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TREATISE

ON THE

Circular Zodiac of Tentyra,

IN EGYPT.

BY MR. JOHN COLE,

Purser in the Royal Navy.



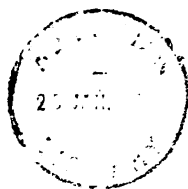
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PREFACE.

IN submitting this ~~small~~ Treatise on the ZODIAC of TENTYRA to the World, the Author trusts, that his substituting the term Tentyra, the ancient name of the Town whence this Monument was taken, instead of Dendera, the modern name of a village, situated one mile and a half distant from the ruins, will not meet with disapprobation.

The mathematician is not to expect to find in the third part any elucidation of that most intricate problem in astronomy, *the precession of the equinoxes*, so ably and so wonderfully managed by Sir Isaac Newton in the third book of his Principia; as this little Tract is intended for general reading to explain as clearly as possible the principal causes of such precession, and does not aim at embracing an explanation of the causes of the multiplicity of variations arising from the combinations of the different attractions connected with it.

The fourth part is the most important in its results; it shows the date of the Zodiac of Tentyra, the place where most probably it was invented, and the uses to which it was appropriated. In the investigation of these particulars, the Author was compelled to resort to the Bible, because no other book extant was sufficiently ancient to communicate the necessary information. Hence it will appear, that while philosophical results are gained, the truth and accuracy of the Scriptural history and chronology are established; and if the arguments be admitted, they cannot but be interesting both to the philosopher and to the christian.

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The Very Rev. Dean of Salisbury,

A TREATISE
ON THE
Circular Zodiac of Tentyra,
IN EGYPT.

PART I.

Interesting Selections from M. Lelorrain's Travels, and his manner of obtaining the Circular Zodiac, as described by M. Sauleier. Translated from the French.

SINCE Mohamed Ali has, by a vigorous effort, annihilated the remaining power of the Mamelukes, Egypt, once so miserable under their disorderly government, assumes a different appearance. Some traces of their former barbarity disappear; and European refinements are introduced. Public fountains are constructed; tillage is extended; new roads are made; and canals are opened.

The organization of the military service has produced great changes. Manufactories are established at Alexandria, at Cairo, and at almost all the towns of Thebais. Commercial

transactions have received a still more active impulse. The merchants, supported by the protection of the Pacha, and by the great capitals, which he places at their disposal, attempt, in order to recover the commerce of India, to make the route thither formerly pursued, but on account of the insults, and dangers, to which it was exposed in Egypt, afterwards abandoned, for that very circuitous one by the Cape of Good Hope. This beautiful country, subjected for so many ages to masters, who knew nothing but destruction, begins to yield the first fruits of a fostering and protecting government.

Mohamed Ali, not originally French, as some romantically pretend, but born of Turkish parents, in Macedon, is far from participating with his fellow countrymen in their peculiar prejudices against Europeans: on the contrary, they share a great part of his confidence, and unite with him in the execution of his projects. He soon discovered, that the present inhabitants of Egypt were ill suited to accomplish its regeneration. Mr. Briggs, an Englishman, is at the head of one of his commercial establishments; M. Jennel, a Frenchman, superintends his manufactories; M. Coste, also a Frenchman, a young architect of superior talent, manages his buildings; and finally,

Col. Seve, a brave Officer, of the old Guard, (retired from France on account of his Orange politics) has found an asylum with him, and enjoys an influence, which he often turns to the benefit of his fellow countrymen.

To the various means, which the existing government of Egypt employs for the purpose of attracting Europeans, we must add the permission granted to every individual desirous of rummaging the soil for discovering antiquities, and of removing those on its surface. These searches, the execution of which is necessarily entrusted to the Arabs, have proved very beneficial in procuring a relative ease to those who have been charged with it, and above all to the once miserable inhabitants of the villages built near the ruins of Thebes. In vain have some of the Pacha's counsellors repeatedly endeavoured to cause these rummagings to be made exclusively on their own account, and afterwards to collect the products into Museums. He perceived that such establishments are ill adapted to a country, still so imperfectly civilized as that of modern Egypt. More judicious than Peter the first, who wished at once to introduce to a people half savage, the refinements of the most polished nations; Mohamed Ali directs his sole attention to objects of positive utility.

I have described the transactions which passed in Egypt, not only from the relations of late travellers, but also from particular information personally gathered on the spot. In 1818 I arrived at the Pacha's with some French books, which he wished to have translated, and which I had obtained in consequence of a note from M. Boghos, his chief Drogman. The choice is remarkable.—They consist of the Biography of Plutarch, the Life of Peter the First, another of Charles the Twelfth, the Campaigns of Frederick the Second, those of Napoleon, and a manuscript of St. Helena. I received afterwards at Alexandria, many expresses with monuments collected at Thebes, and, among others, a mummy, of which there is not its equal in any private or public collection in Europe. But it was not till 1820, that I seriously thought on the means of partaking of the facilities, which the government of Mohamed Ali affords to the explorers of Egyptian antiquities. At the same time, I formed the resolution not to expose myself to any hazardous chances of rummaging, when those means which I should have adopted, had succeeded satisfactorily; little other effect would be produced beyond that of increasing the number of those monuments, of an imposing but uniform character, which begin to encumber the cabinets of Europe. I began to

think it time to neglect these mere copies of figures, and that I must direct my view towards some object of acknowledged, and (if I may thus express myself) of individual importance.

I instantly thought on the Planisphere, sculptured in relief, and situated in the upper chambers of the temple, at Tentyra: and after having reflected a long time on it, that it was the venerable remains of such remote antiquity, I resolved to have it transported into the bosom of enlightened Europe. In the enterprise of which I was meditating, I could not effectually pitch upon an object more important.

There are three other zodiacs in Egypt, but their colossal dimensions, and the places occupied by them in the great buildings of which they constitute parts, will never permit them to be separated. Besides those in the temple of Latopolis do not belong to the same epoch, as the circular Zodiac of Tentyra, and they represent the heavens differently. Finally, what most particularly increases the value of the latter is, that while the others have sustained more or less injury, this scarcely carries with it any traces, either of the hand of time, or of the barbarians.

Other considerations also contributed to fix my choice on this monument. By a singular fatality during a long succession of ages, it

has remained unperceived in the place where it was discovered. The attentive and intrepid travellers, Procope, Bruce, and Norden, have passed near it, without suspecting it. At one of the most brilliant epochs of our military exploits, it was discovered by General Desaix, who was pursuing across the solitudes of Thebais, the shattered remains of the corps of Mourad Bey. M. Denon, whom an active curiosity and enthusiasm for the arts, had prompted to share the dangers and fatigues of the Division of Desaix, delineated for the first time the Planisphere of Tentyra; and the scientific part of the French, then in Egypt, have in their memoirs, since published, brought to light all its importance. So that this monument has in some degree become national by the pleasing remembrances to which it is attached; and I conceive that on its arrival in France, it will be viewed with peculiar regard, and received as a trophy of the army of Egypt.

Fortunately, neither the scientific men, nor the French artificers, who followed the movements of that army, attempted to separate it from the vaults to which it was suspended. If that operation had been undertaken, and had succeeded, the Planisphere of Tentyra would infallibly have fallen into the power of the English; as did the inscription of Rossetta; the tomb under which Alexander is supposed

to have been buried : and all the other monuments collected by the institute of Egypt ; and which were yielded to them by the convention concluded between General Menou and General Hutchinson.

Since that period the government of Great Britain has, through the means of her diplomatic and commercial agents, not ceased to increase her collection already so precious. It appears that she after the examples of the Romans, entertains the idea of decorating her metropolis with the magnificent wreck of Egyptian civilization. The obelisk, known by the name of *Cleopatra's Needle*, has been transported to London, to be elevated on one of its squares ; another obelisk, that of Philæ, has also arrived there, with the colossal head of Memnon ; besides a great number of statutes, and bass-reliefs, and a beautiful sarcophagus, in oriental alabaster, discovered at Thebes, in the sepulchres of the Pharaohs. But if the English have too exclusively taken a part from the archeologic riches, spread on both banks of the Nile ; and if the French on the contrary too little profited from the favourable dispositions, which the government of Mohamed Ali offers to their regard ; it appeared to me, that the time lost by us would be more than compensated by the work I anticipated. The examination of the

plans drawn up by the commission of Egypt, had convinced me of the possibility of its execution.

Unexpected business prevented my departure, and might have delayed it a long time, had not a friend of mine, M. Lelorrain, whose imagination had been vividly excited by the singularity of the project, which I had confided to him, desired me on no account to relinquish it, and proposed to charge himself with its accomplishment. I did not hesitate to accept his offer, and to receive him as an associate; for I was satisfied, that he possessed all the qualifications, which such an undertaking requires. From that moment I employed myself without intermission to collect the several articles requisite for ensuring success. It was evident, that M. Lelorrain could not find in Egypt any of the instruments necessary for the operation. I consequently made in great haste, saws of different dimensions, to separate the monument from its contiguous supports; chisels to reduce it in thickness; machines to raise its mass; and a dray to conduct it to the river Nile. The idea of this dray was conceived by M. Lelorrain; and I regarded the merit of that invention, as the first guarantee of the success of the efforts he was about to perform.

It was during the first days of October, 1820, that he embarked for Alexandria, with the instruments which I had caused to be completed. He carried also with him my instructions, as well as those of an able artist, who had made a profound study of the monuments of antiquity; together with the notes and letters of recommendation with which many of the members of the Institute had freely presented him. M. Le Baron Pasquier, then Minister for Foreign affairs, was equally interested in an enterprise, which appeared so beneficial to the arts; and he transmitted by M. Lelorrain, a letter for M. Pillavoine, who filled at that period the office of Consul General of France, in Egypt. With all these recommendations, M. Lelorrain arrived at Alexandria in the middle of November.—After having rested some time, he left this place for Cairo, where he arrived in the beginning of January, 1821. His arrival at this town threw into confusion all the customary searchers for Egyptian antiquities. It seemed particularly to prepossess Mr. Salt, Consul General of England, and M. Drovetti, who came to be nominated Consul General of France. It is well known, that these two gentlemen assumed to themselves the almost exclusive right over what remained of the beautiful hermitage of the Pharaohs and the Ptolemies:

according to them all the antiquities which form a part of it, and which are found in the lands, where they have at any period given a stroke with the shovel, or with the pick-axe, have become their legitimate property.

At first they had a great deal of trouble in reconciling their common pretensions: the journals of the times, and the relations given by travellers, have rendered an account of the debates of their agents, and of the behaviour, which frequently resulted. At last they came to an understanding, and concluded a treaty of pacification. As kings, who in accommodating their differences wish to prevent all the causes likely to renew them; they have taken a river as the boundary of the respective possessions, which they claim for themselves in Egypt. After two or three years, it is the course of the Nile which separates them.

The Pacha has not interfered in the arrangements, and it may be believed, that he takes no account of it. The benevolence of that Prince towards Europeans, is not partial; it is open to all, whatever be the different nations, to which they may belong. When M. Lalorrain was presented to him, after having received him in a welcome manner, he demands of him, by means of a Drogman, (for he does not himself speak the European languages)

what was the object of his journey, M. Lelorrain replied, that he desired to search for antiquities, in upper Egypt. Mohamed Ali consented without hesitation to authorize these searches, gave the necessary firman, and at the same time, as a mark of special favour, sent by him a letter of recommendation for Achmet Pacha, Governor of Upper Egypt. Here is the translation of the firman, which is in the Turkish language.

Above is written a monogram, which signifies —GOD. A little below is the seal of Mohamed Ali.

ORDER. “Conformably to the suggestion, and by the request, made by a nautical traveller, subject of France, named Lelorrain, who desires to proceed as far as Wadi Halse, to satisfy his curiosity, and make searches and rummagings in certain ancient edifices, our present order has gone forth, and been transmitted to him; in order that he may travel without fear for the purpose above-mentioned; and that, far from opposing any obstacle to his searches about the ancient monuments, the governors of the provinces, and other officers entrusted with the administration of the country, are to afford him aid and protection.”

“If it please God, we act in conformity to his appointment.”

“Given the 20th Day of the Month of Rebi-ulthany, 1235.” (27th of January, 1821).

This firman afforded M. Lelorrain shelter from all personal danger in the expedition he was about to undertake. A person travels now in Egypt, when he is thus authorized, with almost the same security as in the most polished parts of Europe, and certainly with less danger, than in many states of Italy. When Mohamed Ali was raised to the rank, which he at present fills, by the vote of the Militia, in which he was a General Officer, he was obliged to suffer the excesses, to which they abandoned themselves for three days; but in the midst even of these disorders, he swore, that in a few years, a person should walk without fear by night through the streets of Cairo, with his hands full of gold; and he has kept his word. This severe police in countries, where it was once impossible to travel without numerous caravans, proves the great changes which have been effected under the administration of the real Pacha. So I do not hesitate to say that his elevation to the government of Egypt, is, next to the insurrection of Greece, the most important event that for ages has transpired in the East, and it may be pregnant with most important consequences.

M. Lelorrain, having freighted a vessel, departed from Cairo, on the 12th of February, with an intelligent interpreter, and a Janisary of the Guard of the Pacha, to protect his effects and utensils. After a navigation, which was long, since it continued for a whole month, he arrived at last at Dendera, in the middle of the night. The Chief of that town, from whom he implored an asylum, received him with the hospitality of old times; the pathetic tale of which the East alone at present preserves.

Dendera is an Arab town, situated on the eastern bank of the Nile, one hundred and forty leagues from Cairo, and only twenty from Thebes. The ruins of ancient Tentyra, from which it evidently borrows its name, are a mile and a half distant. Tentyra was formerly one of the largest towns in Egypt, and the capital of one of its nomes or provinces. Herodotus, Diodorus, and Strabo, who visited it, all speak of it. The latter even made particular mention of the splendour of its temples. That which is now called the great temple, was dedicated to Isis, according to the authors who have described Egypt; and according to M. De St. Martin at Nephte. It is one of the largest buildings of Thebais, and incontestably the most beautiful, and in the best condition.

