RICHARD ANTHONY PROCTOR

MYTHS AND MARVELS OF ASTRONOMY

Richard A. Proctor

Myths and Marvels of Astronomy

http://www.litres.ru/pages/biblio_book/?art=36321532
Myths and Marvels of Astronomy:

Содержание

PREFACE 4
I. 6
II. 68
III. 98
Конец ознакомительного фрагмента. 123

Richard A. Proctor
Myths and Marvels of Astronomy

PREFACE

The chief charm of Astronomy, with many, does not reside in the wonders revealed to us by the science, but in the lore and legends connected with its history, the strange fancies with which in old times it has been associated, the half-forgotten myths to which it has given birth. In our own times also, Astronomy has had its myths and fancies, its wild inventions, and startling paradoxes. My object in the present series of papers has been to collect together the most interesting of these old and new Astronomical myths, associating with them, in due proportion, some of the chief marvels which recent Astronomy has revealed to us. To the former class belong the subjects of the first four and the last five essays of the present series, while the remaining essays belong to the latter category.

Throughout I have endeavoured to avoid technical expressions on the one hand, and ambiguous phraseology (sometimes resulting from the attempt to avoid technicality) on the other. I have, in fact, sought to present my subjects as I should wish

to have matters outside the range of my special branch of study presented for my own reading.

RICHARD A. PROCTOR.

I.
ASTROLOGY

Signs and planets, in aspects sextile, quartile, trine, conjoined, or opposite; houses of heaven, with their cusps, hours, and minutes; Almuten, Almochoden, Anahibazon, Catahibazon; a thousand terms of equal sound and significance.
—Guy Mannering.

… Come and see! trust thine own eyes.
A fearful sign stands in the house of life,
An enemy: a fiend lurks close behind
The radiance of thy planet—oh! be warned!

—Coleridge.

Astrology possesses a real interest even in these days. It is true that no importance attaches now even to the discussion of the considerations which led to the rejection of judicial astrology. None but the most ignorant, and therefore superstitious, believe at present in divination of any sort or kind whatsoever. Divination by the stars holds no higher position than palmistry, fortune-telling by cards, or the indications of the future which foolish persons find in dreams, tea-dregs, salt-spilling, and other absurdities. But there are two reasons which render the history of

astrology interesting. In the first place, faith in stellar influences was once so widespread that astrological terminology came to form a part of ordinary language, insomuch that it is impossible rightly to understand many passages of ancient and mediæval literature, or rightly to apprehend the force of many allusions and expressions, unless the significance of astrological teachings to the men of those times be recognised. In the second place, it is interesting to examine how the erroneous teachings of astrology were gradually abandoned, to note the way in which various orders of mind rejected these false doctrines or struggled to retain them, and to perceive how, with a large proportion of even the most civilised races, the superstitions of judicial astrology were long retained, or are retained even to this very day. The world has still to see some superstitions destroyed which are as widely received as astrology ever was, and which will probably retain their influence over many minds long after the reasoning portion of the community have rejected them.

Even so far back as the time of Eudoxus the pretensions of astrologers were rejected, as Cicero informs us ('De Div.' ii. 42). And though the Romans were strangely superstitious in such matters, Cicero reasons with excellent judgment against the belief in astrology. Gassendi quotes the argument drawn by Cicero against astrology, from the predictions of the Chaldæans that Cæsar, Crassus, and Pompey would die 'in a full old age, in their own houses, in peace and honour,' whose deaths, nevertheless, were 'violent, immature, and tragical.' Cicero also

used an argument whose full force has only been recognised in modern times. 'What contagion,' he asked, 'can reach us from the planets, whose distance is almost infinite?' It is singular that Seneca, who was well acquainted with the uniform character of the planetary motions, seems to have entertained no doubt respecting their influence. Tacitus expresses some doubts, but was on the whole inclined to believe in astrology. 'Certainly,' he says, 'the majority of mankind cannot be weaned from the opinion that at the birth of each man his future destiny is fixed; though some things may fall out differently from the predictions, by the ignorance of those who profess the art; and thus the art is unjustly blamed, confirmed as it is by noted examples in all ages.'[1]

---

[1] These reflections were suggested to Tacitus by the conduct of Thrasyllus (chief astrologer of the Emperor Tiberius), when his skill was tested by his imperial employer after a manner characteristic of that agreeable monarch. The story runs thus (I follow Whewell's version): 'Those who were brought to Tiberius on any important matter, were admitted to an interview in an apartment situated on a lofty cliff in the island of Capreæ. They reached this place by a narrow path, accompanied by a single freedman of great bodily strength; and on their return, if the emperor had conceived any doubts of their trustworthiness, a single blow buried the secret and its victim in the ocean below. After Thrasyllus had, in this retreat, stated the results of his art as they concerned the emperor, Tiberius asked him whether he had calculated how long he himself had to live. The astrologer examined the aspect of the stars, and while he did this showed hesitation, alarm, increasing terror, and at last declared that "The present hour was for him critical, perhaps fatal." Tiberius embraced him, and told him "he was right in supposing he had been in danger, but that he should escape it," and made him henceforward his confidential counsellor.' It is evident, assuming the story to be true (as seems sufficiently probable), that the emperor was no match for the charlatan in craft. It was a natural thought on the former's part to test the skill of his

Probably, the doubt suggested by the different fortunes and characters of men born at the same time must have occurred to many before Cicero dwelt upon it. Pliny, who followed Cicero in this, does not employ the argument quite correctly, for he says that, 'in every hour, in every part of the world, are born lords and slaves, kings and beggars.' But of course, according to astrological principles, it would be necessary that two persons, whose fortunes were to be alike, should be born, not only in the same hour, but in the same place. The fortunes and character of Jacob and Esau, however, should manifestly have been similar, which was certainly not the case, if their history has been correctly handed down to us. An astrologer of the time of Julius Cæsar, named Publius Nigidius Figulus, used a singular argument against such reasoning. When an opponent urged the different fortunes of men born nearly at the same instant, Nigidius asked him to make two contiguous marks on a potter's wheel which was revolving rapidly. When the wheel was stopped, the two marks were found to be far apart. Nigidius is said to have received the name of Figulus (the potter), in remembrance of the story; but more probably he was a potter

---

astrologer by laying for him a trap such as the story indicates—a thought so natural, indeed, that it probably occurred to Thrasyllus himself long before Tiberius put the plan into practice. Even if Thrasyllus had not been already on the watch for such a trick, he would have been but a poor trickster himself if he had not detected it the moment it was attempted, or failed to see the sole safe course which was left open to him. Probably, with a man of the temper of Tiberius, such a counter-trick as Galeotti's in *Quentin Durward* would have been unsafe.

by trade, and an astrologer only during those leisure hours which he could devote to charlatanry. St. Augustine, who relates the story (which I borrow from Whewell's 'History of the Inductive Sciences'), says, justly, that the argument of Nigidius was as fragile as the ware made on the potter's wheel.

