks.

January 16, 1884.

Much enthusiasm has recently been awakened respecting the proposed American expedition to Egypt.

In connection with this subject a letter from Rev. Jesse H. Jones, with accompanying communications from Professor Piazzi Smyth, and Rev. Jevons M. Perry of Alnwick, England, were received with much interest. Rev. Mr. Perry believes that an astronomical observatory could be established on the top of the Great Pyramid, and kindly offers his services and the use of his telescope for that purpose, if the expense of transportation can be defrayed by the Society.

The Society is in receipt of a very valuable work on the Great Pyramid from John G. Godwin of London, England, librarian to Lord Bute, written by a Roman Catholic priest, Father Thomas Gabb, in 1805. Father Gabb thinks that the Pyramid was constructed by antedeluvians, and that the sands in which it is embedded were deposited there by the flood and are gradually being removed by the wind, and states that at the

time of Herodotus the sand surrounding the Great Pyramid was much deeper than at the time of Greaves, and suggests that immediately after the flood it may have been entirely buried from sight.

A report of the Buffalo Microscopical Society was read, in which was described a micrometer scale prepared and tested with great care under the personal charge of Professor Barnard of Columbia College, and J. E. Hilgard and C. S. Price of the United States Bureau of Weights and Measures. The ruling, which was done by Professor W. A. Rogers of Cambridge Observatory, is upon a platino iridium bar of one by two centimetres, and consists of 1-100 of a metre subdivided to millimetres, and one of these to tenths and hundredths.

From the report it might be inferred that both Professor Rogers and Professor Hilgard were in favor of the metre ; but such is not the case as both are strongly opposed to it, and are members of the "Anti-Metric Society." This is merely an attempt of Professor Barnard and the Columbia College people to fix the metre as a standard of length on the Microscopical Society.

After the reading of other letters, Professor N. B. Wood made an interesting demonstration of his ideas of weighing decimally, in which method of weighing he would use the avoirdupois pound of 7,000 grains with decimal subdivisions down to the one-hundredth of a grain.

Mr. Wood is now making a set of weights according to his method of weighing, which he will soon have finished.

After discussing the plan at some length the meeting adjourned until January 30th.

The members elected were :

Mrs. J. B. Cummings,	Chelsea, Massachusetts.
Mrs. Hattie Hutchinson,	Chelsea, Massachusetts.
E. L. Brown,	Brockton, Massachusetts.
C. V. Kasson,	Detroit, Michigan.
C. T. Heisel,	Cleveland, Ohio.

SPECIAL MEETING.

January 23, 1884.

The paper of the evening was the communication from M. L'Abbe Moigno with reference to the prime meridian and the metric system, in which he manifested his unflinching opposition to the advocates of the metre.

In reference to the American yard, Professor W. A. Rogers of Cambridge wrote that there has never been any legislation establishing "Bronze 11" as a standard, but that it has been adopted for some twenty years as a standard by the action of the superintendent of the Bureau of Weights and Measures when this bar was received in 1856, and it was then stated to be about one ten-thousandth of an inch longer than the Imperial yard. From two independent comparisons made about 1879 the relation Bronze 11 plus .000088 inch = Imperial yard was adopted. But a comparison made during last summer gives only .000022 inch too short, so that within narrow limit there seems to be still some uncertainty. The result of his investigation goes to substantiate the latter value. The professor promises to send the Society, in a short time, a full discussion of standards, which promises to be a very valuable paper.

Mr. E. C. Frisbie, druggist of Hartford, Connecticut, wrote that he had written several hundred of the druggists of Connecticut asking their opinion of the metric syetem, and so far had received answers from one hundred and fourteen, the most of whom are opposed to the French system.

Other letters were read from Rev. J. A. Upjohn, Neenah, Wisconsin; Mrs. W. A. Plumptre, England; and Rev. E. P. Ingersoll, Rosevale, Kansas.

The President read an article from the Chihuahua *Enterprise* in reference to the estab-

lishing of the metric system in Mexico, which stated that after the 1st of January, 1884, the use of the metric system in Mexico would be enforced by law.

The President stated that in a recent interview with Rev. H. G. Wood of Sharon, the latter had told him that he had just made some valuable discoveries touching the religious aspects of the Great Pyramid, endeavoring to prove that the courses of masonry represented generations from Adam, and the beginning stone of grand gallery represents the Messiah. This is independent of the same view by G. A. R. of England.

The members elected were :

James McAllister,	Sinclairville, New York.
W. P. Horton, sr.,	Cleveland, Ohio.

After an animated discussion the meeting adjourned till January 30th.

January 30th, 1884.