This monument, which has for ages, excited the enthusiasm of those who visited it, is built with brown stone, most probably brought from the neighbouring mountains. Its front is 132 feet, some inches, in length. Enormous columns, 21 feet in circumference, adorn its portico; these are twenty-four in number, as well as those of the temple, at Latopolis. The buttresses of the walls, both outside and inside, and also the circumferences of the columns, are covered through their whole height with allegorical and religious representations, sculptured in relief, and with an infinite number of hieroglyphic characters, similarly sculptured, and interded according to all appearances, for the explanations of the representations, about which they are disposed.

The imagination is struck with astonishment at the enormous sums and time, necessary for accomplishing this sumptuous edifice. Its aspect is so imposing, that it seizes upon the dullest and most uncultivated mind. It is said, that the Division of General Desaix, after a long march, in which the soldiers had become a prey to cruel privations, arrived in the evening at Tentyra; and that all who composed it, struck with a sense of admiration at the sight of the great temple, clapped their hands three times successively.

The great Zodiac, or rather its wreck, (for as we have said before, it is excessively damaged) is situated in the ceiling of the portico. It appears even to have suffered much since M. Jollois and Devilliers saw it. Many parts which were represented in the drawing taken by them, are now entirely destroyed. A very few years more will perhaps complete the ruin of this old page of the annals of the universe.

In going out of the portico, and in turning to the right to go round the temple, we proceed on a mass of rubbish, which rising with a rapid ascent, envelop by its side, the columns of the portico to a very considerable height, and the temple properly so called to the lower part of its friezes. An opening, evidently forced across the entablature, gives access to the platform, which covers this vast circuit. Arab cultivators, probably for the purpose of protecting themselves from the oppression of the cavalry of the Mamelukes, or from that of the Bedouins, built a village on the ground, the remains of which still exist.

Having entered on this magnificent terrace, we discover immediately on the right, a little apartment separated into three partitions. Formerly the passage to it was by an inner staircase, the steps of which are not yet destroyed,

but are at present much encumbered. The first partition into which we enter, is uncovered ; its walls are ornamented with sculptures of admirable execution. It is $4\frac{1}{3}$ French measures broad. We cross it to arrive at the other partition; the size of which is the same, and which is enlightened by the doors. The sculptures decorating this second partition are not executed with art inferior to those of the first. On its ceiling was suspended the valuable monument, which M. Lelorrain came to seek with such anxious care, with such considerable trouble, and with such great expence.

Early in the morning at break of day he left his host to proceed to the great temple. Never, as I have observed before did any man, endowed with any degree of sensibility, behold this edifice without astonishment; which appears extraordinary even in a country abounding with other wonders. We may judge after all of the trouble M. Lelorrain experienced; for independently of the ordinary occurrences which might befall him, as well as other travellers: he fancied for a moment, whether our project was not chimerical, and consequently whether the voyage which he had undertaken, and the great expenses already incurred, would not prove destitute of beneficial results.

He arrived at last in the enclosure, where he found the Circular Zodiac; he viewed this famous monument, the object of still unsettled disputes; he carefully observed its position; he considered that by means of the rubbish, by which we ascended to the higher parts of the temple, we could without much trouble conduct to the ground the masses, which we came to separate. It was this rubbish, and the manner, in which it was disposed, which gave to me the first idea of the possibility of the undertaking, to which M. Lelorrain so fortunately consented to associate himself.

After being convinced by his own eyes of the possibility of the performance, he resolved to set about the undertaking immediately. Some English travellers had arrived at Dendera before him, to take drawings; and announced their intention of continuing there. When they had departed and been tired of other concerns, they would probably have spoken of the works of M. Lelorrain, had he been so imprudent as to have undertaken them in their presence. From that time he might have been exposed to disputes, which on the contrary he wished by the mystery of his arrival to avoid.

He removed from the Ruins of Tentyra, with the intention of returning. He entered into Thebais; he successively visited its ancient

D

capital; Esna, the actual capital; Latopolis, Assouan, and the Isle of Philæ, situated on the borders of Egypt and Nubia; and which in the space of three hundred toises, contains the remains of nine temples.

At Assouan, he was presented to Achmet Pacha; for whom, we have seen, he had a letter. He was welcomely received by him; for this Prince has the same benevolence towards Europeans, as Mohamed Ali possesses. It is under the orders of the Kachef of Kena, that the Scheich of Dendera is placed. But as M. Lelorrain was informed, that one of his rivals corresponded with the subalterns of the court of Achmet; in order therefore to prevent their penetrating into his real project, he manifests a desire of having at the same time letters of recommendation for the Kachef of Kena, and for those of Quos and Herment.

They were dispatched to him with a great deal of eagerness, and when he had received them he took leave of the Governor of Upper Egypt; and he did not delay to continue his rout.

He did nothing at Thebes; the preconceived idea, which the difficulties of the undertaking about to be performed at Dendera presented, absorbed his whole thoughts. The Arahs of

Gourna live in sepulchral¹ caves of the Libyc chain of mountains, at distances still unknown, for every day new ones are discovered. In the interior of these caverns we meet with numerous single bodies, and in the wells multitudes in heaps, of a long train of generations, which have ceased to exist for many thousand years. It is there also we find those tombs in granite, and in sycamore; those vases known by the name of canopus; that multitude of amulets in coloured wood, in enamelled earth, in bronze; and all those sumptuous moveables, with which the piety of the Egyptians environed their dead.

The Arabs of Gourna have almost entirely abandoned their agricultural occupations, for the purpose of obtaining leisure to search for the antiquities collected in such abundance in their miserable habitations. They are not however sufficiently wise to dispose of the produce of their searchings to the best advantage to travellers desirous of purchasing. M. Lelorrain obtained from them a certain number of amulets, a few sarcophagus, and two upper parts of mummies in sycamore wood. These two upper parts of mummies are covered with paintings, which equal by the fineness of the stroke, and surpass by the vivacity of their colours, the beautiful coloured plates of

the grand work upon Egypt. The least of them presents a remarkable peculiarity; the person who is represented by it, holds in his hands two symbols, which are often observed in the representations of the Egyptian Divinities;—the cross-handle, and the Nilometer. It is very probable from this circumstance that the person whose body was covered by this monument, belonged to the sacerdotal order.

After M. Lelorrain had made these acquisitions, he departed from Thebes to return to Dendera, where he arrived on the 18th April. From this period the notes of his journal become more interesting, since it was then only that he commenced executing the work, which had determined his voyage to Egypt.

As the agents of his rivals would easily have been able to have extended their influence as far as Dendera, he led them to believe, that his intention was to proceed to the banks of the Red Sea, to make a collection of shells. They were ready enough, when giving this advice to their patrons at Cairo and Alexandria, in adding, that M. Lelorrain had been forced by indisposition to suspend his progress in a town in Thebais, whose name they did not mention.

On the day of his return to Dendera, he repairs to the ruins with his Drogman, twenty

Arabs, and a Scheich, to serve as conductor of the work. In all parts of Egypt the Arabs have ceased to oppose the searching for antiquities. Once they prevented as much as possible these searches, because they were persuaded, that the Europeans had only a curiosity for antique monuments, in consequence of the diamonds, gold and silver, which they would find concealed in them.

It was to discover these pretended treasures that the Arabs mutilated the remains of the most precious arts of Egypt. Even now in spite of the inutility of their persevering endeavours, they are still far from being undeceived in their foolish ideas, and from entertaining a more judicious reason to account for the curiosity of the Europeans. For they think, that these, all of whom they consider as magicians, possess alone the art of extracting from the monuments, the inestimable riches, which they contain. Consequently, they sell to travellers the antiquities which they themselves have obtained ; or for a sum of money they help them to carry others away ; convinced, that they ought henceforth to desist from obtaining their most advantageous parts. M. Lelorrain found at that time no difficulty in persuading the inhabitants of Dendera to help him in the execution of his projects.

On his arrival at the great temple, he saw with satisfaction, that it was left to its accustomed solitude. The English, whom at first he had found there, had fortunately departed! Therefore nothing prevented his immediately commencing his labors. I have already said something about the place, which the Circular Zodiac occupied in this vast building; for the perspicuity of what follows, I must enter into some fresh details on this subject.

The ceiling in which it was inclosed, was composed of three distinct parts; one of its sides was occupied by this Zodiac, the other by an astronomical scene of the same dimensions, and the centre by the figure of Isis or Nephté, placed between two great hieroglyphic inscriptions. From the tenor of the work of the Commission of Egypt, we might have supposed, that the Zodiac had been supported by a single block of wood;—this is erroneous.

The whole of the ceiling was composed of three stones, our monument entirely included one of these stones, and about the fourth part of another, which was in the middle. On one side it touched the wall, and on the other one of the inscriptions which encompass the large figure of the woman. The two other extremities were bordered by strokes in zig-zag, which are seen in many of the Egyptian bas-reliefs;

and which are supposed to represent water. Including these zig-zags, which were two feet in length on each side, the monument was twelve feet long, and about eight broad. Its thickness was three feet; and it would weigh from fifty-five to sixty thousand pounds.

I will borrow from M. Lelorrain his own expressions, in order to communicate the knowledge more exactly of the means which he adopted to effect displacing this almost colossal monument. In a letter which he wrote to me, he has related that operation, the difficulties of which I was far from foreseeing, when I concluded the project with him. These are his words:—

“At first I thought of preserving the borders in zig-zag; but besides their not surrounding the four sides, and their evidently increasing the quantity without any advantage; I conceived that the weight of the great stone would be so enormous, that it would be impossible to manage it. I then confined myself to take away the Planisphere, with the frame in which it was enclosed. This representation naturally obliges me to enter into some details relative to its movements.”

“I was at first very much embarrassed how to make a hole in the ceiling for the purpose

of introducing the saw. We were to encounter stones three feet thick; and I could not dream of doing it with the few chisels I possessed: if they had been employed for that use, they would have been no longer serviceable for clipping it. I then thought of sawing diagonally on the outside; but another difficulty arose;—the saws would not bite without water, and remain cool. To remedy this inconvenience, I made teeth in the saws, and they then bit with difficulty. I had not yet however reached the inside of the chamber: to arrive there I conceived an expedient, which was completely successful; I had with me some good gunpowder to make presents with; I began to undermine a piece, which I had sawed: I did it at first with great precaution, to ascertain the ability of the mine, and the force of the powder. When I was well satisfied on these points, I worked with safety.—After two days of very fatiguing labor, during which time I was even obliged to work in the sun-shine, in a heat of forty degrees, I had the satisfaction to succeed in making a hole, which afterwards I enlarged with a chisel, for the purpose of introducing the saw. In consequence of the precautions I had taken, the explosion of the mine did no damage. I fancied we had gained a great deal; but we discovered, that we were not able to saw above a foot of the stone in a

day: the three sides to be sawed were together twenty feet. By this calculation, it would be necessary for this part of the operation alone, to employ a considerable time: for which I was much pressed. My labors would not for any length of period remain unknown; and if they were divulged before they were completed, all would be lost. I then made two other holes in the zig-zags; in this manner I was able to work three saws at once."

"All was in a fair train; I saw my three saws employed; I had stimulated the Arabs, and they worked with incredible ardor. In order to have an eye on my saws I did not quit the works a single instant; when overpowered by the sun, the insupportable heat of which you cannot imagine, I fell dangerously ill and in such a way, that it was not possible for me to move. I was consumed with a dreadful fever; and all my nerves were contracted about their articulations. This continued eight days, and I had no medicine; I did not judge it fit to obtain that of Farchiout. An Arab cured one with the juice of a plant, the name of which I am ignorant of.

"In the mean time it was of the greatest importance not to interrupt my work. My Drogman was very intelligent; he had constantly assisted me in overlooking my Arabs. By way

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of recompence I engaged him to supply my place. It was then the work became irregular. The drogman by excess of precaution, and in order not to injure the Planisphere, gives to the saws an oblique direction, which has produced an irregularity in the thickness of the stones, and in the cut of the zig-zags. This irregularity has indeed done no injury, and it has produced a proof of the integrity of the Zodiac."

I had no need of helping him, before the commencement of this operation. M. Lelorrain had supported the monument by interior scaffolding. When it was finished, in order to render it more manageable, he reduced it with the chisel a little less than half the thickness of the two stones, upon which the Zodiac was supported. Then by means of six engines, and some cords with which he had provided himself, they were brought successively on the terrace. All these undertakings at the great temple were entirely executed in twenty-two days.

It was next necessary to provide the means of transporting the Zodiac to the Nile; and this task was not less difficult than that which he had lately so ably accomplished. M. Lelorrain had not found a landing place nearer than two leagues distant from Dendera: it was there where his vessel waited. To ar-

rive at it, a person was obliged to traverse the ruins, which covered two hundred toises with their rubbish; and afterwards over a country very irregular, intersected with a great number of little canals.

It was so much the more difficult to transport a burden so unwieldy as this was, across rubbish, forming numerous heaps, with very steep ascents. Nevertheless, at the end of the first day's journey, the dray, which carried the great stone, had reached beyond the ruins. The second day it went half a league; but the beams upon which it rolled, were crushed by its bulk, and were found in the evening in so bad a condition, that it was impossible to use them any longer. The following day they were replaced by small wood, procured in the country; but this wood was only serviceable for a single day.

Afterwards it was only by the application of the engines, and of levers, assisted by a great number of Arabs, whom M. Lelorrain employed, that he could make the dray advance. From day to day its progress became more slow. At last they employed not less than twelve hours to accomplish fifty or sixty paces: the Arabs were oppressed by the intensity of the suffocating heat, and by labors so painful and protracted. Our traveller did not content

himself with directing the work ; although a convalescent, he would often take a part in it himself. It took him sixteen days, and fifty men, to bring this precious conquest to the borders of the Nile. The transportation of the little stone was performed in the same time as that of the great one, but with much less difficulty, although it was not placed on a dray.

Unfortunately, when they arrived at the river, the water was too low. It happened, that the bank was elevated perpendicularly, more than a dozen feet. For the purpose of embarking the monument, M. Lelorrain made a path of about sixty feet in length, which had an inclination of about forty five degrees. When it was finished, the dray was brought to it. Thirty men were employed to keep it with cords, and at the same time fastened to a palm tree, which was near.

To render the descent easy, our traveller put two little soaped planks under six cylinders. But these planks were scarcely placed, when breaking violently from its cable, it started, throwing down the men who held it. After having run with the rapidity of lightning over a very considerable space, it plunged downward to six feet from the Nile, into soft earth, which the waters had recently moistened.