The belief must have been all but universal in those days that at the birth of any person who was to hold an important place in the world's history the stars would either be ominously conjoined, or else some blazing comet or new star would make its appearance. For we know that some such object having appeared, or some unusual conjunction of planets having occurred, near enough to the time of Christ's birth to be associated in men's minds with that event, it came eventually to be regarded as belonging to his horoscope, and as actually indicating to the Wise Men of the East (Chaldæan astrologers, doubtless) the future greatness of the child then born. It is certain that that is what the story of the Star in the East means as it stands. Theologians differ as to its interpretation in points of detail. Some think the phenomenon was meteoric, others that a comet then made its appearance, others that a new star shone out, and others that the account referred to a conjunction of Jupiter, Saturn, and Mars, which occurred at about that time. As a matter of detail it may be mentioned, that none of these explanations in the slightest degree corresponds with the account, for neither meteor, nor comet, nor new star, nor conjoined planets, would go before travellers from the east, to show them their way to any place. Yet the

ancients sometimes regarded comets as guides. Whichever view we accept, it is abundantly clear that an astrological significance was attached by the narrator to the event. And not so very long ago, when astrologers first began to see that their occupation was passing from them, the Wise Men of the East were appealed to against the enemies of astrology,[2]—very much as Moses was appealed to against Copernicus and Galileo, and more recently to protect us against certain relationships which Darwin, Wallace, and Huxley unkindly indicate for the human race divine.

Although astronomers now reject altogether the doctrines of judicial astrology, it is impossible for the true lover of that science to regard astrology altogether with contempt. Astronomy, indeed, owes much more to the notions of believers in astrology than is commonly supposed. Astrology bears the same relation to modern astronomy that alchemy bears to modern chemistry. As it is probable that nothing but the hope of gain, literally in this case *auri sacra fames*, would have led to

[2] The belief in the influence of the stars and the planets on the fortunes of the new-born child was still rife when Shakespeare made Glendower boast:At my nativityThe front of heaven was full of fiery shapesOf burning cressets; know, that at my birthThe frame and huge foundation of the earthShook like a coward.And Shakespeare showed himself dangerously tainted with freethought in assigning (even to the fiery Hotspur) the reply:So it would have doneAt the same season, if your mother's catHad kittened, though yourself had ne'er been born.In a similar vein Butler, in *Hudibras* ridiculed the folly of those who believe in horoscopes and nativities:As if the planet's first aspectThe tender infant did infectIn soul and body, and instilAll future good and future ill;Which in their dark fatalities lurking,At destined periods fall a-working,And break out, like the hidden seedsOf long diseases, into deeds,In friendships, enmities, and strife.And all th' emergencies of life.

those laborious researches of the alchemists which first taught men how to analyse matter into its elementary constituents, and afterwards to combine these constituents afresh into new forms, so the belief that, by carefully studying the stars, men might acquire the power of predicting future events, first directed attention to the movements of the celestial bodies. Kepler's saying, that astrology, though a fool, was the daughter of a wise mother,[3] does not by any means present truly the relationship between astrology and astronomy. Rather we may say that astrology and alchemy, though foolish mothers, gave birth to those wise daughters, astronomy and chemistry. Even this way of speaking scarcely does justice to the astrologers and alchemists of old times. Their views appear foolish in the light of modern scientific knowledge, but they were not foolish in relation to what was known when they were entertained. Modern analysis goes far to demonstrate the immutability, and, consequently, the non-transmutability of the metals, though it is by no means so certain as many suppose that the present position of the metals in the list of *elements* is really correct. Certainly a chemist of our day would be thought very unwise who should undertake a series of researches with the object of discovering a mineral having such qualities as the alchemists attributed to the philosopher's stone. But when as yet the facts on which the science of chemistry is based were unknown, there was nothing unreasonable in supposing that such a mineral might

[3] Preface to the *Rudolphine Tables*.

exist, or the means of compounding it be discovered. Nay, many arguments from analogy might be urged to show that the supposition was altogether probable. In like manner, though the known facts of astronomy oppose themselves irresistibly to any belief in planetary influences upon the fates of men and nations, yet before those facts were discovered it was not only not unreasonable, but was in fact, highly reasonable to believe in such influences, or at least that the sun, and moon, and stars moved in the heavens in such sort as to indicate what would happen. If the wise men of old times rejected the belief that 'the stars in their courses fought' for or against men, they yet could not very readily abandon the belief that the stars were for signs in the heavens of what was to befall mankind.

If we consider the reasoning now commonly thought valid in favour of the doctrine that other orbs besides our earth are inhabited, and compare it with the reasoning on which judicial astrology was based, we shall not find much to choose between the two, so far as logical weight is concerned. Because the only member of the solar system which we can examine closely is inhabited, astronomers infer a certain degree of probability for the belief that the other planets of the system are also inhabited. And because the only sun we know much about is the centre of a system of planets, astronomers infer that probably the stars, those other suns which people space, are also the centres of systems; although no telescope which man can make would show the members of a system like ours, attending on even the

nearest of all the stars. The astrologer had a similar argument for his belief. The moon, as she circles around the earth, exerts a manifest influence upon terrestrial matter—the tidal wave rising and sinking synchronously with the movements of the moon, and other consequences depending directly or indirectly upon her revolution around the earth. The sun's influence is still more manifest; and, though it may have required the genius of a Herschel or of a Stephenson to perceive that almost every form of terrestrial energy is derived from the sun, yet it must have been manifest from the very earliest times that the greater light which rules the day rules the seasons also, and, in ruling them, provides the annual supplies of vegetable food, on which the very existence of men and animals depends. If these two bodies, the sun and moon, are thus potent, must it not be supposed, reasoned the astronomers of old, that the other celestial bodies exert corresponding influences? *We* know, but they did not know, that the moon rules the tides effectually because she is near to us, and that the sun is second only to the moon in tidal influence because of his enormous mass and attractive energy. We know also that his position as fire, light, and life of the earth and its inhabitants, is due directly to the tremendous heat with which the whole of his mighty frame is instinct. Not knowing this, the astronomers of old times had no sufficient reason for distinguishing the sun and moon from the other celestial bodies, so far at least as the general question of celestial influences was concerned.