The members elected at this meeting were :

R. W. Burnet,	Cincinnati, Ohio.
L. Sharp,	Providence, Rhode Island.
W. C. Whittimore,	Chicago, Ill.
W. W. Andrews,	Cleveland, Ohio.
H. B. Seymour,	Cleveland, Ohio.
Arnold Hersent,	Cleveland, Ohio.

A paper from the *American Machinist* entitled "Opposition to Changes of Measurement," indicated that manufacturers are not so apathetic on this subject as they are supposed to be, and that any effort to make a compulsory change would be met by strenuous opposition.

The writer cites the trouble incurred by the Board of Trade in trying to establish a new standard sheet-iron guage for Great Britain.

A letter was read from Professor J. E. Hilgard, Superintendent United States Coast and Geodetic Survey, stating that he had forwarded the Society copies of the coast survey reports from 1870, and that all future reports would be sent the Society. In reference to American standard yard, Bronze No. 11, he wrote : It is found to be at 62° Fahrenheit less than the Imperial yard by 0.000088 inch. Therefore Bronze No. 11 is a standard yard at 62°.25 Fahrenheit. The yard of the Troughton scale at 62° Fahrenheit exceeds the Imperial yard by 0.00084 inch, and is a standard yard at 59°.62 Fahrenheit.

Favorable criticisms of the Society's magazine, THE INTERNATIONAL STANDARD, were read, showing that there is a continually growing interest in the work of the Society.

The paper on "The Chronology of the Pyramid," by Rev. H. G. Wood, of Sharon, was listened to with great interest. Mr. Wood thinks that the different courses of masonry represent different epochs, and that vertical lines drawn from the respective courses strike prominent points in the passages represcnting different ages of the patriarchs. For example, a line drawn from the thirty-fifth course strikes stone in the descending passage representing the time of Abraham, and a line drawn from the fiftieth course strikes stone representing the exodus, etc., and the distance between these points in inches corresponds with the years intervening.

Samuel Beswick, civil engineer, of Canada, in his criticism of William Flinders Petrie's recent work at the Pyramid, agrees with Rev. H. G. Wood in his deductions and explanation, and thinks that Petrie gives fuller points on prior measurements made by Colonel Howard Vyse and Professor Smyth, and states that the major part of his book is devoted to the second and third pyramids and other Egyptian monuments.

Letters were also read from Mrs. Rebecca N. Hazard of Kirkwood, Missouri; Theodore Gribi, Elgin, Illinois; J. L. Dampier of Canada, and others.

The President then gave a very interesting blackboard demonstration of what he calls Lotus Flower of the Pyramid." He constructs a square with side equal to the

square of the length of the coffer in the king's chamber or 8,100, and by circumscribing circles and inscribing squares he deduces a triangle with the exact proportions of the Great Pyramid of Gizeh, and by using the other dimensions of the coffer he arrives at the lengths and dimensions of the different chambers and passages.   His demonstrations were followed very closely, and all went away with an increased reverence for the science and wisdom contained in the gigantic pile of masonry.

<div align="right">February 13, 1884.</div>

A communication was read from Mr. E. C. Frisbie, druggist, of Hartford, Connecticut, stating that the majority of answers to the circular sent to the druggists of the State, some time since, were in favor of our present units and opposed to the French metric system, and at the annual meeting of the Connecticut Pharmaceutical Association, held at New Haven on the 6th inst., the following resolution was adopted :

Resolved, That in the opinion of this Association, the adoption of the French metric system would be a detriment to our interests as pharmacists and as practical business men.

Much interest has been aroused throughout the country in the last few months relative to the proposed Pyramid expedition, and a number of encouraging letters have been received from prominent persons, several promising contributions and support to the extent of their ability.

Letters were also read from Dr. Seiss, of Philadelphia ; Samuel Beswick, C. E., Canada ; Jacob M. Clark, of New York ; J. K. Kornish, of Denver, Colorado ; Mr. Frank Norton, editor of the New York *Evening Telegram* ; W. K. McAllister and others, in all of which the importance of the Pyramid expedition is urged, a deep interest expressed in its teachings and a continued feeling of opposition to the French metric system.   One of the correspondents stated that Senator Morrill would present a bill before Congress, this session, to have the five and three-cent nickel coins withdrawn, to be replaced with five and three-cent silver coins, their size and weight being expressed in terms of the French system, and to have the one-cent copper coin replaced with one-cent nickel, thus engrafting the French system on our coinage.   After the reading of a letter from the Governor of California relative to the standards of measure for that State, Dr. J. W. Redfield made a few interesting remarks, giving his idea of the meaning of Isaiah XIX, 19, which speaks of their being an altar in the midst of the land of Egypt and a pillar at the border thereof.   Heretofore it has been thought by pyramid students that the " pillar at the border thereof " referred to the Great Pyramid of Gizeh, but the doctor thinks that " an altar to the Lord " refers to the Pyramid, and the Sphynx is " the pillar at the border thereof."   The doctor cites a number of Scriptural passages in support of his views, and thinks he has the correct interpretation of the passage.