How could one judge of the fright which M. Lelorrain must have experienced at this crisis!

Since his return to Dendera, he had conciliated the affection of the inhabitants by his kind behaviour, and by the manner he allotted to them their business. Hence, the courage of the men whom he employed, was not abated by this accident; although many, who did not wish to let go the prize, had suffered their members to be cruelly bruised. They did not delay applying themselves to work with renewed activity, and in a few hours effected drawing the dray from the place where it had been sunk, and of transporting it to the bank.

A fresh danger attended it: it was scarcely on board, before the water penetrated through the cracks, which had not been observed, and which probably the extreme heat had occasioned.

In less than five minutes, this bark had sunk a foot, and was continuing to sink more. At length a party of the intrepid assistants of M. Lelorrain employed themselves in bailing the water; while others threw themselves into the Nile to stop up the cracks. They succeeded immediately. As soon as that was done, and the bark was afloat, the second stone was deposited.

M. Lelorrain not without some emotion, then thought of separating from the good inhabitants of Dendera ; who had seconded him so well in the execution of his undertaking. For a moment he anticipated where he could enjoy in lower Egypt that repose, which was so necessary after so many fatigues and anxieties. But unforeseen circumstances *procrastinated* that desired period of repose. We have already seen him contending with difficulties, which casualties presented to him: difficulties which he surmounted with perseverance and address. We are now going to see him sustain a dispute still more painful against powerful men, who were become his enemies.

What was his surprise, after having given orders to the Rais, or Master of the vessel, that he wanted to depart ; this man declared to him that it could not be done, because the waters were too low at Dischne to allow the vessel to pass. Uselessly does M. Lelorrain explain to him by better arguments, that his fears were chimerical. This man obstinately persists in his refusal.

Overwhelmed at first by this fresh opposition ; our traveller immediately suspects the true causes. He recollected that Mr. Bradick, agent to the United States, had passed to Dendera, at the moment he was performing his

operation at the great temple ; and consequently it would be known at Cairo. A fact still more significant is, that while they were transporting the Zodiac to the borders of the Nile, he had seen wandering in the neighbourhood a man, whom he had met at Thebes, and who was in the pay of his rivals.

During the next day these suspicions were changed to certainties. His drogman told him, that in a moment of absence the Rais came to him, and declared, that the man, whom they had seen wandering the preceeding days, had promised him a thousand Turkish Dollars, if he would delay for three weeks the departure of the monument. M. Lelorrain comprehended from that circumstance, that it would be of the highest importance for him to gain that time, which they were desirous of making him lose from motives of the most mischievous tendency.

He did not therefore hesitate to engage to give the Rais, if he would depart immediately the sum promised to cause his delay. Touched with this proposition the Rais fell on his knees, swearing that henceforth his fidelity should be secure from all seductions ; and really, from that period his conduct was irreproachable.

After having surmounted these difficulties, our traveller at last was able to depart ; and

he only began to breathe with freedom. Unfortunately, the North wind blowing, was far from favouring his impatience for arriving. Another circumstance, also contributed to retard his progress. As the waters of the Nile continued to be very low, his vessel ran aground almost every day, and frequently many times in one day.

Having arrived within sixty leagues of Cairo, after a navigation, which appeared to him very long, he was hailed by a bark coming down the river. On approaching, he recognized a Frenchman, employed by the Consul General of England. This person signified to him, that he was the bearer of an order from Raya Bey, to prevent the removal of the Planisphere of Tentyra. M. Lelorrain replied, that he had acted in virtue of authority granted to him by the Pacha; and that if they attempted to take his property, which he had legitimately acquired, he would first infringe upon the right of the flag, which he had hoisted on his vessel for his protection. This menace, and the manner in which it was pronounced, apparently imposed on them; after some fresh explanations, the tone of which was not offensive, they allowed him peaceably to continue his voyage, and he arrived at Cairo, during the month of June.

Mr. Salt even dared to implore a monument obtained with such difficulty. Therefore, all my expences, all the pains my associate had taken, all the dangers which he had encountered, would have produced no other result, than that of bringing the Zodiac of Tentyra to the feet of our fortunate and lazy rival, if his pretensions had met with a favorable reception.

The Pacha demanded if the searches of M. Lelorrain had been authorized by him; and upon receiving an affirmative answer, he immediately pronounced in our favor. Some Turks, attached to the person of Mohamed Ali, did not conceive how two stones could be the object of contentions so vivid, in a country where, they said, there were some for all the world.

M. Lelorrain was soon informed of the decision of the Pacha. When it was known to him, he returned to Alexandria, where he embarked the Zodiac on board a ship bound for Marseilles, on the 18th July 1821.

It was on the 9th September 1821, that the Circular Zodiac entered the roads of Marseilles. The vessel on board which it was embarked, brought me a letter also from M. Lelorrain, which was transmitted to me immediately. I had not received one since the month of

March. I then entertained as we have seen above, very great anxiety for his health, and even for his life. So that in learning the success of his operation; I also learnt, what was of much more importance, that he still existed.

END OF PART I.

PART II.

*A Description of the Circular Zodiac of Tentyra.
Translated from the French.*

THE apartment, whence the Circular Zodiac of Tentyra was taken, was appropriated to the celebration of mysteries. Under this roof the initiated were taught, that the Divinities, whom they adored, were only symbolical representations of the celestial bodies; and their feigned history was an allegory of the movements and revolutions of these phenomena.

The Planisphere of Tentyra would so much the more exactly produce this result, as the figures of the constellations represented on it, precisely corresponded to those of the Gods, whose images the piety of the ancient Egyptians has so abundantly multiplied. This fabulous Theogony did, without doubt, cause the Egyptian priest to make this allusion to Plato: "you Greeks, you are bnt infants; you mistake allegories for realities."

Thales, who lived 600 years before the birth of Christ, after his return from Egypt, taught in Greece the spherical form of the earth; the obliquity of the ecliptic; and the true causes of the eclipses of the sun and moon. He even predicted them, by adopting the method which the Egyptian priests had undoubtedly taught him. His disciples afterwards introduced the use of the gnomon, and geographical charts. Pythagoras, one of them, also travelled into Egypt; and was there initiated in the mysteries. When he returned to Europe, his ideas respecting the system of the universe, were more correct, than those since professed by the Greeks from the school of Alexandria.

He was the first who informed his own country, (and afterwards Italy, whither he retired) of the knowledge of the earth's diurnal rotation and annual revolution. He also taught, that comets were not meteors, formed accidentally in the atmosphere, but permanent bodies moving round the sun in immense orbits. He conjectured, that the planets were inhabited, and that the fixed stars were innumerable suns, dispersed through boundless space, and forming as many centres for planetary systems. These correct notions of the system of the world, prove what great progress the science of astronomy had made in Egypt.

Without exposing ourselves to be taxed with temerity, we may believe that Thales, as also Pythagoras, and all the other philosophers, who have drawn their light from the same source, did, during their stay in Egypt, see the Planisphere of the great temple at Tentyra, or at least similar monuments.

This Zodiac, which France at present possesses, does at the same time bring to our recollection some of the most renowned names of antiquity, and the most glorious periods of our recent victories.

It is the only monument of the Egyptians, which possesses a circular form. The diameter of the medallion in which the constellations are sculptured, is four feet nine inches, French measure. It is surrounded by another circle of much larger circumference, containing hieroglyphic characters: this second circle is enclosed in a square, whose sides are seven feet nine inches long. Four female figures, and eight men, with hawks' heads, seem to be supporting the Planisphere with their hands. The females are placed at the four corners; the intermediate spaces are occupied by two men with hawks' heads, in groups. The figures at the corners stand alone; those which form the groups, are on the contrary, sitting. In consequence of this arrangement of the

figures, which we have been describing, the circle containing the hieroglyphic characters, is divided into eight sections,

The Planisphere contains a certain number of figures, which M. De St. Martin, in consequence of the positions in which they are placed, think to be the northern constellations. This thought carries with it a very great degree of improbability for excepting the Great Bear, which is easily recognised, the other forms have no analogy to the figures, with which we at present represent those constellations. Many of these figures are very remarkable for their singularity; and among others, a claw to a cloven foot, and the body of an animal without a head.

The asterisms, constituting the Zodiacal constellations mixed with others, are represented in a spiral. The extremities of this spiral after one revolution, are Leo and Cancer. Leo is no doubt at the head. It appears to be trampling on a serpent, and its tail to be held by a woman. Immediately after the Lion comes the Virgin holding an ear of corn. Further on we perceive two scales of a balance, above which, in a medallion, is the figure of Harpocrates. Then follows the Scorpion, and Sagittarius, to whom the Egyptians gave wings, and two faces. After Sagittarius are success-

ively placed, Capricornus, Aquarius, Pisces, the Ram, the Bull, and the Twins. This Zodiacal procession is, as we have already observed, terminated by Cancer, the Crab.

All these signs are perceived without difficulty, they differ a little from those which are at present represented in our almanacks; and what is still more remarkable, they bear a striking resemblance to those of the Indian Zodiac. A great number of other figures, whose forms are different, make about the Zodiacal constellations, a double circle. Those which form part of the last circle, have their lower extremities upon the border of the Planisphere. A little inscription in sacred characters, and a star, are placed near to each of them, and to some others of the interior circles. It is very likely, that these single stars were intended to show, that the figures at the sides of which they are placed, represent constellations or asterisms, whose names have, according to all appearances, been indicated by the little hieroglyphic characters. Besides, almost all the asterisms of the inferior circle, are accompanied with stars placed below, in different numbers: we suppose with M. De St. Martin, that they represent the brightest stars of the different constellations. All the figures contained in the Planisphere, proceed evident-

ly in the same direction with the Lion, and the Signs which follow him.

The great hieroglyphic Zone, and other legends also made with sacred characters, and which are placed in irregular numbers near the figures, situated at the four corners, are necessarily intended to give an explanation of the monument.

Outside of the Planisphere, between the figures which are supporting it, are seen two emblems, which are not easy to be characterized: they are opposite to each other, and placed at the extremities of a line, passing through Scorpio and Taurus. According to the hypothesis of the Commission of Egypt, they show the signs, where the equinoxes were at the time the Circular Zodiac was sculptured. Also in the space, which separates the Planisphere from the great hieroglyphic Zone, we observe two short inscriptions, in sacred characters, opposite to each other. They are situated in a diameter, which passes through the Lion and Aquarius; which were then by the same hypothesis, the signs of the solstices. These inscriptions, and these two emblems, of which we have just spoken, are the only things sculptured between the great figures of support; and this circumstance contributes to render them more remarkable, and more significant.

In spite of the efforts we have been making to render the description of the Circular Zodiac clear, it is impossible that it can be perfectly comprehended, if we have not under our eyes a faithful representation of the monument, or, what is still better, the monument itself.

We have already several times spoken of its high state of preservation. No circumstance of the Planisphere has disappeared, with the exception of a small number of hieroglyphic characters, which have been destroyed with violence, but which the hand of time seems to have touched but gently.

This is not the case with the supporting figures. Those which have hawks' heads, have all been mutilated in the same place. The bosoms of three of the females, placed at the corners, have been attempted to be destroyed. These damages have most certainly been done intentionally; and it is probable that a sentiment of mistaken modesty prompted the hands of those who mutilated them.

In other respects, even these damages carry with them a certain degree of interest. They are, without doubt, the traces of one of those great revolutions which Egypt has successively experienced. We can equally attribute them

to the fanaticism of the Persians, to that of the conquered Arabs, or, what is still more probable, to the religious zeal of the hermits, who lived in the deserts of Thebais, at the period of the primitive church.

This small number of fractures, with some others still less considerable, does not diminish the impression which this memorable monument produces. Its general appearance is very imposing; and the admirable distribution of its parts, equally merit consideration. The large hieroglyphic belt encompassing the Plannisphere, produces a very happy effect. It was also an ingenious idea to represent the figures at the four corners standing, while the intermediate ones were sitting.

It must, however, be acknowledged, that the human figures sculptured on the Circular Zodiac, possess all the roughness of outline and stiffness of standing, which are observed on all the productions of the Egyptian statuary. But, by contrasting it with other monuments of the same original, these animals are, on the contrary, full of life, motion, and symmetry. We admire, above all, a furious bull rushing forward in an open space; and a lion, without the Zodiac, which turns his head fiercely. The vivacity of the action of these animals, and of many others which are there represented, give

to this table, which is purely symbolical, an interest and emotion which we did not expect to feel, and which seems properly to belong only to historical compositions.

The two stones on which the Zodiac is fixed, are of the same nature, but of different qualities. The grain of the least is both finer and closer, the consequence of which is, that the sculptures which are upon it, possess some superiority over those of the great one. The flambeaux of the people initiated, and of travellers, as well as some other causes, have communicated to these stones, shades which they do not naturally possess.

It has often been repeated, that they resemble an antique bronze ; perhaps we could, with greater exactness, compare them to a fire hearth ; for they have, at the same time, shades of soot and cinders. The variety of these different tints also give, in some respects, to our monument, the appearance of a great furnace.

We know that Dupuis, Volney, and many other learned men, have been induced, from the Egyptian Zodiacs, and more particularly from those of Tentyra, to assert, that the universe has existed from all eternity, or, at least, to go back to a very distant period for its creation. M. Fourier, of the Academy of Sci-

ences, who has made these Zodiacs objects of his profound study, in thoroughly considering their remote antiquity, has given explanations of them quite irreconcilable with the tradition of the Hebrews.

According to him the invention of the Egyptian sphere existed 2500 years before our era. The people who made it were not long in observing its successive changes. His observations on the precession of the equinoxes were verified by the astronomical monuments of Latopolis, and by those of Tentyra. The kind of procession which the signs of the Zodiac form, begins in some with the Virgin, in others with the Lion. It is these differences which determine the date. It follows from this hypothesis, that the Zodiacs of Latopolis form the first page known of the history of the heavens, and that those of Tentyra form the second.