So far as particulars were concerned, it was not altogether so

clear to them as it is to us, that the influence of the sun must be paramount in all respects save tidal action, and that of the moon second only to the sun's in other respects, and superior to his in tidal sway alone. Many writers on the subject of life in other worlds are prepared to show (as Brewster attempts to do, for example) that Jupiter and Saturn are far nobler worlds than the earth, because superior in this or that circumstance. So the ancient astronomers, in their ignorance of the actual conditions on which celestial influences depend, found abundant reasons for regarding the feeble influences exerted by Saturn, Jupiter, and Mars, as really more potent than those exerted by the sun himself upon the earth. They reasoned, as Milton afterwards made Raphaël reason, that 'great or bright infers not excellence,' that Saturn or Jupiter, though 'in comparison so small, nor glist'ring' to like degree, may yet 'of solid good contain more plenty than the sun.' Supposing the influence of a celestial body to depend on the magnitude of its sphere, in the sense of the old astronomy (according to which each planet had its proper sphere, around the earth as centre), then the influence of the sun would be judged to be inferior to that of either Saturn, Jupiter, or Mars; while the influences of Venus and Mercury, though inferior to the influence of the sun, would still be held superior to that of the moon. For the ancients measured the spheres of the seven planets of their system by the periods of the apparent revolution of those bodies around the celestial dome, and so set the sphere of the moon innermost, enclosed by the sphere of Mercury,

around which in turn was the sphere of Venus, next the sun's, then, in order, those of Mars, Jupiter, and Saturn. We can readily understand how they might come to regard the slow motions of the sphere of Saturn and Jupiter, taking respectively some thirty and twelve years to complete a revolution, as indicating power superior to the sun's, whose sphere seemed to revolve once in a single year. Many other considerations might have been urged, before the Copernican theory was established, to show that, possibly, some of the planets exert influences more effective than those of the sun and moon.

It is, indeed, clear that the first real shock sustained by astrology came from the arguments of Copernicus. So long as the earth was regarded as the centre round which all the celestial bodies move, it was hopeless to attempt to shake men's faith in the influences of the stars. So far as I know, there is not a single instance of a believer in the old Ptolemaic system who rejected astrology absolutely. The views of Bacon—the last of any note who opposed the system of Copernicus[4]—indicate the extreme

[4] It is commonly stated that Bacon opposed the Copernican theory because he disliked Gilbert, who had advocated it. 'Bacon,' says one of his editors, 'was too jealous of Gilbert to entertain one moment any doctrine that he advanced.' But, apart from the incredible littleness of mind which this explanation imputes to Bacon, it would also have been an incredible piece of folly on Bacon's part to advocate an inferior theory while a rival was left to support a better theory. Bacon saw clearly enough that men were on their way to the discovery of the true theory, and, so far as in him lay, he indicated how they should proceed in order most readily to reach the truth. It must, then, have been from conviction, not out of mere contradiction, that Bacon declared himself in favour of the Ptolemaic system. In fact, he speaks of the diurnal motion of

limits to which a Ptolemaist could go in opposition to astrology. It may be worth while to quote Bacon's opinion in this place, because it indicates at once very accurately the position held by believers in astrology in his day, and the influence which the belief in a central fixed earth could not fail to exert on the minds of even the most philosophical reasoners.

'Astrology,' he begins, 'is so full of superstition that scarce anything sound can be discovered in it; though we judge it should rather be purged than absolutely rejected. Yet if any one shall pretend that this science is founded not in reason and physical contemplations, but in the direct experience and observation of past ages, and therefore not to be examined by physical reasons, as the Chaldæans boasted, he may at the same time bring back divination, auguries, soothsaying, and give in to all kinds of fables; for these also were said to descend from long experience. But we receive astrology as a part of physics, without attributing more to it than reason and the evidence of things allow, and strip it of its superstition and conceits. Thus we banish that empty notion about the horary reign of the planets, as if each resumed the throne thrice in twenty-four hours, so as to leave three hours supernumerary; and yet this fiction produced the division of the week,[5] a thing so ancient and so universally received. Thus

---

the earth as 'an opinion which we can demonstrate to be most false;' doubtless having in his thoughts some such arguments as misled Tycho Brahe.

[5] To Bacon's theological contemporaries this must have seemed a dreadful heresy, and possibly in our own days the assertion would be judged scarcely less harshly, seeing that the observance of the (so-called) Sabbath depends directly upon the belief in quite

likewise we reject as an idle figment the doctrine of horoscopes, and the distribution of the houses, though these are the darling inventions of astrology, which have kept revel, as it were, in the heavens. And lastly, for the calculation of nativities, fortunes, good or bad hours of business, and the like fatalities, they are mere levities, that have little in them of certainty and solidity, and may be plainly confuted by physical reasons. But here we judge it proper to lay down some rules for the examination of astrological matters, in order to retain what is useful therein, and reject what is insignificant. Thus, 1. Let the greater revolutions be retained, but the lesser, of horoscopes and houses, be rejected —the former being like ordnance which shoot to a great distance, whilst the other are but like small bows, that do no execution. 2. The celestial operations affect not all kinds of bodies, but only the more sensible, as humours, air, and spirits. 3. All the celestial operations rather extend to masses of things than to individuals, though they may obliquely reach some individuals also which are more sensible than the rest, as a pestilent constitution of the air affects those bodies which are least able to resist it. 4. All the celestial operations produce not their effects instantaneously, and in a narrow compass, but exert them in large portions of time and space. Thus predictions as to the temperature of a year may hold good, but not with regard to single days. 5. There is no fatal necessity in the stars; and this the more prudent astrologers

---

another origin of the week. Yet there can be little question that the week really had its origin in astrological formulæ.

have constantly allowed. 6. We will add one thing more, which, if amended and improved, might make for astrology—viz. that we are certain the celestial bodies have other influences besides heat and light, but these influences act not otherwise than by the foregoing rules, though they lie so deep in physics as to require a fuller explanation. So that, upon the whole, we must register as needed,[6] an astrology written in conformity with these principles, under the name of *Astrologia Sana*.'

He then proceeds to show what this just astrology should comprehend—as, 1, the doctrine of the commixture of rays; 2, the effect of nearest approaches and farthest removes of planets to and from the point overhead (the planets, like the sun, having their summer and winter); 3, the effects of distance, 'with a proper enquiry into what the vigour of the planets may perform of itself, and what through their nearness to us; for,' he adds, but unfortunately without assigning any reason for the statement, 'a planet is more brisk when most remote, but more communicative when nearest;' 4, the other accidents of the planet's motions as they pursue

> Their wand'ring course, now high, now low, then hid,
> Progressive, retrograde, or standing still;

---

[6] In Bohn's edition the word 'defective' is here used, entirely changing the meaning of the sentence. Bacon registers an *Astrologia Sana* amongst the things needed for the advancement of learning, whereas he is made to say that such an astrology must be registered as defective.