His remarks were followed by an interesting discussion, after which the meeting adjourned for two weeks.

The members elected were:

Jacob Klein,	St. Louis.
William Ernstein,	St. Louis.
J. M. Durkee,	Pittsfield, Massachusetts.
E. Jane Copeland,	Byrantville, Massachusetts.
Frank Norton,	New York.
Theodore H. Lowe, C. E.,	Denver, Colorado.
A. C. Getchell,	Cleveland, Ohio.
George P. Burwell,	Cleveland, Ohio.

A subsequent communication from Mr. Frisbie, states that the resolution referred to was tabled and not passed.

MEETING OF THE NEW YORK AND NEW JERSEY AUXILIARY OF THE INTERNATIONAL INSTITUTE.

Friday, January 11, 1884.

A meeting of the New York and New Jersey Auxiliary Society of the International Institute for preserving and perfecting weights and measures was held at two o'clock this afternoon at Cooper Union. A number of grocers, drygoods dealers, druggists and others to whom the question of weights and measures is of importance, attended the meeting. Mr. J. N. Wing, secretary and treasurer of the society, in speaking of the subject, said to a *Telegram* reporter to-day : "This Auxiliary Society was established on November 15. The International Institute numbers something over one hundred members in New York and New Jersey. Mr. Charles Latimer, of Cleveland, is the president of the International Union. In that city a strong organization is in existence, and it was owing mainly to their indefatigable work that a bill introduced in Congress to change the order of our present weights and measures to the French metric system was killed. Efforts are still being made to get the United States to compel the adoption of this system, as was done in Germany. Our weights and measures are good enough as they are, and if they were changed it would entail an enormous and useless expense on all persons using weights and measures." Professor Davies, of Columbia College, has said : "The French metric system is inapplicable to the ordinary affairs of humankind, being full of errors in science, and requiring innumerable patchings in practice to make it hold water at all." President Barnard, of the same college, also has said : "The authors of French metric system ought to adopt in place of their superficial earth measure the metre, the Great Pyramid axial reference of the cubit, on account of its immense superiority in science."—*New York Evening Telegram.*

EDITORIAL NOTES.

The diagrams which illustrate the paper of Samuel Beswick, C. E., in this number, are taken from "The British Mile," No. III, by Rev. H. G. Wood, in the Magazine for January.

Our thanks are due to Mrs. Emily Lewis, of Philadelphia, for her translation from the French, of the papers of M. L'Abbè Moigno, which appears in this number of the Magazine.

In addition to many other favors, Prof. C. Piazzi Smyth has sent us for a future number of the INTERNATIONAL STANDARD, a portrait and biographical sketch of the late William Osburn,

of Leeds, England, author of 'Monumental History of Egypt,' 'Religions of the World,' and other works. The portrait is the work of Mr. William Hawson, of Leeds.

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We publish below the propositions enunciated by the Geodetic Conference which took place in Rome last October. It is very plain that a sop was thrown to England and America, they being the Anglo-Saxon world, in adopting the meridian of Greenwich as the prime meridian for the world, hoping thereby to secure for the pride of France the adoption of the metric system. "Our representative" is credited with having proposed an international conference touching the adoption of these propositions. The conference puts it that they accepted "the proposition of the representative from the United States," as if to show that our people are ready for the French metre. In this our French metric advocates will find themselves very much mistaken. Let them listen to one voice from France in this number, who denounces the false metre born in France in 1793.

At the congress recently held at Rome, twenty-eight States were represented, and resolutions embodying the following principles were adopted by the delegates present :

1. The unification of longitude and of time is recommended to all Governments, as forming a suitable basis for international treaties; the scientific and practical advantages resulting from such an arrangement more than compensating for any inconvenience attending its introduction. This arrangement would be carried out in all astronomical and nautical almanacs, except as regards any data in which a local meridian and local time are indispensable.

2. That information should be diffused as to the decimal subdivision of the quadrant, and that this system should be partially introduced as regards calculations, etc., although the present system can hardly be superseded with respect to navigation, etc.

3. The meridian of Greenwich being the most generally accepted, it is recommended for adoption in the proposed international arrangement.

4. It is suggested to reckon longitude only from west to east, starting from the meridian of Greenwich.

5. For purposes of railway, steamboat, post and telegraph services, the adoption of a universal time is recommended ; local time being still used for ordinary purposes.

6. The foundation for this international time would be noon according to Greenwich time ; the hours being reckoned from o to 24.

7. States which accept the new system of unification should adopt measures for its introduction as soon as possible.

8. The adoption of the English meridian will, it is hoped, urge England to take steps as to the question of uniformity of weights and measures.