We, however, take great care in touching on these high questions in astronomy. They will be very well treated by M. Fourier himself, in a series of memoirs which will successively appear, and some of which are at this moment in the royal press. These memoirs will, without doubt, be compiled with the talent which we have a right to expect from the author of the introduction of the great work upon Egypt; an introduction not less re-

markable for its loftiness of style than for its depth of penetration. We shall content ourselves with adding, that in adopting these explanations, which M. Fourier has given of the Egyptian Zodiacs, M. de la Place has established a prepossession which is necessarily very favourable to them.

END OF PART II.

PART III.

Explanation of the Causes of the Precession of the Equinoxes.

THE points where the Ecliptic intersects the Equinoctial, are called the *Equinoctial Points*, or *Equinoxes*; because when the sun is in them, the days and nights are equal. As the sun is in one of them in the spring; it is called the *Vernal Equinox*; and in the other in autumn, it is called the *Autumnal Equinox*.

The beginnings of Cancer and Capricornus are called the *Solstitial Points*, or *Solstices*; because when the sun is in them, he seems *stationary*, neither encreasing, nor diminishing his declination for some days. The first is the summer, the other the winter solstice.

The Meridians, which pass through the Equinoctial Points, are called the *Equinoctial Colures*; and those which pass through the Solstitial Points, are called the *Solstitial Colures*.

The Zodiac surrounds the Sphere, like a broad belt, whose middle is the Ecliptic, and whose edges reach five degrees on each side of the Ecliptic. Within this belt is contained twelve constellations of stars, known by the name of the Twelve Signs, represented chiefly by the figures of animals, and on that account called the *Zodiac*, from a Greek word, similar to it, signifying an animal. The names of the twelve signs with which this belt is adorned are these: Aries, the Ram; Taurus, the Bull; Gemini, the Twins; Cancer, the Crab; Leo, the Lion; Virgo, the Virgin; Libra, the Scales; Scorpio, the Scorpion; Sagittarius, the Archer; Capricornus, the Horned Goat; Aquarius, the Waterer; and Pisces, the Fishes.

There are two kinds of *Zodiacs*, one *astral*, which belongs to the heavens, and contains the twelve preceding constellations of stars represented in their proper signs; the other *local*, divided into twelve equal parts of 30 degrees each, retaining the same names, and commencing at the first point of Aries, as fixed at the vernal equinox. The *astral* zodiac is the real representation of the heavens; whereas the *local* one is only adapted to shew the longitude of a star, or the star's distance from the equinoctial point eastward, measured on the ecliptic. This double zodiac should be

carefully considered, as it has misled many. When the sun is seen on the vernal equinox, if a star at the same instant be precisely in the same position, the following year, when the sun has arrived at the same equinoctial point, the star will be observed to be 50 seconds of a degree more towards the East ; so likewise every succeeding year the star will be found, at the time of the sun's arrival at the vernal equinox, to have advanced 50 seconds of a degree more towards the East. In this manner the longitude of every star in the heavens has a yearly increase of something more than 50 seconds of a degree. This motion of the fixed stars towards the East, is called the *precession* of the *equinoxes* ; and causes the astral Zodiac to move forward, and quite over the local Zodiac in the space of 25,628 years. The explanation of the causes which produce this motion of the fixed stars towards the East, and which is called the precession of the equinoxes, is to be the subject of the present enquiry ; and to render this as clear as possible, it will be necessary to take into consideration the figure of the earth, its diurnal rotation, its annual revolution, and the effect which the sun, moon, and planets' attractions consequently produce.

The figure of the earth is most certainly round, for, during the eclipse of the moon, we

see its shadow formed by the sun's rays cast upon the moon's disk ; and this shadow, notwithstanding it has been projected from many different positions of the earth, has universally exhibited a circular appearance. We may, therefore say, that we know the earth is round, for we see its image reflected in the mirror of the moon. But whether, or not, it be precisely spherical, will be exemplified in the following demonstrations of the earth's rotation.

It is said, that as Sir Isaac Newton was sitting under an apple tree, an apple fell on his head : "how could this happen?" he exclaimed; "how could this apple fall here?" "why not remain where it was?" "there must be some cause for it."—This cause, whatever it be, he never attempted to explain. It was beyond the reach of human reason. But he simply gave it the name of attraction; a word, compounded of two Latin words, *ad*, towards, and *traho*, to draw; because it was a cause which drew things towards the earth. This force of attraction when exerted on falling bodies, is continually encreasing their velocity, and on this account it is called an accelerating force. It constitutes the weight of all bodies; whence it is frequently termed the force of gravity. By experiments made with the air-pump, we have discovered, that if a guinea and a feather

be let fall together at the same instant in a place where the air has been exhausted, they will reach the bottom precisely together. Hence, when the resistance of the atmosphere does not interfere, all bodies near the earth are found to fall through the same distance in height at the same time.

It is discovered that this force of gravity is not alone peculiar to the earth, but also exists in the sun, moon, and planets, which mutually attract each other.

Suppose on the brow of a lofty mountain, situated in the centre of an extensive plain, we place a cannon which we can fire *point blank*, as the phrase is, so that the ball may proceed horizontally out of the cannon's mouth; and suppose we call this force, which causes it to move in a horizontal direction, the projectile force. If the ball be influenced by this projectile force only, without being resisted by the atmosphere, or acted upon by gravity, or any other power whatever, there will exist no cause for its being retarded in its course, or for its being drawn from the horizontal direction in which it was at first projected; and therefore it will continue moving in that direction parallel to the plain below. Since, however, this is a circumstance, which never occurs, (for cannon balls, as well as all other bodies, whe-

ther separated, like the apple, from a place of rest, or possessed with motion, like a shot, always fall to the ground), hence it is clear that they must have the same cause for thus falling, and must be all alike influenced by the power of attraction. Now because the projectile force is horizontal, and the force of gravity vertical, they must be at right angles to each other; so that the force of gravity will neither accelerate nor retard the shot's horizontal velocity; nor will the projectile force encrease or diminish the time of the ball's fall. Hence, in the time that the ball would employ to descend from the mouth of the cannon to the spot immediately below, when it is acted on by these two forces together, it will be found to pitch just so far distant on the plain, as the projectile force alone would carry it in the same time, having described, in its course, a curved line, called a parabola. Let us now imagine this plain, in the centre of which stands the mountain, whence we fire the cannon, to extend itself evenly, as a plane without thickness, to an immense distance, so as to form a kind of tangent plane to the earth's surface, which it will soon cease to touch; and let us also suppose, that by the means of encreasing the charge of gunpowder, we have the power of communicating to the ball any degree of velocity we choose.

The reader may, if he pleases, cast his eye on figure 1st, to assist his imagination in what follows. From what has been said, it is clear, that whatever be the velocity with which the ball be projected out of the cannon, it will always reach this plane below, which is now supposed to be infinitely extended, in the same time that the ball would be falling from the cannon to the spot immediately below. Now when the velocity is very great, it will reach the tangent plane before it arrives at the earth; it will, therefore, have some distance farther to fall; this circumstance will encrease the time of its descent. The more we encrease the projectile force, the further will the ball be on the tangent plane, when it arrives there, which it always performs in the same time; but the greater will be the space remaining for the ball to descend after it has passed the tangent plane, and consequently the longer will the ball be in arriving at the earth's surface. Since the greater the velocity is, which is communicated to the ball, the further it will proceed; and the more time it will employ in arriving at the earth; so if a sufficiently just velocity were given to the ball, it would not reach the earth at all, but, like a little moon, would revolve round it till it struck the cannon, whence it was fired. Although the ball may not have approached nearer to the centre of the earth than

where it was when it was first fired, yet it may be said that it has fallen through the earth's diameter to the cannon's antipode; and (if the expression may be used) had fallen back again during the time of its performing this revolution.

Although the foregoing illustration of the effects produced by the union of the projectile and gravitating forces has been necessarily extended beyond the limits anticipated, yet another example, (the representation of which is in figure 2), derived from the motion of a ship, is also added, because it more immediately leads to the point at which the author is anxious to arrive.

When a ship is under weigh, and proceeding rapidly in smooth water, every thing and person on board possess the same projectile force with the ship, and are carried along with it without perceiving its motion. If from the mast head a leaden ball be let fall at the side of the mast, it will continue falling perpendicularly till it strikes the bottom of the vessel, close to the step of the mast, just the same as it would do if the ship were at anchor, although, during the time of the fall, the ship must have advanced several feet. If the ship be sailing on a plain surface, the time of the ball's fall

will not be altered by the ship's velocity, however rapid ; but if it be proceeding at a very considerable rate on a round surface, so as to have made a little descent from the tangent plane of the earth during the time of the fall, the ball will then take some longer time to accomplish this greater distance. The faster the ship has proceeded, the greater distance she will have descended from the tangent plane, and consequently, the longer time will be employed by the ball to accomplish its fall. Although the ball, in respect to the ship, descends perpendicularly, yet in space, it positively describes a parabola, just the same as if it were fired from a cannon : and speaking mathematically, the step of the mast describes by its uniform horizontal velocity, the fluxion of the ordinate, while the accelerated perpendicular velocity of the ball, is describing the fluxion of the abscissa of the curve.

We see the sun, moon, and all the stars move round us every day, rising in the East, and setting in the West. How certain is it, that they must either move from East to West, as they seem to do, or else the earth must move from West to East, to produce this appearance. The latter is most certainly the case ; for let us consider the results, which this rotation of the earth would inevitably produce. Excepting the poles,

which are at the extremities of the axis, about which the earth turns, every point will describe during twenty four hours, circles parallel to each other, encreasing in size, as they are farther distant from the poles, and nearer to the equator, the greatest circle being that of the equator itself. The consequence of this will be, that every thing on the earth must possess a projectile force, similar to what has been represented in a ship. This projectile force is nothing at the poles; but in receding from the poles as the parallel circles encrease, so must the projectile force, which is always proportional to these circles, encrease also, and become greatest of all at the equator. But it has been shown by the examples of a shot fired from a cannon, and of a leaden ball falling from the mast head of a ship, that the greater the projectile force is, the longer will a body be in descending to the earth. Hence, at the poles, where there is no projectile force, bodies fall quicker than any where else; and as we recede from the poles, and approach the equator, they fall gradually slower; because, the projectile force gradually encreases: and at the equator they fall slowest of all, because there the projectile force is greatest of all. That this is really the case, we know from experiments; for many gentlemen, who have been sent to make astronomical observations in

distant countries have observed the pendulums of their clocks to vibrate slower nearer the equator than in our country. Now the time of the vibration of a pendulum bears a certain proportion to the time of a body's fall through the length of a pendulum ; consequently where the pendulum vibrates slower, the descent of bodies must be slower. To preserve the time of the vibration of the pendulum uniform, as we approach the equator we are under the necessity of reducing its length ; for a shorter distance is fallen through in the same time by a body near the equator, than is done by one more remote ; for the slower a body falls, the less will be the space it will describe. This plainly shows, that the projectile force exists on the earth, being properly communicated from the poles to the equator ; and proves that the earth must turn on its axis to produce this effect.

Having proved the rotation of the earth, let us consider its consequences. As bodies near the equator fall slower than they do at the poles, so their weight must be less and their pressure diminished. The fluid part of the earth, which is susceptible of every impression, will yield to the stronger pressure at the poles, and proceed to the weaker pressure at the equator, till an equilibrium be produced.

This will cause the parts of the earth near the poles to be flattened, while those parts near the equator become more protuberant. Hence the earth will no longer be a perfect sphere, but will assume the form that is generally called a spheroid. Different parts of the earth have occasionally been measured ; and although the precise proportion between the polar and equatorial diameters has not been exactly determined, yet all the measurements have contributed to shew, that the earth possesses this spheroidal figure.

If the earth performs an annual revolution, by the theory of motion, each of the fixed stars would describe an elipsis in a contrary direction ; but by the nicest and most accurate observations, made by the best instruments, these motions are insensible. Astronomers did, however, detect annual variations in the stars, which were exactly apposite to what they expected to discover. This apparent contradiction deterred them from making fresh observations, till Dr. Bradley at last found out the true physical cause for this apparent motion, which is called the *aberration of the stars*. From observations made on the eclipses of Jupiter's satellites, when the earth was near that planet, and again when it was far distant ; it was discovered that when the earth was one diameter of

its orbit more remote from Jupiter than at first, the eclipse did not take place by 16 minutes so soon, as it did before; and consequently, that this circumstance must be owing to the motion of light: so by dividing this time, 16 minutes by 2, it was ascertained, that light was eight minutes passing from the sun to the earth, a distance equal to the semidiameter of its orbit. By comparing this velocity of light with the velocity of the earth's motion in its orbit, it was proved, that the light of each star did not appear in its proper direction; but following the earth in its course, described an elipsis from West to East, whose greatest diameter was about 40 seconds of a degree. This gave a clear insight into the cause of the aberration of the stars; while at the same time it demonstrated to a certainty, the annual revolution of the earth.

It now remains for us to show the effect, which the sun, moon, and planets' attractions produce on this spheriodical figure of the earth, for it is this effect which exhibits the cause of the precession of the equinoxes. It is not difficult to imagine, if the parts near the equator be more protuberant than the rest of the earth, that there will be a greater quantity of matter about it; and that consequently it will be more attracted than any other part of the earth, by any extraneous body. The sun,

therefore, when rising in the ecliptic above the plane of the equator, will, in consequence of the excess of matter contiguous to the equator, endeavour to draw those parts more than any other towards it. This will occasion a small motion of the equator towards the sun ; so that, the sun will meet it earlier than it otherwise would do, if the earth were spherical : and because the sun has not had sufficient time to perform its whole course before it arrives at the equator, the point of intersection of the equator and ecliptic, that is, the equinoctial point, will be more westerly, or have gone backwards according to the order of the signs. When the sun descends below the equatorial plane, the same effect will be repeated : so that, when the sun again reaches the equator, the equinoctial point will be still more westerly than before. This effect will be successively repeated in every following year, and cause the equinoctial points to be continually moving backwards. If therefore these points be regarded as fixed, it will produce an apparent motion of the fixed stars forward, or to the eastward ; and this is what is termed the precession of the equinoxes. Just in the same manner the moon and the planets, when they rise above, or fall below the plane of the equator, will endeavour to draw the equatorial regions nearer to them ; and will also cause a

motion of the equinoctial points to the westward, similar to what the sun produces. But because the moon is much nearer to the earth than the sun is, the moon's power to cause the same, is nearly $4\frac{1}{2}$ times greater than the sun's; while that of the planets' is considerably less. During the space of a year their united influence occasions the equinoctial points to recede towards the west $50''.57$ seconds of a degree: consequently, if we regard the equinoctial points as fixed, the stars will appear to have advanced $50''.57$ in their longitude.