5, all that can be discovered of the general nature of the planets and fixed stars, considered in their own essence and activity; 6, lastly, let this just astrology, he says, 'contain, from tradition, the particular natures and alterations of the planets and fixed stars; for' (here is a reason indeed) 'as these are delivered with general consent, they are not lightly to be rejected, unless they directly contradict physical considerations. Of such observations let a just astrology be formed; and according to these alone should schemes of the heavens be made and interpreted.'

The astrology thus regarded by Bacon as sane and just did not differ, as to its primary object, from the false systems which now seem to us so absurd. 'Let this astrology be used with greater confidence in prediction,' says Bacon, 'but more cautiously in election, and in both cases with due moderation. Thus predictions may be made of comets, and all kinds of meteors, inundations, droughts, heats, frosts, earthquakes, fiery eruptions, winds, great rains, the seasons of the year, plagues, epidemic diseases, plenty, famine, wars, seditions, sects, transmigrations of people, and all commotions, or great innovations of things, natural and civil. Predictions may possibly be made more particular, though with less certainty, if, when the general tendencies of the times are found, a good philosophical or political judgment applies them to such things as are most liable to accidents of this kind. For example, from a foreknowledge of the seasons of any year, they might be apprehended more destructive to olives than grapes,

more hurtful in distempers of the lungs than the liver, more pernicious to the inhabitants of hills than valleys, and, for want of provisions, to monks than courtiers, etc. Or if any one, from a knowledge of the influence which the celestial bodies have upon the spirits of mankind, should find it would affect the people more than their rulers, learned and inquisitive men more than the military, etc. For there are innumerable things of this kind that require not only a general knowledge gained from the stars which are the agents, but also a particular one of the passive subjects. Nor are elections to be wholly rejected, though not so much to be trusted as predictions; for we find in planting, sowing, and grafting, observations of the moon are not absolutely trifling, and there are many particulars of this kind. But elections are more to be curbed by our rules than predictions; and this must always be remembered, that election only holds in such cases where the virtue of the heavenly bodies, and the action of the inferior bodies also, is not transient, as in the examples just mentioned; for the increases of the moon and planets are not sudden things. But punctuality of time should here be absolutely rejected. And perhaps there are more of these instances to be found in civil matters than some would imagine.'

The method of inquiry suggested by Bacon as proper for determining the just rules of the astrology he advocated, was, as might be expected, chiefly inductive. There are, said he, 'but four ways of arriving at this science, viz.—1, by future experiments; 2, past experiments; 3, traditions; 4, physical reasons.' But he was

not very hopeful as to the progress of the suggested researches. It is vain, he said, to think at present of future experiments, because many ages are required to procure a competent stock of them. As for the past, it is true that past experiments are within our reach, 'but it is a work of labour and much time to procure them. Thus astrologers may, if they please, draw from real history all greater accidents, as inundations, plagues, wars, seditions, deaths of kings, etc., as also the positions of the celestial bodies, not according to fictitious horoscopes, but the above-mentioned rules of their revolutions, or such as they really were at the time, and, when the event conspires, erect a probable rule of prediction.' Traditions would require to be carefully sifted, and those thrown out which manifestly clashed with physical considerations, leaving those in full force which complied with such considerations. Lastly, the physical reasons worthiest of being enquired into are those, said Bacon, 'which search into the universal appetites and passions of matter, and the simple genuine motions of the heavenly bodies.'

It is evident there was much which, in our time at least, would be regarded as wild and fanciful in the 'sound and just astrology' advocated by Bacon. Yet, in passing, it may be noticed that even in our own time we have seen similar ideas promulgated, not by common astrologers and fortune-tellers (who, indeed, know nothing about such matters), but by persons supposed to be well-informed in matters scientific. In a roundabout way, a new astrology has been suggested, which is not at all unlike Bacon's

'astrologia sana,' though not based, as he proposed that astrology should be, on experiment, or tradition, or physical reasons. It has been suggested, first, that the seasons of our earth are affected by the condition of the sun in the matter of spots, and very striking evidence has been collected to show that this must be the case. For instance, it has been found that years when the sun has been free from spots have been warmer than the average; and it has also been found that such years have been cooler than the average: a double-shotted argument wholly irresistible, especially when it is also found that when the sun has many spots the weather has sometimes been exceptionally warm and sometimes exceptionally cold. If this be not considered sufficient, then note that in one country or continent or hemisphere the weather, when the sun is most spotted (or least, as the case may be), may be singularly hot, while in another country, continent, or hemisphere, the weather may be as singularly cold. So with wind and calm, rain and drought, and so forth. Always, whether the sun is very much spotted or quite free from spots, something unusual in the way of weather must be going on somewhere, demonstrating in the most significant way the influence of sun-spots or the want of sun-spots on the weather. It is true that captious minds might say that this method of reasoning proved too much in many ways, as, for example, thus—always, whether the sun is very much spotted or quite free from spots, some remarkable event, as a battle, massacre, domestic tragedy on a large scale, or the like, may be going on, demonstrating in the

most significant way the influence of sun-spots or the want of sun-spots on the passions of men—which sounds absurd. But the answer is twofold. First, such reasoning is captious, and secondly, it is not certain that sun-spots, or the want of them, may not influence human passions; it may be worth while to enquire into this possible solar influence as well as the other, which can be done by crossing the hands of the new fortune-tellers with a sufficient amount of that precious metal which astrologers have in all ages dedicated to the sun.

That the new system of divination is not solely solar, but partly planetary also, is seen when we remember that the sun-spots wax and wane in periods of time which are manifestly referable to the planetary motions. Thus, the great solar spot-period lasts about eleven years, the successive spotless epochs being separated on the average by about that time; and so nearly does this period agree with the period of the planet Jupiter's revolution around the sun, that during eight consecutive spot-periods the spots were most numerous when Jupiter was farthest from the sun, and it is only by going back to the periods preceding these eight that we find a time when the reverse happened, the spots being most numerous when Jupiter was nearest to the sun. So with various other periods which the ingenuity of Messrs. De la Rue and Balfour Stewart has detected, and which, under the closest scrutiny, exhibit almost exact agreement for many successive periods, preceded and followed by almost exact disagreement. Here, again, the captious may argue that such

alternate agreements and disagreements may be noted in every case where two periods are not very unequal, whether there be any connection between them or not; but much more frequently when there is no connection: and that the only evidence really proving a connection between planetary motions and the solar spots would be constant agreement between solar spot periods and particular planetary periods. But the progress of science, and especially the possible erection of a new observatory for finding out ('for a consideration') how sun-spots affect the weather, etc., ought not to be interfered with by captious reasoners in this objectionable manner. Nor need any other answer be given them. Seeing, then, that sun-spots manifestly affect the weather and the seasons, while the planets rule the sun-spots, it is clear that the planets really rule the seasons. And again, seeing that the planets rule the seasons, while the seasons largely affect the well-being of men and nations (to say nothing of animals), it follows that the planets influence the fates of men and nations (and animals). *Quod erat demonstrandum.*