9. The proposal of the United States Government for a special conference is approved ; and wishes for the holding of an international convention for the ratification of the proposed uniformity of longitude and time are also expressed.

The only important case of absence from the voting was that of the representatives of Holland, the Government of that country preferring to await the result of the congress to be held in 1884 at Washington.

OBITUARY.

We deeply regret that we have to record the death of one of our, most worthy and distinguished members and workers, Commodore William B. Whiting, United States navy. The Society has suffered a great loss in his death. He was an active member of the Committee on Standard Time, and gave most valuable information, maintaining in the most emphatic manner the necessity of the adoption of the Great Pyramid as the prime meridian of the world. In this we venture to predict that he uttered words that shall have their fulfillment before many years.

REVIEW.

THE NUMBER COUNTED 666, AND THE NAME COUNTED 888. By the Rev. James Upjohn, of Neenah, Wisconsin.

The names of these books are enough to suggest a veil of obscurity; nevertheless the information of Mr. Upjohn is rather to shed light upon the scriptures. He is a follower of Dr. Mahan, in whose work called ' Palmoni and Mystic Numbers,' will be found a similar vein of thought; but the Rev. Mr. Upjohn has trodden in a new field, though in the same line. We advise all students to investigate both the thoughts of Dr. Mahan and of the Rev. Mr. Upjohn, for notwithstanding the titles are seemingly so abstruse, there is great truth concealed in the numerical values of the Hebrew scriptures. Indeed they are a perfect mine of wealth; it suggests the thought of "the tree which bare twelve

manner of fruits." We have the letter and the spirit. Mr. Skin-
ner touches the astronomical and mathematical, Dr. Mahan the
chronological, and Rev. Upjohn the numerical values of names
which in the old kabbala is considered the grandest test of all
inspiration, truth and divine wisdom.

INQUIRERS' CLUB.

In relation to the question of Mr. Reeve, there are several reasons why we may con-
clude that it is a fact that the order of Free Masons had its origin at the building òf the
Pyramid; the first is that the Pyramid is a symbol of mathematics and astronomy, and
the masons were formerly called "matimatici" or "geometrici;" they were also called
"Sons of Light," and they have been, as an order, persecuted in various epochs of the
world and driven out by different sovereigns. Bunsen says that the Pyramid was called
A. O. R., which means Light, and the word "light" is one of the oldest and most re-
markable in existence. A structure containing the highest order of knowledge ever at-
tained by man, and which, indeed, as those who have investigated know, reached and
does reach into futurity, could never have been constructed without an order of men, who
must have handed down their symbols and signs from age to age; and, although we believe
that they have lost their key, yet it would seem that the masonic order, in its symbolism,
does contain much of the WISDOM of the Great Pyramid, but unknown to the order as
a general rule. As to the corner-stone being the northeast, I believe that the writer is
correct. However, the southeast corner-stone of the Great Pyramid seems to be the con-
troling stone as far as is shown by Mr. Petrie's measures.—A. O. R.

In answer to "Veri Surrexit" there is more in this thought of the granite coffer repre-
senting the Resurrection than at first thought might be supposed. It seems to me certain
that the coffer in the king's chamber represents the new birth, and the new birth is
certainly complete in the Resurrection.

The coffer is a pyramidal lotus flower ever blooming; of which more hereafter.—
Natzir.

In relation to the question of S. F. G. about the position of the Pyramid east of Green-
wich, we have to say that the longitude of the Pyramid is not precisely known, but as
near as we have it, its location is two hours and five minutes east of Greenwich.—L.

I have enjoyed the article by J. W. Redfield on "The Altar and Pillar of Jehovah," and
I cannot but stop and think on the curious fact he has brought out that a pyramid of
stones—arranged as he says the Israelites were commanded to build their altars—contains
the same relation between the number of stones in each successive layer and their differ-
ences as the spaces traveled over by a falling body in vacuo, *i. e.*, the number of stones in
each successive layer is as the square of the number of layers from the top, and the differ-
ence between each successive layer as the spaces traveled over during each second of a
falling body; and I asked myself the question: would a pyramid constructed in that way
of balls of equal sizes be in the same proportion with respect to height, and length of base,
and subtend the same angle by its sides as the Great Pyramid of Jeezeh? *i. e.*, would it
be π proportioned? This may be a matter well worth examining.   T. G.

ERRATA.

Page 472—11th line from top, for eternal ear, *read* internal.

Page 526—8th line from bottom, for 180 A, *read* 180^2.

Page 528—The editor stated that there were only two cubits, he omitted the third—the sacred cubit of 25 inches.

Page 15, Vol. II., 3d line from top, in place of "most" *read* midst.