But to put these causes of the precession of the equinoxes in a still stronger point of view, since we have already treated largely on the combination of the projectile and gravitating forces; it will not be amiss to indulge our imaginations in this beautiful theory, and to render them subservient to our present purposes. Suppose the whole earth to be fluid, consisting of water, When there is no rotation, and consequently no projectile force, then will the uninterrupted power of attraction, model the water into a perfect sphere. Give a small rotation to this fluid globe, then will the force of gravity at the poles, by exerting all its influence in these regions, become proportionally greater than at the equator, where the projectile force endeavours to remove the bodies from the

earth's centre, and diminish the gravitating power, the water about the poles will necessarily fall ; while that which is contiguous to the equator, will inevitably swell, in order to produce the requisite equilibrium ; and the spherical figure of the earth will consequently be converted into a spheroid.

Encrease greatly the earth's rotation, then will the polar diameter be considerably diminished, and the equitorial diameter will be exceedingly encreased : for the greater the celerity of rotation is, the less will be the polar, and the greater will be the equitorial diameter.

Now let the velocity of the exterior surface of the equator become equal to the velocity with which a ball, or moon, at the same distance from the earth's centre, would perform a revolution without approaching to the earth ; then will the water adjacent to the equator, by having all its propensity towards the centre counteracted in the same manner as the ball or moon by the projectile force, loose all its gravity : and there will exist no power to prevent the water at the poles descending, till their superficies approach infinitely near, and the whole globe of water will be changed into an immensely extensive circular plane.

Augment the rapidity of the rotation still more, then will the fluid leave the centre, and this extensive circular plane will assume the shape of a still more extensive ring. The swifter the velocity of rotation is, the greater will be the magnitude of this ring's diameter, but the more will its breadth be diminished. Who knows, but the ring of Saturn is formed by this excessive rotation?

In figure 3, let N E N Q, represent a steel ring capable of being moved with the greatest ease in all directions about the centre C, where alone it is supported; and let it be so poized, as to be inclined to the horizontal plane H N R N, which it intersects in the points N N. Move the magnet L with a gentle motion round the horizontal plane from West to East, and it will soon be perceived, that the power of the magnet will cause the steel ring to incline downward, communicating to it at the same time a small motion from East to West, meeting in its course; so that the ring will assume a fresh position N E N Q, cutting the horizontal plane in the points N N, more to the Westward than before. Now suppose this ring N E N Q, to represent the fluid ring of water, which we just now imagined to be formed by excessive rotation; and let the moon be conceived to move in the plane H N R N,

in a circle round the centre of this ring : in the same manner as the magnet did before incline the steel ring towards itself, and produce a motion of the points of intersection $N N$, towards the west ; just so will the moon incline the fluid ring towards itself, and occasion a motion of the point $N N$, towards the west.

It is manifest, that the same effect would be produced, whether the attracting power moved in a circle round the ring, or the ring moved in a circle round the attracting power.

Let us now refer the ring of water $E N Q O$, together with the plane $H N R N$, as represented in figure 3, to move in an orbit round the sun S , as shown in figure 4, the plane $H N R N$ being identified with the plane of the orbit. Suppose the first situation of the ring to be at A , where the interior edge of the ring is directly turned towards the sun. If this ring were not influenced by any attraction, but were to move parallel to itself round the sun from West to East, it is evident that when it had performed one quarter of its orbit, and had arrived at B , that the summit Q of the ring would then be opposite to the sun : when it had performed another quarter at C , the edge, before exterior, would now be interior, and directly opposite to the sun ; when it had

accomplished its third quarter at *D*, the lowest point *E* of the ring would then face the sun; and finally, when it had completed its last quarter, and arrived at *A*, whence it started, then would the original edge be again exactly opposite to the sun. But since we have seen that the ring is influenced by attractions, which tend to draw the ring round to meet the sun, it is manifest that the summit *Q* of the ring would then be opposite to the sun earlier than it otherwise would be; and therefore, this event will happen at some point *B* before it arrives at the first quarter point *B* of its orbit. For the same reason, the exterior edge of the ring will become interior, and opposed to the sun at some point *C*, anterior to *C*. So likewise will the inferior point *E* of the ring face the sun before it arrives at *D*, the third quarter of the orbit; and finally the ring will turn its original edge again towards the sun at some point *G*, before it reaches its original situation *A*, whence it departed.

Next imagine this excessive rotation to cease—the water will again return to a circular plane, and afterwards assume the figure of a spheroid, exactly similar to our earth, provided it has the same degree of rotation. Although the figure has been considerably changed, and the power of the sun, moon, and

planets' attractions to move the same, has, in consequence been very much diminished; yet the protuberant parts about the equator may still be considered not to have entirely lost the shape of a ring, but may be regarded in that point of view as surrounding a sphere, and will, therefore, be subject to produce the same effect only in a less degree. Consequently during the autumnal equinox, if the earth, possessing the figure of a spheroid, be situated at A, directly opposite to a star, having the edge of the equator facing the sun, were to move from West to East, describing an orbit round the sun in the same manner as we have seen the ring revolve, it would, from the effects produced by the sun, moon, and planets' attractions, be subjected to changes similar to those with which the ring was influenced, only in a less degree: consequently, before the earth had entirely completed its revolution, and had reached its original situation A, the same edge of the equator which was at first opposite to the sun at A would be turned towards the sun again at some point *a* to the westward of A, so that the star would then be seen to the eastward.

Now when the edge of the equator is turned towards the sun; it will be situated in the equatorial plane; and the points A, C, where the earth is at those periods seen in its orbit, are

the equinoctial points, A being the autumnal and C the vernal.

From what has been said, it is clear that these points are perpetually moving towards the west; therefore if we regard them as fixed points, whence we measure the distance eastward, or longitude of the stars, it is manifest that this eastern distance, or longitude of the stars, must every year be encreased; and this circumstance is what is implied by the precession of the equinoxes, the causes of which we have just now investigated

Hipparchus is the first person we read of, who had any idea of this precession of the equinoxes. Ptolemy compared his observations with those of Hipparchus, and concluded that the stars advanced a degree in a hundred years. Ulugh Beigh made it 51." 43. in a year; Tycho, 51"; Copernicus, 49." 8.; Bulliardus, 50." 94.; and Sir Isaac Newton demonstrates from the sun and moon's attractions only, that it ought to be something more than 50", or a degree in 72 years, and this is generally followed. But that renowned astronomer Abbe Piazzzi, of Palermo, who has honoured the author with his publication on the places of the stars, who has estimated the position of about 8000 stars, and who, by possessing one of the best instruments in the world, and by living in a much later pe-

riod than Sir I. Newton did in respect to the progress of science, was consequently possessed of much better means for obtaining a more accurate knowledge of the precession of the equinoxes, estimates the mean effect of the sun and moon's attractions to produce an advance of the stars' positions yearly to be $50'' 388$, and that of the planets $0' 1814$, making in all $50'' 5694$, which the author calls $50'' 57$, and uses in the sequel.

• END OF PART III.

PART IV.

The Philosophical Results which the Circular Zodiac demonstrates.

WHEN the author commenced this inquiry into the philosophical results which the Circular Zodiac demonstrates, he was not aware that it would tend to corroborate the truth and accuracy of any part of the Mosaic History, in the very strong and irresistible manner he afterwards discovered. He did not anticipate its close connexion with the Bible, and he was therefore induced more strongly to engage in this inquiry from philosophical, than from religious motives. Hence it was not till after several fruitless attempts to obtain satisfactory information from Heathen authors, that he was induced in many instances, to abandon their accounts, and receive his elucidations from the light of the Holy Scriptures, in order to gain the results he so anxiously desired. Indeed, when it is considered, that the date of the Zodiac of Tentyra is about 100 years after the

flood, it is no wonder if the Heathen authors are found to be too modern for this purpose.

This inquiry begins with the names and figures of the Zodiacal constellations, and produces evidence showing very satisfactorily, that they were originally given at Babylon, and not in Egypt. It is generally admitted, that these names and figures were at first designed to represent emblematically the seasons of the year, and in some instances it will be seen, that this is really the case. The significations applied to the Virgin, Sagittarius, Capricornus, and Cancer, are highly important, and ought to be particularly attended to: but those which are attached to the other signs, are for the most part such as have been usually appropriated to them, and because they are unimportant in the result, they are not insisted on by the author.

We see in the Planisphere the Zodiacal signs following each other in a kind of procession, led on by the Lion and terminated by the Crab: let us therefore examine their names and figures, as they appear in succession.

LEO, the Lion. It will be shown hereafter, that the Star Regulus, in the heart of the Lion, was either on the solstitial colure, or very near to it, at the time the Zodiac of Tentyra was

invented; and that consequently this sign corresponded to the period between the middle of June and that of July. It may be imagined in the figure of this sign, that the raging fury of the Lion trampling on the serpent, is compared to the fiery rays of the sun at this season of the year, overcoming the stubbornness of the ground, and causing it to yield its produce to the tenderest of the creation, the female and the bird, who are seen standing behind.

VIRGO, the Virgin. The period of the year, to which she corresponds, falls between the middle of July and that of August. She holds in her hand an ear of corn: a most appropriate emblem for the time of harvest. Some of the ancient Zodiacs even represented her in the character of a female reaper, with a sickle in her hand. From these circumstances, we may with reason conclude, that she was placed in the Zodiac to represent symbolically the time of harvest.

To ascertain how this is adapted to the climate of Egypt, let us consult Rollin's Ancient History. He says, "Herodotus, Diodorus, Siculus, and several other authors declare, that the Nile begins to swell in Egypt at the summer solstice, that is about the end of June, and continues to rise till the end of September, then decreases gradually during the months of

October and November; after which it returns to its channel, and resumes its wonted course. As it seldom rains there, this river, which waters the whole country by its regular inundations, supplies that defect, by bringing as a yearly tribute, the rains of other countries. The name of Cataract is given to some parts of the Nile, where the water falls down the steep rocks. The river, which at first glided smoothly along the vast deserts of Ethiopia, before it enters Egypt, passes by the Cataracts, then growing on a sudden, contrary to nature, raging and violent in those places where it is pent up and restrained; after having at last broken through all obstacles in its way, it precipitates itself from the top of some rocks to the bottom, with so loud a noise, that it is heard three leagues distant." In consequence of this inundation of the Nile, the Egyptians sow in October or November, according as the waters draw off; and their harvest is in March and April. The situation therefore of the Virgin in the Zodiac of Tentyra, which is adapted to the period between the middle of July and that of August, cannot possibly correspond to the harvest of Egypt, which happened in March and April. And yet her situation is precisely adapted to the time of harvest for all other countries lying towards the southern regions of the northern temperate zone.

This singular exception in respect to Egypt alone, is remarkably striking; for while it does not produce sufficient power to invalidate the conclusion, that the Virgin with the ear of corn in her hand, indicates harvest, since her position is suitable to represent the harvest time of all other countries, and since the enlightened of every age have admitted, that she is emblematical of harvest, it at the same time clearly proves that she cannot be indicative of the harvest of Egypt.

Hence we may reasonably conclude, that the names of the Zodiacal signs were not originally given in Egypt. For then the Egyptians would have caused the Virgin with the ear of corn in her hand, to have been symbolical of the harvest of Egypt, and would have placed her in March or April.

LIBRA, the Scales. It is generally stated, that this sign represents the equality of day and night, but as it corresponds to the period between the middle of August and that of September, it can scarcely be regarded as situated on the equinoctial, at the time this name was given to it; and therefore, this thought appears to be erroneous. It is more probable, that it was symbolical of the weighing out, and distribution of the corn after harvest.

SCORPIO, the Scorpion. This sign falls between the middle of September and that of October. The emblem outside of the Planisphere, which denotes the autumnal equinox, points to the shoulder of its fore-leg. The wound which the sting of the Scorpion occasions, is supposed to be emblematical of diseases, which the immoderate use of fruit at this season of the year produces; and St. John in the Revelation uses the term to represent spiritual disease.

SAGITTARIUS, the Archer. This sign falls between the middle of October and that of November. It is so highly symbolical, that it requires very particular attention. We have already seen in the instance of the Virgin, a very convincing proof, that the names of the signs were not given in Egypt: but if not in Egypt, where else could they be given except at Babylon? Where did there exist another place sufficiently noted for astronomy, and so near to Egypt, whence the Egyptians could have borrowed this Zodiac? For if they were not the people who assigned to the constellations of the Zodiac their respective names, it must have been the work of some other nation; and every degree of probability, as well as strong corroborating evidence drawn from Holy Writ, tend to show, that this other nation was Babylon.

Bishop Newton properly observes, that "God was pleased to condescend and conform to the customs and manners of the age, to make thereby a stronger impression on the minds of the people. Nor is such a condescension unworthy of the Deity, nor unsuitable to the other methods of his providence, but is rather an argument of his infinite goodness." In the visions therefore which appeared unto Daniel, the Almighty chose to employ the symbolical imagery peculiar to Babylon, where Daniel was then residing. After the Babylonish captivity, it may be presumed, that the Jews were acquainted with the emblematical figures of the Babylonians, and that this is the reason, that St. John in the Revelation uses symbols so strikingly similar to those of Daniel; and even in Rev. xvii. 5; says, when speaking of the woman arrayed in purple and scarlet, "*Upon her head was a name written, MYSTERY, BABYLON THE GREAT.*" Hence we may esteem the visions of Daniel, and the Revelation of St. John, as the most accurate accounts we at present possess of the significations of the Babylonish symbolical imagery; and may consequently use those holy books for the explication of this and following emblematical figures.