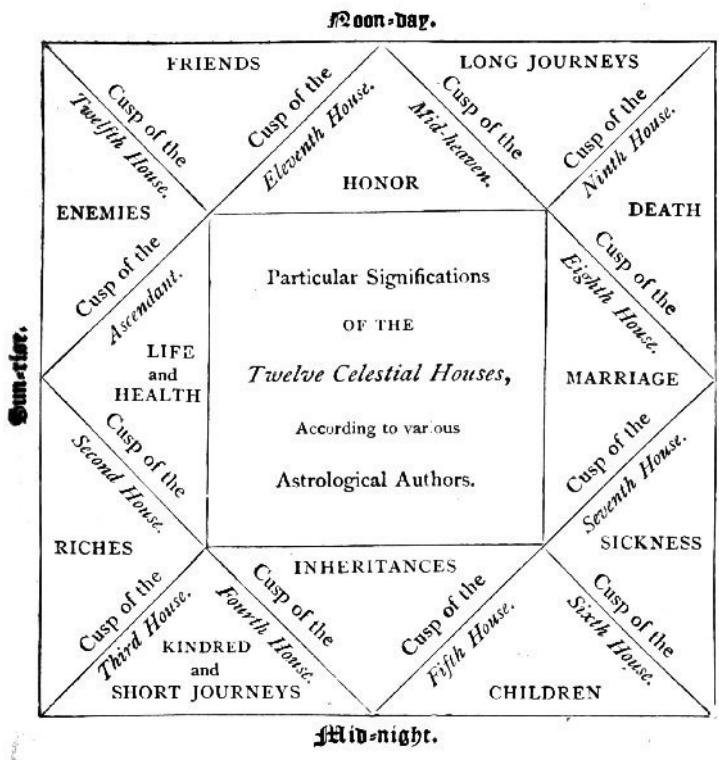
Let us return, however, to the more reasonable astrology of the ancients, and enquire into some of the traditions which Bacon considered worthy of attention in framing the precepts of a sound and just astrology.

It was natural that the astrologers of old should regard the planetary influences as depending in the main on the position of the celestial bodies on the sky above the person or place whose fortunes were in question. Thus two men at the same

moment in Rome and in Persia would by no means have the same horoscope cast for their nativities, so that their fortunes, according to the principles of judicial astrology, would be quite different. In fact it might happen that two men, born at the same instant of time, would have all the principal circumstances of their lives contrasted—planets riding high in the heavens of one being below the horizon of the other, and *vice versâ*.

The celestial sphere placed as at the moment of the native's birth was divided into twelve parts by great circles supposed to pass through the point overhead, and its opposite, the point vertically beneath the feet. These twelve divisions were called 'houses.'

Their position is illustrated in the following figure, taken from Raphaël's Astrology.



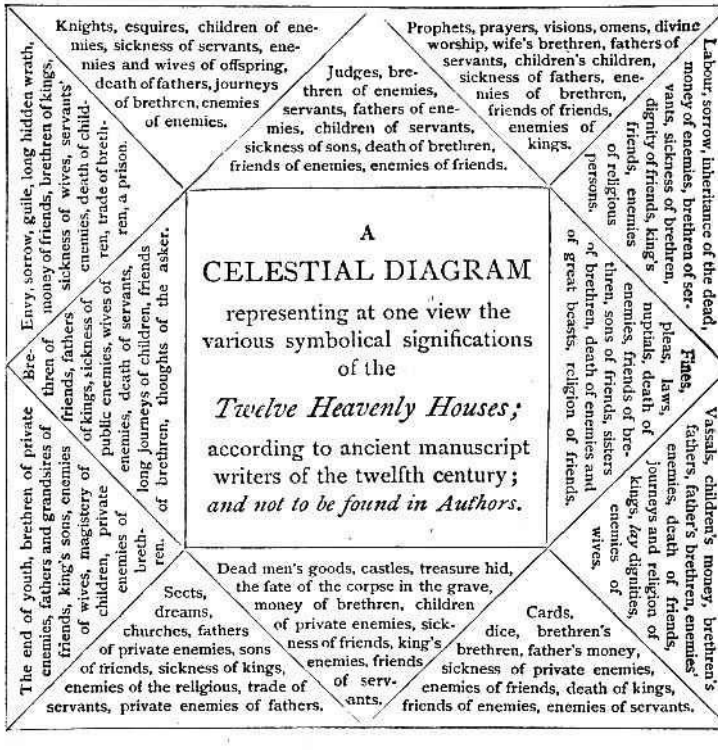
The first, called the Ascendant House, was the portion rising above the horizon at the east. It was regarded as the House of Life, the planets located therein at the moment of birth having most potent influence on the life and destiny of the native. Such planets were said to rule the ascendant, being in the ascending house; and it is from this usage that our familiar expression that

such and such an influence is 'in the ascendant' is derived. The next house was the House of Riches, and was one-third of the way from the east below the horizon towards the place of the sun at midnight. The third was the House of Kindred, short journeys, letters, messages, etc. It was two-thirds of the way towards the place of the midnight sun. The fourth was the House of Parents, and was the house which the sun reached at midnight. The fifth was the House of Children and Women, also of all sorts of amusements, theatres, banquets, and merry-making. The sixth was the House of Sickness. The seventh was the House of Love and Marriage. These three houses (the fifth, sixth, and seventh) followed in order from the fourth, so as to correspond to the part of the sun's path below the horizon, between his place at midnight and his place when descending in the west. The seventh, opposite to the first, was the Descendant. The eighth house was the first house above the horizon, lying to the west, and was the House of Death. The ninth house, next to the mid-heaven on the west, was the House of Religion, science, learning, books, and long voyages. The tenth, which was in the mid-heaven, or region occupied by the sun at midday, was the House of Honour, denoting credit, renown, profession or calling, trade, preferment, etc. The eleventh house, next to the mid-heaven on the east, was the House of Friends. Lastly, the twelfth house was the House of Enemies.

The houses were not all of equal potency. The *angular* houses, which are the first, the fourth, the seventh, and the tenth—

lying east, north, west, and south—were first in power, whether for good or evil. The second, fifth, eighth, and eleventh houses were called *succedents*, as following the angular houses, and next to them in power. The remaining four houses—viz. the third, sixth, ninth, and twelfth houses—were called *cadents*, and were regarded as weakest in influence. The houses were regarded as alternately masculine and feminine: the first, third, fifth, etc., being masculine; while the second, fourth, sixth, etc., were feminine.

The more particular significations of the various houses are shown in the accompanying figure from the same book.



It will be easily understood how these houses were dealt with in erecting a scheme of nativity. The position of the planets at the moment of the native's birth, in the several houses, determined his fortunes with regard to the various matters associated with these houses. Thus planets of good influence in the native's ascendant, or first house, signified generally a prosperous life;

but if at the same epoch a planet of malefic influence was in the seventh house, then the native, though on the whole prosperous, would be unfortunate in marriage. A good planet in the tenth house signified good fortune and honour in office or business, and generally a prosperous career as distinguished from a happy life; but evil planets in the ninth house would suggest to the native caution in undertaking long voyages, or entering upon religious or scientific controversies.

Similar considerations applied to questions relating to horary astronomy, in which the position of the planets in the various houses at some epoch guided the astrologer's opinion as to the fortune of that hour, either in the life of a man or the career of a State. In such inquiries, however, not only the position of the planets, etc., at the time had to be considered, but also the original horoscope of the person, or the special planets and signs associated with particular States. Thus if Jupiter, the most fortunate of all the planets, was in the ascendant, or in the House of Honour, at the time of the native's birth, and at some epoch this planet was ill-aspected or afflicted by other planets potent for evil in the native's horoscope, then that epoch would be a threatening one in the native's career.

The sign Gemini was regarded by astrologers as especially associated with the fortunes of London, and accordingly they tell us that the great fire of London, the plague, the building of London Bridge, and other events interesting to London, all occurred when this sign was in the ascendant, or when special

planets were in this sign.[7]

[7] The astrologers were exceedingly ingenious in showing that their art had given warning of the great plague and fire of London. Thus, the star which marks the Bull's northern horn—and which is described by Ptolemy as like Mars—was, they say, exactly in that part of the sign Gemini which is the ascendant of London, in 1666. Lilly, however, for whom they claim the credit of predicting the year of this calamity, laid no claim himself to that achievement; nay, specially denied that he knew when the fire was to happen. The story is rather curious. In 1651 Lilly had published his *Monarchy or no Monarchy*, which contained a number of curious hieroglyphics. Amongst these were two (see frontispiece) which appeared to portend plague and fire respectively. The hieroglyphic of the plague represents three dead bodies wrapped in death-clothes, and for these bodies two coffins lie ready and two graves are being dug; whence it was to be inferred that the number of deaths would exceed the supply of coffins and graves. The hieroglyphic of the fire represents several persons, gentlefolk on one side and commonfolk on the other, emptying water vessels on a furious fire into which two children are falling headlong. The occurrence of the plague in 1665 attracted no special notice to Lilly's supposed prediction of that event, though probably many talked of the coincidence as remarkable. But when in 1666 the great fire occurred, the House of Commons summoned Lilly to attend the committee appointed to enquire into the cause of the fire. 'At two of the clock on Friday, the 25th of October 1666,' he attended in the Speaker's chamber, 'to answer such questions as should then and there be asked him.' Sir Robert Brooke spoke to this effect: 'Mr. Lilly, this committee thought fit to summon you to appear before them this day, to know if you can say anything as to the cause of the late fire, or whether there might be any design therein. You are called the rather hither, because in a book of yours long since printed, you hinted some such thing by one of your hieroglyphics.' Unto which he replied: 'May it please your honours, after the beheading of the late king, considering that in the three subsequent years the Parliament acted nothing which concerned the settlement of the nation's peace, and seeing the generality of the people dissatisfied, the citizens of London discontented, and the soldiery prone to mutiny, I was desirous, according to the best knowledge God had given me, to make enquiry by the art I studied, what might, from that time, happen unto the Parliament and nation in general. At last, having satisfied myself as well as I could, and perfected my judgment therein, I thought it most convenient to signify my intentions and conceptions thereof in forms, shapes, types, hieroglyphics, etc., without

The signs of the zodiac in the various houses were in the first place to be noted, because not only had these signs special powers in special houses, but the effects of the planets in particular houses varied according to the signs in which the planets were situated. If we were to follow the description given by the astrologers themselves, not much insight would be thrown upon the meaning of the zodiacal signs. For instance, astrologers say that Aries is a vernal, dry, fiery, masculine, cardinal, equinoctial, diurnal, movable, commanding, eastern, choleric, violent, and quadrupedalian sign. We may, however, infer generally from their accounts the influences which they assigned to the zodiacal signs.

Aries is the house and joy of Mars, signifies a dry constitution, long face and neck, thick shoulders, swarthy complexion, and a hasty, passionate temper. It governs the head and face, and all diseases relating thereto. It reigns over England, France, Switzerland, Germany, Denmark, Lesser Poland, Syria, Naples,

---

any commentary, that so my judgment might be concealed from the vulgar, and made manifest only unto the wise; I herein imitating the examples of many wise philosophers who had done the like. Having found, sir, that the great city of London should be sadly afflicted with a great plague, and not long after with an exorbitant fire, I framed these two hieroglyphics, as represented in the book, which in effect have proved very true.' 'Did you foresee the year?' said one. 'I did not,' said Lilly; 'nor was desirous; of that I made no scrutiny. Now, sir, whether there was any design of burning the city, or any employed to that purpose, I must deal ingenuously with you, that since the fire I have taken much pains in the search thereof, but cannot or could not give myself the least satisfaction therein. I conclude that it was the finger of God only; but what instruments He used thereunto I am ignorant.'

Capua, Verona, etc. It is a masculine sign, and is regarded as fortunate.

Taurus gives to the native born under his auspices a stout athletic frame, broad bull-like forehead, dark curly hair, short neck, and so forth, and a dull apathetic temper, exceedingly cruel and malicious if once aroused. It governs the neck and throat, and reigns over Ireland, Great Poland, part of Russia, Holland, Persia, Asia Minor, the Archipelago, Mantua, Leipsic, etc. It is a feminine sign, and unfortunate.

Gemini is the house of Mercury. The native of Gemini will have a sanguine complexion and tall, straight figure, dark eyes quick and piercing, brown hair, active ways, and will be of exceedingly ingenious intellect. It governs the arms and shoulders, and rules over the south-west parts of England, America, Flanders, Lombardy, Sardinia, Armenia, Lower Egypt, London, Versailles, Brabant, etc. It is a masculine sign, and fortunate.

Cancer is the house of the Moon and exaltation of Jupiter, and its native will be of fair but pale complexion, round face, grey or mild blue eyes, weak voice, the upper part of the body large, slender arms, small feet, and an effeminate constitution. It governs the breast and the stomach, and reigns over Scotland, Holland, Zealand, Burgundy, Africa, Algiers, Tunis, Tripoli, Constantinople, New York, etc. It is a feminine sign, and unfortunate.