The period to which Sagittarius belongs,

reaches from the middle of October to that of November, corresponding to the time of the year when hunting commences; and its figure has generally been regarded as a hunter. But its component parts are so highly symbolical, that they manifestly do not represent a hunter in an ordinary point of view, but symbolize a mighty royal hunter, and a mighty conqueror,

We shall see hereafter, that the date of this Zodiac is 2261 years before Christ, and we have already seen a strong reason for the names being communicated to the Zodiac at Babylon. Now this time and place exactly agree with the time that Nimrod was alive, and the place over which he reigned. The Bible speaks of Nimrod, thus: Gen. x, 8, 9, 10, "*And Cush begat Nimrod: he began to be a mighty one on the earth. He was a mighty hunter; wherefore, it is said, even as Nimrod the mighty hunter before the Lord.*" Thus we see, that Nimrod was both a mighty man, which expression seems to imply a great conqueror; and a mighty hunter so renowned, that to speak of him as such became a proverb. In compliment, therefore, to their founder, we may presume, the Babylonians chose to put him in one of their Zodiacal constellations, galloping on his horse full speed, with a crown on his head, bow and arrow in his hands, and



wings on his back, to represent the rapidity of his flight, having made him to be emblematical of hunting, and placed him at that season of the year best suited for the chase.

This figure of Sagittarius, so highly symbolical, indicates his exceedingly great importance. He appears to have a crown on his head, and two faces, one looking earnestly forward, apparently female, the other looking behind, having a hawk's head similar to the men's faces who, in the middle of the sides of the square, support the circumference of the Planisphere—representing, by all probability, the faces of slaves. He has a bow and arrow in his hand, and his body is united to the neck of the horse, which is galloping full speed, with wings on his back. He has also two tails, one exultingly elevated, and the other hanging submissively down.

This is extremely figurative both of hunting and victory, whether in pursuit of the chase or of the enemy. In Rev. vi. 2, we read—“*And I saw and beheld a white horse, and he that sat on him had a bow, and a crown was given unto him, and he went forth conquering and to conquer.*” The bow, the horse, and the crown are proper emblems of victory, triumph, and royalty. In Daniel vii. in the vision of the four kingdoms, the first is repre-

sented by a beast which is like a lion, and had eagle's wings to shew the swiftness and rapidity of the conquests of Babylon. The third kingdom is also represented by another beast, like a leopard, which had on its back the four wings of a fowl, and represented how amazingly swift and rapid Alexander and the Macedonians were in their conquests. So likewise, in the figure of Sagittarius, the wings represent the swiftness and rapidity with which Nimrod pursued the chase and the enemy.

In respect to the two faces, we may suppose, that the female face looking forward, is emblematical of Babylon; while the other looking behind, like that of a slave, represents Nineveh. For Babylon in Isaiah xlvii, is called a Lady: 1, "*Come down and sit in the dust, O virgin, daughter of Babylon, sit on the ground.*" 5, "*For thou shalt no longer be called the lady of kingdoms.*" 7, "*And thou saidst, I shall be a Lady for ever*" We have also seen above, that St. John in the Revelation, unites the term Babylon to the woman clothed in purple and scarlet. It is manifest from Isaiah, that she called herself a Lady: and this symbol is not uncommon with nations, for even we represent Great Britain by the figure of a female, as may be seen on every penny. The female face might therefore symbolize Babylon.

Bishop Newton speaking of Nineveh, says :
 "This very ancient city was, as some say, built by Nimrod for those words of Moses. Gen. x. 11. '*Out of that land went forth Asshur, and builded Nineveh ;*' others translate as the Chaldee paraphrast translates them, and as they are rendered in the margin of our Bibles, '*Out of that land he, that is Nimrod, the person spoken of before, went forth into Assyria, and builded Nineveh.*' It is well known that the name Asshur, is the name of the country as well as the name of the man ; and the preposition is often omitted, so that the words may very well be translated, '*he went forth into Assyria.*' And Moses is here giving an account of the sons of Hám, and it may seem foreign to his subject, to intermix the story of any of the sons of Shem, as Asshur was. Moses afterwards recounts the sons of Shem and Asshur among them ; and it is presumed, that he would hardly relate his actions before he had mentioned his nativity, or even his name contrary to the series of genealogy, and to the order of history." The 10th and 11th verses of the 10th Chapter of Genesis, thus corrected, will be, "*And the beginning of his (Nimrod's) kingdom, was Babel, and Erech, and Accad, and Calneh, in the land of Shinar. Out of that land he went forth into Assyria, and builded Nineveh, and the city of Rehoboth,*

and Calah." From the former part we may conclude, that Babylon was the principal city in the land of Shinar; and from the latter, that Nineveh was the principal city in the land of Assyria. The expression, "*out of that land he went forth into Assyria,*" seems to imply, that he conquered that country by proceeding out of his own territories into those of Asshur: and therefore, when he had built Nineveh, he might have regarded it as a city, subjected to him. Hence, when Babylon was represented by the face of a female, they might choose to express Nineveh by the face of a slave, to denote its subjection; and place a crown over both, to show his sovereign authority over both cities.

These two faces, symbolizing Babylon, as the victorious, and Nineveh as the conquered country, might in a short time afterwards have been taken in a general sense, and regarded as emblematical of victory and subjection; and at the dispersion of mankind, might have been carried from Babylon, and preserved by the ancestors of the Romans in the double face of Janus, whose temple was open in time of war and shut in time of peace.

The two tails, one erected triumphantly, and the other hanging down submissively, might have more particularly denoted Nimrod's

superiority in the chase. The Babylonians were so bold with their representations, and so fond of strong symbols, that this apt assemblage of the two faces and the union of the man's body to that of the horse, are stronger proofs that the figure of Sagittarius symbolically represented Nimrod, and was devised in Babylon, than if the man positively possessed a natural face, and was exhibited properly astride on his horse.

CAPRICORNUS, the Goat's horn. This figure belongs to the period between the middle of November and that of December, and is represented by the upper part of a Goat with two horns attached to the hinder part of a fish. It is so highly figurative, that it ought, in every point of view to be regarded symbolical. In the explanation of Sagittarius we have seen that Nimrod was sovereign over both the cities of Babylon and Nineveh: the two horns of the Goat may therefore be regarded as emblematical of these two towns, subjected to one head or government; just as Daniel in Chapter viii. in the vision of the Ram and the He Goat, explains the Ram's horns to mean Media and Persia, which were also so closely united, as to be considered under one head or government. For the figure of a horn is derived from the oriental languages, in

which the same word signifies a *horn*, a *crest*, *power*, and *splendor*: so that the kings of Persia used to wear a Ram's horn made of gold, and adorned with precious stones, instead of a diadem. It is true, that two horns are natural to a goat; but when an image is so strictly emblematical as that of Capricornus manifestly appears to be, it is correct to pursue the allegorical analogy throughout. Two horns are also natural to a Ram in the preceding vision of Daniel, yet we find that they represented two people; and two horns were also natural to a He Goat in the same vision, yet we read that he had only one notable horn between his eyes, which represented the king of Grecia. We must therefore consider these two horns to represent two people, or governments, under one controul: and therefore it is concluded, that they represented the two towns or governments of Babylon and Nineveh, under the controul of their sovereign Nimrod.

The head of the Goat with its two horns, having its body attached to the hinder part of a fish, is a very appropriate symbol for Babylon. This city was situated in a low watery plain, was surrounded by water, and had the river Euphrates running through the middle part of it: its lower part was therefore most

properly represented by a fish, as emblematical of the situation in which it stood. In Scripture too it is called a mountain, Jeremiah, xli, 25, "*Behold, I am against thee, O destroying mountain, saith the Lord, which destroyest all the earth; and I will stretch out my hand against thee, and roll thee down from the rocks, and will make thee a burnt mountain.*"

It is so called on account of the great height of its walls and towers, its palaces and temples. Beresius, speaking of some of its buildings, says, that "they appeared almost like mountains." Hence a Goat, which lives and delights in mountains, was an appropriate emblem for a city, which looked like a mountain from its magnificence, and was made so by the labor of man. Indeed, the delight which the Goat takes in climbing, is exactly similar to the desire the Babylonians had in building. As a Goat, after having reached one summit, endeavours to ascend another, so the Babylonians when they had attained one height in their buildings, endeavoured to raise them higher, till they said, Gen. xi, 4, "*Let us build a tower, whose top may reach unto heaven;*" and thus displeased Almighty God by their presumption!

The symbol therefore of the Goat rising from the body of a fish, represents with the

greatest propriety the mountainous buildings of Babylon rising out of its low and marshy situation; the two horns of the Goat as being emblematical of the two towns Nineveh and Babylon, the former built on the Tigris, the latter on the Euphrates; but both subjected to one sovereignty. Capricornus therefore may be regarded as the standard of Babylon, which modern heraldry could not more exactly devise.

AQUARIUS, the Waterer. This is the figure of an old man with a long beard, having a large female breast on his left side, holding in each hand an urn, from each of which a stream of water issues on a fish below. When the ancients represented a river, they always symbolized it by a man pouring out water from an urn. The moderns also do the same thing; and the beautiful sculptured image at the entrance of Somerset-House, is an emblem of the river Thames, which is represented by an old man with a long beard, pouring water from an urn. Here we have an old man with two urns pouring out water, which evidently resembles two rivers,

It is manifest, that it does not represent rain from heaven, as is generally supposed: for the female breast, which the old man possesses, is evidently emblematical of fruitfulness, and

nourishment to the human race ; and the fish below, shows the species of nourishment afforded. We may therefore conclude, that Aquarius represents two rivers ; and these can be none other than the Tigris and Euphrates, on the banks of which Nineveh and Babylon were built. For no other part of the then civilized world, where astronomy was cultivated, possessed two rivers of sufficient magnitude to be considered worthy to be inserted in the heavens, as representative of a Zodiacal constellation. Therefore, as Egypt has but one river, the Nile, running through the middle of the country, and as the territory of Babylon has two, the Tigris and Euphrates, this figure of Aquarius could not have had its name given to it in Egypt, but produces the strongest evidence of having received it at Babylon.

Aquarius we conclude, represents two rivers, the Tigris and Euphrates, and corresponds to the period between the middle of December and that of January, when those rivers were swollen by the winter rains.

PISCES, the Fishes. This sign is represented by the figure of two fishes tied back to back, as symbolical of the fishing season ; and belongs to the period between the middle of January and that of February. It may however be remarked, that the three preceding

signs, together with this, exhibit a double representation. Sagittarius has two faces and two tails; Capricornus, two horns; Aquarius, two streams; and Pisces, two fishes: which circumstances appear to have some allusion to the two towns, Nineveh and Babylon, or to the two rivers, Tigris and Euphrates.

The following signs are represented by simple animals, and do not possess the strong symbolical character of the Babylonish imagery; and consequently they are applicable to any part of the world.

ARIES, the Ram. This sign belongs to the middle of February and that of March; and because the Ram is the father of the fleecy flock, affording both food and raiment to the human race, he was deemed worthy of a place among the constellations of the Zodiac.

TAURUS, the Bull, belonged to the period between the middle of March and that of April; and he was put among the Stars because he was regarded as the pride and strength of those numerous heads, which supplied mankind with their principal subsistence.

The vernal equinox passed through the middle of this sign. It is possible that the Egyptians who worshipped the host of heaven, and made some of the Zodiacal signs objects of

adoration, derived their God Apis from this sign: for the heifer selected for the purpose of being deified, was necessarily obliged to have a mark similar to a half moon on his side, just in the same situation where the equinoctial point is placed in the bull.

GEMINI, the Twins. This sign reaches from the middle of April to that of May: it is represented by a man and woman taking hold of each others hands. It was perhaps intended originally to signify matrimony; or was placed among the stars in consequence of some particular marriage. At first it might have been called the *Twain*, and afterwards corrupted into the *Twins*; or what is more probable, the Greeks, who made considerable alterations in the original representations of the heavens, removed the man and woman, and in commemoration of the feats of Castor and Pollux in horsemanship and boxing, converted it into the sign Gemini.

CANCER, the Crab. This sign, which is evidently the last in the procession, corresponds to the period between the middle of May and that of June. It received its name from the very circumstance of its being the last sign, and from the necessity of moving backward, after all the stars in the Crab had been observed, in order to take notice of the

stars situated in the head of the Lion. For the Crab extends itself over about one third part of the Lion; therefore, when the last star in the Crab had been observed, it was necessary to cease to proceed, and move backward like a Crab, in order to remark the first star in the Lion. If this be true, as it undoubtedly seems to be, it produces strong evidence to show, that the Zodiac of Tentyra offers to our view a copy of the original one: otherwise the last sign in the Zodiac would have been altered, and it would not then have been discovered, that it received its name from its position. Indeed, the noble appearance of the Lion trampling on the serpent, whose head is so majestically raised, would naturally induce one to conclude, that this figure was intentionally designed to render conspicuous the leader of the procession, while the diminutive figure of the Crab, appropriately designates the last in the train.

In the preceding French account we are told, that the Zodiacs of Latopolis begin the procession with Virgo. Were this true, there must exist some cause for such an alteration, which cannot at present be explained for want of a more exact and particular description of those Zodiacs.

For the purpose of pursuing this inquiry

into its results, it is absolutely necessary to ascertain the length of the year made use of at the time it was invented. Sir Isaac Newton in his chronology, speaking of Ammon, who reigned in Egypt 1034 years before Christ, says, "In his time the Egyptians began to observe the course of the stars, and took their directions for sailing from the rising and setting of certain stars, which gave birth to astronomy. The luni-solar year, which was then in use, was of an unequal length, and consequently not fit for astronomy. It was for this reason that in his reign, and in the reigns of his son and grandson, much care was employed in observing the heliack setting of the stars; by which it appeared, that the solar year exceeded the soli-lunar year of 360 days by 5." This is one of the most ancient accounts of the length of the year that has been obtained from heathen authors, and yet it does not reach within a 1000 years from the date of this Zodiac. But since the period of the Deluge was only about 100 years prior to this Zodiac's date, how much more probable it is, that the year corresponded with that of Noah, which we will therefore take from the pages of the Holy Scriptures. There we find Noah extremely exact and particular in noting the very days in which he entered and left the Ark. Gen.

vii. 2, "*In the six hundredth year of Noah's life, in the second month, on the seventeenth day of the month, were the fountains of the great deep broken up, and the windows of heaven were opened.*" v. 13, "*In the self same day entered Noah, &c. into the Ark.*" Gen. viii, 3. "*And the waters returned from off the earth continually; and after the end of one hundred and fifty days the waters were abated.*" v. 4. "*And the Ark rested in the seventh month on the seventeenth day of the month, upon the mountains of Ararat.*" Hence we learn that his month consisted of thirty days; for the space of time between the second month and the seventeenth day of the month, and the seventh month and the seventeenth day of the month, that is five months, contained one hundred and fifty days: consequently one month consisted of thirty days.