The native born under Leo will be of large body, broad

shoulders, austere countenance, with dark eyes and tawny hair, strong voice, and leonine character, resolute and ambitious, but generous, free, and courteous. Leo governs the heart and back, and reigns over Italy, Bohemia, France, Sicily, Rome, Bristol, Bath, Taunton, Philadelphia, etc. It is a masculine sign, and fortunate.

Virgo is the joy of Mercury. Its natives are of moderate stature, seldom handsome, slender but compact, thrifty and ingenious. It governs the abdomen, and reigns over Turkey both in Europe and Asia, Greece, and Mesopotamia, Crete, Jerusalem, Paris, Lyons, etc. It is a feminine sign, and generally unfortunate.

Libra is the house of Venus. The natives of Libra are tall and well made, elegant in person, round-faced and ruddy, but plain-featured and 'inclined to eruptions that disfigure the face when old; they' (the natives) 'are of sweet disposition, just and upright in dealing.' It governs the lumbar regions, and reigns over Austria, Alsace, Savoy, Portugal, Livonia, India, Ethiopia, Lisbon, Vienna, Frankfort, Antwerp, Charleston, etc. It is a masculine sign, and fortunate.

Scorpio is, like Aries, the house of Mars, 'and also his joy.' Its natives are strong, corpulent, and robust, with large bones, 'dark curly hair and eyes' (presumably the eyes dark only, not curly), middle stature, dusky complexion, active bodies; they are usually reserved in speech. It governs the region of the groin, and reigns over Judæa, Mauritania, Catalonia, Norway, West Silesia,

Upper Batavia, Barbary, Morocco, Valentia, Messina, etc. It is feminine, and unfortunate. (It would appear likely, by the way, that astrology was a purely masculine science.)

Sagittarius is the house and joy of Jupiter. Its natives are well formed and tall, ruddy, handsome, and jovial, with fine clear eyes, chestnut hair, and oval fleshy face. They are 'generally jolly fellows at either bin or board,' active, intrepid, generous, and obliging. It governs the legs and thighs,[8] and reigns over Arabia Felix, Spain, Hungary, Moravia, Liguria, Narbonne, Cologne, Avignon, etc. It is masculine, and of course fortunate.

Capricorn is the house of Saturn and exaltation of Mars. This sign gives to its natives a dry constitution and slender make, with a long thin visage, thin beard (a generally goaty aspect, in fact), dark hair, long neck, narrow chin, and weak knees. It governs, nevertheless, the knees and hams, and reigns over India, Macedonia, Thrace and Greece, Mexico, Saxony, Wilna, Mecklenburgh, Brandenburg, and Oxford. It is feminine, and unfortunate.

Aquarius also is the house of Saturn. Its natives are robust, steady, strong, healthy, and of middle stature; delicate complexion, clear but not pale, sandy hair, hazel eyes, and generally an honest disposition. It governs the legs and ankles, and reigns over Arabia, Petræa, Tartary, Russia, Denmark,

[8] Sir Toby Belch and Sir Andrew Aguecheek were evidently not well taught in astrology. 'Shall we set about some revels?' says the latter. 'What shall we do else?' says Toby; 'were we not born under Taurus?' 'Taurus, that's sides and heart,' says sapient Andrew. 'No, sir,' responds Toby, 'it's legs and thighs. Let me see thee caper.'

Lower Sweden, Westphalia, Hamburg, and Bremen. It is masculine, and fortunate.

Pisces is the house of Jupiter and exaltation of Venus. Its natives are short, pale, thick-set, and round-shouldered (like fish), its character phlegmatic and effeminate. It governs the feet and toes, and reigns over Portugal, Spain, Egypt, Normandy, Galicia, Ratisbon, Calabria, etc. It is feminine, and therefore, naturally, unfortunate.

Let us next consider the influences assigned to the various planets and constellations.

Though we can understand that in old times the planets and stars were regarded as exercising very potent influences upon the fates of men and nations,[9] it is by no means easy to understand how astrologers came to assign to each planet its special influence. That is, it is not easy to understand how they could have been led to such a result by actual reasoning, still less by any process of observation.[10] There was a certain scientific

---

[9] 'This is the excellent foppery of the world, that, when we are sick in fortune (often the surfeit of our own behaviour), we make guilty of our disasters the sun, moon, and stars: as if we were villains on necessity; fools by heavenly compulsion; knaves, thieves, and treacherous by spherical predominance; drunkards, liars, and adulterers, by inforced obedience of planetary influence; and all that we are, evil, by a divine thrusting on.'—Shakespeare (*King Lear*).

[10] There are few things more remarkable, or to reasoning minds more inexplicable, than the readiness with which men undertook in old times, and even now undertake, to interpret omens and assign prophetic significance to casual events. One can understand that foolish persons should believe in omens, and act upon the ideas suggested by their superstitions. The difficulty is to comprehend how these superstitions came into

basis for the belief in the possibility of determining the special influences of the stars; and we should have expected to find some scientific process adopted for the purpose. Yet, so far as can be judged, the influences assigned to the planets depended on entirely fanciful considerations. In some cases we seem almost to see the line along which the fancies of the old astrologers led them, just as in some cases we can perceive how mythological superstitions (which are closely related to astrological ideas) had their origin; though it is not quite clear whether the planets were first regarded as deities with special qualities, and these qualities afterwards assigned to the planetary influences, or whether the planetary influences were first assigned, and came eventually to be regarded as the qualities of the deities associated with the several planets.

It is easy, for instance, to understand why astrologers should have regarded the sun as the emblem of kingly power and dignity, and equally easy to understand why, to the sun regarded as a

---

existence. For instance, who first conceived the idea that a particular line in the palm of the hand is the line of life; and what can possibly have suggested so absurd a notion? To whom did the thought first present itself that the pips on playing-cards are significant of future events; and why did he think so? How did the 'grounds' of a teacup come to acquire that deep significance which they now possess for Mrs. Gamp and Betsy Prig? If the believers in these absurdities be asked *why* they believe, they answer readily enough either that they themselves or their friends have known remarkable fulfilments of the ominous indications of cards or tea-dregs, which must of necessity be the case where millions of forecasts are daily made by these instructive methods. But the persons who first invented those means of divination can have had no such reasons. They must have possessed imaginations of singular liveliness and not wanting in ingenuity. It is a pity that we know so little of them.

deity, corresponding qualities should have been ascribed; but it is not easy to determine whether the astrological or the Sabaistic superstitions were the earlier. And in like manner of the moon and planets. There seems to me no sufficient evidence in favour of Whewell's opinion, that 'in whatever manner the sun, moon, and planets came to be identified with gods and goddesses, the characters ascribed to these gods and goddesses, regulated the virtues and powers of the stars which bear their names.' As he himself very justly remarks, 'We do not possess any of the speculations of the earlier astrologers; and we cannot, therefore, be certain that the notions which operated in men's minds when the art had its birth, agreed with the views on which it was afterwards defended.' He does not say why he infers that, though at later periods supported by physical analogies, it was originally suggested by mythological beliefs. Quite as probably mythological beliefs were suggested by astrological notions. Some of these beliefs, indeed, seem manifestly to have been so suggested; as the character of the deity Mercury, from the rapid motions of the planet Mercury, and the difficulty of detecting it; the character of Mars from the blood-red hue of the planet when close to the horizon, and so forth.