Again, Gen. viii. 5. "*In the tenth month on the first day of the month, were the tops of the mountains seen.*" v. 6, "*And at the end of forty days, Noah opened the window of the Ark, which he had made, and sent forth a raven.*" Hence, forty days after the first day of the tenth month, will bring the time to the eleventh day of the eleventh month, when this circumstance of the raven took place.

V. 10, "*He stayed yet other seven days,*

and again he sent forth a dove out of the Ark. v. 11, And the dove came to him in the evening, and lo, in her mouth was an olive leaf pluckt off." By adding these seven days to the eleventh month, and eleventh day of the month, we come to the eighteenth day of the eleventh month for the period when the dove returned with the olive leaf.

V. 12, "*He stayed yet other seven days, and sent forth a dove which returned not unto him any more. v. 13, And it came to pass, in the six hundredth and first year, in the first month, on the first day of the month, that the waters were dried up from off the earth."* By adding these other seven days to the eighteenth day of the eleventh month before obtained, we reach to the twenty-fifth day of the eleventh month for the period, when Noah for the last time sent forth the dove, which returned not. But immediately afterwards, he says, that it was in the first month on the first day of the month, that the water was dried up. Now it is evident, that he knew that the waters were dried up from the dove not returning, whence those periods must be the same. Indeed, the repetition of the same period in these 12 and 13 verses, is precisely of the same character as that in the 3rd and 4th verses. Consequently, the twenty-fifth

day of the eleventh month falling on the first day of the following year, proves that the last month contained only twenty-four days. Hence the eleven months of thirty days each, and the twelfth month of twenty-four days, made the year of Noah consist of 354 days, a lunar year exactly.

Further. Gen. viii. 14, 15. *"And in the second month, on the seven and twentieth day of the month, was the earth dried; and God spake to Noah, saying; "Go forth of the Ark."* We have seen above, that he entered the Ark in the second month, on the seventeenth day of the month. If therefore we count the day he entered and the day he left the Ark, we shall find that he was one year and eleven days in the Ark; that is, a lunar year of 354 days, and 11 days more, making exactly 365 days, or a solar year.

It is true, that the Almighty let Noah out of the Ark: and therefore, as the work of God, it is no positive proof of the knowledge of man, or that Noah understood the length of a solar year. Yet, as it coincided so exactly with the solar year, it is not improbable that the Almighty condescended to suit his time to the understanding of men. And when we find that the length of Noah's common year consisted of 354 days, exactly 12 times $29\frac{1}{2}$, or

twelve lunations, we have no reason to doubt but the length of the solar year, which was much less difficult to discover, was also known.

How much more satisfactory are these lunar and solar years obtained from the Bible, at a period of about an hundred years prior to the date of this Zodiac, than the information received from the extract from Sir Isaac Newton's chronology, deduced from Heathen authors at a period one thousand years posterior to its date.

It is probable, that during the 365 days that Noah was in the Ark, and when he had nothing to engage his attention but the different animals there, and the phenomena of the heavens, he united these circumstances in his mind, and assigned to the several constellations the names of those animals who were then his companions; and that this circumstance was the origin of the Zodiac. For we find that Noah resided considerably to the eastward of Babylon; and the Chinese are consequently supposed to be his un-expatriated descendants. To them he might have left his Zodiac. Now these are the names of the constellations of the Chinese Zodiac. 1, Mouse; 2, Ox or Cow; 3, Tiger; 4, Hare; 5, Dragon; 6, Serpent; 7, Horse; 8, Sheep; 9, Monkey; 10, Cock; 11, Dog; and 12, Boar: every one of which

animals must have been companions with Noah in the Ark. A singular circumstance is this, which does not occur to any other Zodiac in the world, And when it is considered, that Noah knew the lunar year, and most probably the solar year also, there can be little doubt, that he possessed considerable knowledge in astronomy; which indeed was requisite for preserving the chronology of his generation with that degree of accuracy with which we see it continued.

We find that "*The children of men*," as they are called, in consequence of their vices and idolatry. (Gen. xi. 2.) "*journeyed from the East, and found a plain in the land of Shinar; and they dwelt there.*" They also built a city and a tower, which was first called Babel, afterwards Babylon. This circumstance is stated to have taken place under Nimrod, who was the grandson of Ham. As we have not the birth of Nimrod given, we may suppose it to have been cotemporary with that of Salah, the grandson of Shem, who was born thirty-seven years after the Flood, or 2310 years before Christ. When therefore Nimrod was 30 years of age, this transmigration might have taken place, which would be 2280 years before Christ. The age of 30 years is given to Nimrod because most of the posterity of Shem had

children by that age, and man must therefore have reached maturity by that time.

When they had arrived in the plain of Shinar, and had built Babylon, they no doubt began to make fresh observations on the phenomena of the celestial bodies; and improving on Noah's example, they in some instances suited to the seasons of the year, the names of the animals which they appropriated to the Zodiacal constellations. In compliment to their founder Nimrod, they inserted him among their signs in the figure of Sagittarius: then, very properly following Nimrod, they displayed the standard of their country in the figure of Capricornus; and afterwards by Aquarius the image of a man pouring out water from two urns, they made a symbolical representation of their two great rivers, the Tigris and Euphrates. They also called one sign the Crab; indicating by that name, that it was the last sign in the procession, and that it showed the necessity of going back, as a Crab walks backward, in order to proceed to the stars in the head of the Lion.

It will appear hereafter, that the date of this Zodiac, which is 2261 years before Christ, is 19 years after the arrival of the Children of men in the plain of Shinar. This corresponds very nearly with the relation made by Por-

phyry, who says, that Calishenes, a philosopher in the train of Alexander, makes mention of astronomical observations, an account of which he sent to Aristotle, having been discovered at Babylon for 1903 years previous. As Babylon was taken by Alexander 331 years before Christ, therefore, astronomical observations were made at Babylon 2234 years before Christ. This account differs only 27 years from the date we have given to the Zodiac. A difference so small, considering the immense number of years that have since elapsed, and the imperfect state of astronomy at that very early period, that we cannot but conceive that the time assigned by Porphyry, and the date of this Zodiac, to be one and the same period.

In Gen. x. 25, we are told, "*that unto Eber were born two sons, the name of one was Peleg, for in his days was the earth divided.*" And from Gen. xi. 16, we find that Peleg was born 2246 years before Christ. It is therefore manifest, that the date of 2261 years before Christ, which we give to this Zodiac, was after the children of men came into the plain of Shinar, and prior to their dispersion. If we suppose that the dispersion took place a few years after the birth of Peleg, which we reasonably may from the expression "*in his days was the earth divided,*" the period of 2234

years before Christ, mentioned by Porphyry, would also be before the dispersion of mankind : and this date may be seen in most chronological tables, as well as in that attached to Johnson's Dictionary.

This beginning of astronomy in Babylon, agrees also with what Cicero says, (*De Divinatione*, lib. 1.) "*Principio Assyrii, propter planitiem magnitudinemque regi onum, quas incolebant, cum cælum ex omni parte patens et apertum intuerentur, trajectiones motusque stellarum observarunt.*" The Assyrians in consequence of the flat and extensive plain in which they resided, could see in every direction the sky clearly defined by the horizon, and uninterrupted by any object, and were consequently the first who observed the courses and motions of the stars.

At the dispersion of mankind, we may suppose, that the Egyptians carried away with them the plan of the Babylonian Zodiac. When they placed this plan in the great temple at Tentyra, they surrounded the margin of the Planisphere with their own hieroglyphics for the purpose of explaining when the stars came in conjunction with the sun ; but they neither altered the position of the equinoctial nor solstitial points : for at that early period

in astronomy, it is more than probable, that they were unacquainted with the precession of the equinoxes. The sacred characters in the circular belt, as well as those in the corners of the square, appear to be of Egyptian production. The Greeks, it is well known, received their Zodiac from the Egyptians; and the other European nations borrowed theirs from the Greeks.

What increases the probability of this relation is, the Indian Zodiac, which is similar to the Greek or Egyptian, and which Sir William Jones proves to have existed in that country from time immemorial. The following is an extract from the *Encyclopædia Perthenis*. "The identity, or at least the striking similarity of the Indian Zodiac, with that of the Greeks, is universally known, and M. Montucla has endeavoured to prove, that the Bramins received it from the Arabs; his opinion has we believe been generally admitted, but Sir William Jones has proved *unanswerably*, that neither of these nations borrowed that division from the other; that it was known among the Hindoos from time immemorial, and that it was probably invented by the first progenitors of that race, whom he considers as the most ancient of mankind, *before their dispersion*." If the authority of Sir William Jones can be

relied on, we must suppose, that the Indians received their Zodiac from Babylon at the time of the dispersion of mankind.

The Indians as well as the Babylonians and Egyptians, converted their knowledge in astronomy to the very worst of purposes—that of deifying the signs of the Zodiac, and worshipping those symbols as their gods. When the English Army under Sir Ralph Abercrombie was in Egypt, one part of it had marched from India, and the following is an extract from Dr. Clarke's Travels, who was in Egypt at the time. "Upon this occasion we heard the extraordinary fact, maintained and confirmed by indisputable testimony, that certain Bramins, who had accompanied the Indian army in its march from the Red Sea to the Nile, from Cosseir to Kene, saw at Dendera the representation of their God Vishnu, among the ancient sculptures of the place; and were with difficulty restrained by their officers from assaulting the Arabs, on account of the neglected state in which his temple, as they supposed, was suffered to remain." This event which took place some years before the removal of the Zodiac of Tentyra to France, may be regarded as a proof of the similarity of the Egyptian and Indian Zodiacs.

We have now seen strong reasons for be-

lieving, that both the Indians and Egyptians brought their Zodiacs from Babylon at the dispersion of mankind; and these two coinciding circumstances tend, at this very distant period of time since the events, to corroborate very forcibly the veracity of Holy Writ. Gen. xi. 9. *“Therefore is the name of it called Babel, because the Lord did there confound the language of all the Earth; and from thence did the Lord scatter them abroad upon the face of all the Earth.”*

The next subject necessary to be considered is the mode that the Ancients pursued in making their astronomical observations, and in ascertaining the positions of the stars. We do not read, that they possessed any instruments for obtaining the altitudes of the heavenly bodies; nor any method of measuring time by the night, when the sun was down, and consequently the gnomon became useless. But all the Heathen accounts agree in stating, that they were very attentive in observing the heliacal rising and setting of the stars; and we know from the position of the Egyptian Pyramids, which are placed exactly to correspond with the meridian line, that they knew very early, how to place the cardinal points of the compass.

The heliacal rising of a star, is when it rises

just sufficiently long before the sun, as to become visible to the naked eye, and then disappear almost immediately from being obscured by the splendor of the sun. The heliacal setting of a star is, when as a star sets just so long after the sun, as to become visible to the naked eye immediately before it sets. Ptolemy states, that the sun is 12° 13° 14° &c. below the horizon, when stars of the first, second, third, &c. magnitude, respectively rise or set heliacally.

In this manner therefore, we have every reason to believe, the Ancients obtained the situations of the stars. They watched the rising of a star for some days before it became obscured by the sun's rays, and having noted the last day they were able to see the star rise, they called it the heliacal rising of the star on that day. They afterwards watched the first day they were able to see the same star set, after having emerged from the sun's rays, and having noted the period, they called it the heliacal setting of the star for that day. The time elapsed between the heliacal rising and setting of the star they divided by two, and thus obtained very nearly the period when the star was in conjunction with the sun.

They likewise marked on an horizontal plane, the direction in which they saw a star rise, and then the direction in which they ob-

served it set. The line which bisected the angle formed by these two directions became their meridional line; to which they compared the rising and setting of all the other stars: and thus they obtained their amplitudes.

By these means of obtaining the stars' conjunctions with the sun, and their amplitudes, they were enabled with scarcely any instruments to ascertain the situations of the stars to an accuracy within about half a degree. But those stars which were far towards the North, and never rise nor set, could not have their positions obtained by these means. Hence in the infancy of astronomy, the Ancients had no means of obtaining the situations of those Northern stars; for without measuring time by night with considerable accuracy, and without observing the altitudes of those stars, they would be incapable of doing it.

They were therefore necessarily obliged to represent only a zone of the celestial sphere; and it will appear hereafter that such zone did not originally embrace greater space than was necessary for comparing the rising and setting of the stars with the motions of the sun, moon, and planets.

Let us now return to our main subject, and cast our eyes on the Lithographic representa-

tion of the Zodiac. Here the reader is requested to pay particular attention to the forms of the thirty-six figures which stand in a circle round the border or margin of the Planisphere, and have sacred characters with a star attached to each of them; in order that he may be enabled to separate from the figures representing the constellations in the body of the Planisphere, the other figures which are similar to those in the margin, and similarly attached to sacred characters with a star, and which are in reality hieroglyphics and not constellations. Having taken this precaution in order to assist his imagination, he may draw three pencil lines within the Planisphere; one over the heads of the marginal figures, another under the feet of the Zodiacal signs, and a third over their heads. By so doing he will divide the Planisphere into three parts, each consisting of twelve constellations. The first set of asterisms, which is below the Zodiac and over the heads of the hieroglyphic figures in the circular margin, is to the southward of it, and apparently contain those stars which were at its date, situated in the southern superficial segment of the celestial sphere, comprehended between the Zodiac and that parallel of declination which then passed through its southern extremity. The second set contains the Zodiacal signs. The third set seems to consist of those constellations

which were situated in the northern superficial segment of the celestial sphere, and contained between the Zodiac and that parallel of declination which then passed through its northern extremity. Wherefore the whole constellations in the Planisphere consist of those stars which were at the time of its invention situated in a zone of the celestial Globe between two parallels of declination about 30 degrees distant on each side of the equinoctial. The twelve constellations below the Zodiac are so properly situated to correspond with the southern celestial segment, besides being placed in a space not dissimilar in shape, that if there is any arrangement in placing the constellations in the Planisphere contiguous to each other in the same manner as they appear in the heavens, it is impossible they can represent any other asterisms, than those situated between the Zodiac, and a southern parallel of declination. The twelve constellations above the Zodiac, we cannot so satisfactorily refer to the northern celestial segment. But when we observe, that the position which the Zodiac has in the Planisphere, necessarily cramps the proper distribution of the northern stars; and when we consider that the number of constellations above, are precisely equal to those below the Zodiac; we have a right to suppose, that they occupy an equal space in the heavens, and

therefore in all probability represented the stars in the northern segment of the celestial sphere, situated between the Zodiac and a northern parallel of declination.

The figure of the Great Bear, which is very conspicuous among these northern constellations would very much oppose this supposition, if his position could in any way be made to correspond to the constellation we now represent by that animal. There is nothing but its figure to speak in its favour, its relative situation to the other stars renders it impossible to represent the stars placed in the present Great Bear. Besides, at the period when the Planisphere of Tentyra was invented, the modern Great Bear was as far North as it could be; and therefore if the observations previously made on the mode of ancient astronomy be true, they did not in those days possess the means of obtaining the positions of the stars composing this constellation. It is most probable that the Greeks who made very great changes in the original representation of the heavens for the purpose of inserting their own fabulous theogony, removed the Great Bear from its primitive to its present situation.

Outside of the Planisphere, between the figures which are supporting it, are seen two

emblems, which are not easy to be characterized : they are opposite to each other, and are placed at right angles to the spiral form of the Zodiac. It is universally agreed, that these emblems point to the positions occupied by the equinoctial points in the Zodiac at the time of its invention. Also in the space which separates the Planisphere from the great hieroglyphic zone, we observe two short inscriptions in sacred characters opposite to each other. They are situated in a diameter which passes through the Lion and Aquarius, and it is generally admitted that they direct our view to the solstitial signs. If the exterior circle of the Planisphere be parallel to the equinoctial, which most probably is the case, the stars below the Zodiac seem to be placed in a space of nearly the same form as would have been the case, when the Lion was on the solstitial colure.

We have already seen that the year used about the period of the date of this Zodiac, was the lunar of 354 days. In examining the Lithographic representation, we see the Crab extend itself over the Lion for the space of about the third of a sign ; consequently the stars of the Zodiac are doubled through this space, and the exterior circumference of the Planisphere cannot correspond to 365 days, for then the whole of the Zodiac would be included

in one circumference. It must therefore contain a space less than 365 days, by about the third of a sign. This space most probably was their common year of 354 days, and the distance extended by the Crab over the Lion corresponds to the distance through which the sun passes during the interval of eleven days and six hours, the difference between the solar and lunar years.

We will now endeavour to investigate the use the Ancients made of this Zodiac, having first gained what light we can from ancient history. Rollin speaking of the Egyptian King Osymandyas, observes: "His Mausoleum discovered an uncommon magnificence; it was encompassed with a circle of gold, a cubit in breadth, and 365 cubits in circumference, each of which showed the rising or setting of the sun, moon, and the rest of the planets. For so early as this king's reign, the Egyptians divided the year into twelve months, each month consisting of thirty days; to which they added, every year, five days and six hours. The spectator did not know which to admire most in this stately monument, whether the richness of the materials, or the genius and industry of the artists and workmen."

Another extract is adduced from Sir Isaac

Newton's Chronology, which carries with it the appearance of greater veracity than the former, because it was impossible for the rising and setting of the moon and planets to be expressed in a daily manner through any more years than one. "The Egyptians dedicated to Osiris, Iris, Orus, Typhon, and Nephte', his wife and sister, the five additional days, which were joined to the twelve months of the ancient luni-solar year of 360 days. They were added in the year of Ammon, the father of those princes; but the year of 365 days was not universally received in Egypt, till the reign of Amenophis. It was he that ordered a great circle to be divided into 365 parts, each of which had one day of the year on it, with the heliacal rising and setting of the stars for the day to be placed in his temple of Abydos, in Thebais."

We may from these extracts suppose, that the thirty-six symbolical figures standing round the margin of the Planisphere, explain the names of the thirty-six constellations which are represented within: and that the little inscription in sacred characters, with a star attached to each, shows the name of a particular star in that constellation, which rises or sets heliacally, or is in conjunction with the sun on the day of the year opposite which the symbolical figure is placed.

There is no regular and uniform division of the exterior circumference to mark precisely the particular days: this was an improvement made in after ages, as may be seen by the preceding extracts. But we may suppose that the phenomenon expressed by the little inscription with a star attached to each of the symbolical figures in the circular margin, was selected so as to preserve, as near as possible, a certain uniform interval of time with the others.

We see in the Planisphere the Crab situated over the head of the Lion; the reason of which is no doubt that the exterior circumference of the Planisphere corresponded to the lunar year of 354 days; which year we have seen was used by Noah about 100 years before the date of this Zodiac: so that the space of a solar year of 365 days could not be contained in one circuit, but necessarily exceeded it. If we admit, that the circle of the Planisphere was suited to a lunar year of 354 days, we have also a reason to suppose, that the use they made of this Zodiac, was to ascertain the periods for the changes of the moon: otherwise they would not have placed the stars out of the natural circle and positions, which they occupy in the heavens.

It is impossible without a knowledge of the

Egyptian symbols and hieroglyphics to ascertain to a certainty the manner in which they did obtain a knowledge of the periods of the moon's changes; yet, if we can show a method by which they might arrive at such information, it will be reasonable until we can be gratified, with what is not likely to be known,—an accurate explanation of the Egyptian characters, to suppose that they adopted such a plan.

There are three sets of constellations, each consisting of twelve; one below, one in, and one above the Zodiac, which seem to correspond to three following years. The star, which is particularized in each constellation, and noted by sacred characters in the margin of the Planisphere, most probably rose or set heliacally, or was in conjunction with the sun, on a particular day. As there were thirty-six such stars, so there appears to be a treble set of twelve months; and the space between every third figure we may suppose to occupy a lunar month, or as nearly so as the phenomenon made by the star would admit. Hence, if any change of the moon, whether new, quartered, or full, was known to happen when any star, suppose Regulus, rose heliacally, then, when every third star noted in the margin from Regulus rose heliacally, the same change of the moon, whether new, quartered, or full, would happen

at those periods. By thus taking every third star or figure in the circular margin successively, if you began with Regulus, when you come to the last star in the Crab, or to the first in the Lion, you will find that you have passed over twelve lunations, having gone round the whole circumference and arrived at the figure whence you departed. But then you will not have taken notice of the stars in the head of the Lion; to do which you must retreat one figure backward, as is indicated by the Crab, which walks backward; and in your retreat you will have passed over the exact difference between a lunar and a solar year, or the space which is passed over by the stars in eleven days, six hours. Then beginning another year from this new figure, and taking every third figure therefrom successively, you will find when the particular star attached to it rose heliacally, and likewise when the moon underwent a change similar to what it underwent the year before.

When you have completed twelve lunations, you will find you have arrived at the figure you departed from; but not having passed over the latter stars in the Crab, you must again retreat one figure backward, which is also the difference between a lunar and a solar year. From this other figure you must commence a

third lunar year, and proceed as before. When you have completed this third lunar year, you will find that in respect to Regulus from which you at first started, you will have retreated the space corresponding to thirty three days, eighteen hours. You must therefore give to the third year another lunation, and begin again with Regulus. Because 33 days, 18 hours, exceed a lunation of $29\frac{1}{2}$ days, by about 4 days; if the moon was new when you originally began from Regulus: now, when you return to Regulus again after the thirteenth lunation in the third year, the moon will be four days old and so it will continue to be in every third figure following, till the three successive years are passed over as before, and you again arrive at Regulus; after which it will be eight days old, altering about four days of its age, every three years.

By thus keeping the lunar year fixed while the changes of the moon were compared to the rising or setting of the stars heliacally, or to their conjunctions with the sun, a great length of years would not make them far out in respect to the moon. For the lunation given by them was 29 days, 12 hours, differing only 44 minutes, 3 seconds, from what is at present assigned to that period; and the errors arising from the solar year were corrected by being compared with the heliacal rising of the stars.

Let us now estimate the date of the Zodiac of Tentyra. In the preceding part of this work we have seen that the precession of the equinoxes is 50,57 Seconds of a degree of a circle annually. If therefore at any period we can ascertain accurately the position of the equinoxes or the situation of any fixed star, we can also find exactly the year when the star, or the equinoxes, were so situated. In the French description of this Zodiac, we have seen, that the two emblems at the sides between the Planisphere and the hieroglyphic zone, are supposed to direct our view to the equinoctial points in the Zodiac; and that the Lion, which leads the procession, is on the solstitial colure. These particulars can scarcely be doubted; for if we make a stereographic projection of the northern hemisphere upon the equator as a primitive circle; and continue the projection about 30 degrees, outside of the primitive in order to take in all the signs of the Zodiac; then will the projections of the Zodiacal constellations, if Leo is placed on the solstitial colure and the signs following in order, appear among the stars placed similarly to the signs in this Zodiac, excepting only the irregularity occasioned by the extension of the Crab over the Lion, the cause and use of which we have already seen. This proves that the Lion is properly

placed to be the northern constellation, and is consequently on the summer solstice.

It is also evident that the two emblems situated between the hieroglyphic zone and the Planisphere are at proper distances from the Lion to direct our attention to the equinoctial points in the Zodiac. But the emblem which is sharp pointed belonging to the Spring is intentionally turned a little from the centre of the Planisphere; because the constellations not being quite contained in one circuit, but folding a little over each other, could not be equally divided by a line passing through the centre. The spring emblem points to the middle of Taurus, but the autumn one being curved at top causes some doubt to exist in respect to the particular spot in Scorpio towards which it was intended to be directed. The star Regulus, in the heart of the Lion,—a star of the first magnitude, is situated exactly 90 degrees from the point in the Bull to which the vernal emblem is directed. If therefore you have a celestial Globe, and if you count from Regulus, 90 degrees on the Ecliptic towards the West, you will come exactly to that spot in the Bull, which is pointed at by the emblem. The extremity of the Crab also is exactly placed over where that star should be situated in the Lion.

Now if it be considered that the Ancients

received only those stars in their constellations, which were visible to the naked eye, and the intermediate space between two constellations where stars were not visible, was not regarded as belonging to any constellation, we shall find that the distance between the first visible star in the Lion, and Regulus, corresponded very nearly to the space passed over by the stars in eleven days and six hours; the reason for which we have just seen. All these coinciding circumstances tend to prove that the star Regulus was either on, or very near the solstitial colure, when this Zodiac was first invented.

New Abbe Piazzi for the beginning of the year 1800, gives to Regulus a right ascension $146^{\circ} 25' 33''$, 4, and a declination $12^{\circ} 56' 22''$ North. These data by accurate calculation, makes the longitude to be $147^{\circ} 2' 57''$ from the vernal equinoctial point, or $57^{\circ} 2' 57''$ or 205 397 seconds from the summer solstitial colure. This number 205397, divided by 50. 57 seconds the mean annual precession of the equinoxes, produces a quotient of 4061 for the number of years before 1800 of our Lord, and gives the date of the Zodiac to be 2261 years before Christ. This date is only 27 years prior to the period when by Porphyry's account, (before taken notice of) astronomical observations were

begun at Babylon; a difference, which in respect to the situation of the stars, does not exceed 20 minutes of a degree, and a difference not to be observed in the imperfect state of astronomy at that very early period.

By a retrospect of the evidences resulting from the foregoing enquiry, we are naturally led to form the following conclusions.—Two very powerful reasons present themselves to show, that the names and figures of the Zodiac of Tentyra were not originally given to it in Egypt. The Virgin holding the ear of corn in her hand, being emblematical of harvest, is not properly placed to represent the harvest of Egypt; and Aquarius, holding two urns, as symbolical of two rivers, could not possibly be appropriated to Egypt, which country has only one.

Very many and powerful arguments tend to prove, that the Zodiac received its names and figures, and had its equinoctial points fixed at Babylon. The striking resemblance of Sagittarius to Nimrod, the appropriate emblem of Capricornus for the standard of Babylon and Nineveh, and symbolical representation of the rivers Tigris and Euphrates in the figure of Aquarius,—three signs immediately following each other, and all possessing the exact features and peculiarity of the Babylonish imagery,

offer strong presumptive reasons for such conclusions. The date of the Zodiac 2261 years before Christ, only 27 years prior to the period mentioned by Porphyry, falling exactly in the interval between the time of the children of men arriving in the plain of Shinah, and that of the dispersion of mankind, is also a strong evidence that the Zodiac was invented at Babylon, and the equinoctial points fixed at that place.

The situation of the Crab over the Lion, indicating by its figure the use to be made of it, is a very satisfactory proof, that the constellations in this Zodiac preserve their original situations, and consequently that this Planisphere presents to our view the representation of one of the most ancient of its kind.

It having been proved that Noah was acquainted with the lunar year, and great probability having been shown that he knew the solar year also; we may rationally conclude that he was a proficient in astronomy, and that his great grandson Nimrod might have been sufficiently instructed in that science to have pointed out the proper method for commencing astronomical observations at Babylon.

The striking similarity of the Indian with that of the Egyptian Zodiac, and the testi-

mony of Sir William Jones, that the former existed before the dispersion of mankind, united with the proofs we have seen, that the latter was of Babylonish original, are evidences very strongly corroborating the truth of Scriptural history. We cannot be destitute of a sense of admiration when we reflect, that a stone sculptured some thousand years since in Egypt, should, by almost every particularity which it possesses, so completely refute the sentiments generally entertained concerning the Egyptian Zodiacs,—that they disagree with the accounts in the Holy Scriptures; and should on the contrary, become the means of confirming, by such a vast variety of circumstances, and in so indisputable a manner, the veracity of the Bible; the great accuracy of its chronology, and the truth of the dispersion of mankind.



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ERRATA.

.YOUTH IN CHOCOLATE

Page 6, *Procope*, read *Procopius*.

- 12, ~~ammette~~, read ~~ammette~~.
18, ~~naut~~, read *route*.
52, ~~a tright angles~~, read *at right angles*.
58, ~~ellipote~~ read *ellipse*.
The following are the only errors in the text.

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