Let us examine, however, the characteristics ascribed by astrologers to various planets.

It is unfortunate for astrology that, despite the asserted careful comparison of events with the planetary positions preceding and indicating them, nothing was ever observed which seemed to

suggest the possibility that there may be an unknown planet ruling very strongly the affairs of men. Astrologers tell us now that Uranus is a very potent planet; yet the old astrologers seem to have got on very well without him. By the way, one of the moderns, the grave Raphaël, gives a very singular account of the discovery of Uranus, in a book published sixteen years before Neptune was discovered by just such a process as Raphaël imagined in the case of Uranus. He says that Drs. Halley, Bradley, and others, having frequently observed that Saturn was disturbed in his motion by some force exerted from beyond his orbit, and being unable to account for the disturbance on the known principles of gravitation, pursued their enquiry into the matter, 'till at length the discovery of this hitherto unknown planet covered their labours with success, and has enabled us to enlarge our present solar system to nearly double its bounds.' Of course there is not a word of truth in this; Uranus having been discovered by accident long after Halley and Bradley were in the grave. But the account suggests what might have been, and curiously anticipates the actual manner in which Neptune was discovered.

Astrologers agree in attributing evil effects to Uranus. But the evil he does is always peculiarly strange, unaccountable, and totally unexpected. He causes the native born under his influence to be of a very eccentric and original disposition, romantic, unsettled, addicted to change, a seeker after novelty; though, if the moon or Mercury have a good aspect towards Uranus, the

native will be profound in the secret sciences, magnanimous, and lofty of mind. But let all beware of marriage when Uranus is in the seventh house, or afflicting the moon. And in general, let the fair sex remember that Uranus is peculiarly hostile to them, and very evil in love.

Saturn is the Greater Infortune of the old system of astrology, and is by universal experience acknowledged to be the most potent, evil, and malignant of all the planets. Those born under him are of dark and pale complexion, with small, black, leering eyes, thick lips and nostrils, large ears, thin face, lowering looks, cloudy aspect, and seemingly melancholy and unhappy; and though they have broad shoulders, they have but short lips and a thin beard, They are in character austere and reserved, covetous, laborious, and revengeful; constant in friendship, and good haters. The most remarkable and certain characteristic of the Saturnine man is that, as an old author observes 'he will never look thee in the face.' 'If they have to love any one, these Saturnines,' says another old author, 'they love most constantly; and if they hate, they hate to the death.' The persons signified symbolically by Saturn are grandparents, and other old persons, day labourers, paupers, beggars, clowns, husbandmen of the meaner sort, and especially undertakers, sextons, and gravediggers. Chaucer thus presents the chief effects which Saturn produces in the fortunes of men and nations—Saturn himself being the speaker:—

… quod Saturne
My cours, that hath so wide for to turne,
Hath more power than wot any man.
Min is the drenching in the sea so wan,
Min is the prison in the derke cote,
Min is the strangel and hanging by the throte,
The murmure and the cherles rebelling,
The groyning, and the prive empoysoning,
I do vengaunce and pleine correction,
While I dwell in the signe of the leon;
Min is the ruine of the high halles,
The falling of the toures and of the walles
Upon the minour or the carpenter:
I slew Sampson in shaking the piler.
Min ben also the maladies colde,
The derke tresons, and the castes olde:
My loking is the fader of pestilence.

Jupiter, on the contrary, though Saturn's next neighbour in the solar system, produces effects of an entirely contrary kind. He is, in fact, the most propitious of all the planets, and the native born under his influence has every reason to be jovial in fact as he is by nature. Such a native will be tall and fair, handsome and erect, robust, ruddy, and altogether a good-looking person, whether male or female. The native will also be religious, or at least a good moral honest man, unless Jupiter be afflicted by the aspects of Saturn, Mars, or Uranus; in which case he may still be a jolly fellow, no man's enemy but his own—only he

will probably be his own enemy to a very considerable extent, squandering his means and ruining his health by gluttony and intoxication. The persons represented by Jupiter (when he is not afflicted) are judges, counsellors, church dignitaries, from cardinals to curates, scholars, chancellors, barristers, and the highest orders of lawyers, woollendrapers (possibly there may be some astral significance in the woolsack), and clothiers. When Jupiter is afflicted, however, he denotes quacks and mountebanks, knaves, cheats, and drunkards. The influence of the planet on the fortunes is nearly always good. Astrologers, who to a man reverence dignities, consider Great Britain fortunate in that the lady whom, with customary effusion, they term 'Our Most Gracious Queen,' was born when Jupiter was riding high in the heavens near his culmination, this position promising a most fortunate and happy career. The time has passed when the fortunes of this country were likely to be affected by such things; but we may hope, for the lady's own sake, that this prediction has been fulfilled. Astrologers assert the same about the Duke of Wellington, assigning midnight, May 1, 1769, as the hour of his birth. There is some doubt both as to the date and place of the great soldier's birth; but the astrologer finds in the facts of his life the means of removing all such doubts.[11]

[11] Wellington lived too long for the astrologers, his death within the year having unfortunately been predicted by them many times during the last fifteen years of his life. Some astrologers were more cautious, however. I have before me his horoscope, carefully calculated, *secundum artem*, by Raphaël in 1828, with results 'sufficiently evincing the surprising verity and singular accuracy of astrological calculations, when

Next in order comes Mars, inferior only in malefic influence to Saturn, and called by the old astrologers the Lesser Infortune. The native born under the influence of Mars is usually of fierce countenance, his eyes sparkling, or sharp and darting, his complexion fiery or yellowish, and his countenance scarred or furrowed. His hair is reddish or sandy, unless Mars chances to be in a watery sign, in which case the hair will be flaxen; or in an earthly sign, in which case the hair will be chestnut. The Martialist is broad-shouldered, steady, and strong, but short,[12] and often bony and lean. In character the Martialist is fiery and choleric, naturally delighting in war and contention,

---

founded on the correct time of birth, and mathematically calculated. I have chosen,' he proceeds, 'the nativity of this illustrious native, in preference to others, as the subject is now living, and, consequently, all possibility of making up any fictitious horoscope is at once set aside; thus affording me a most powerful shield against the insidious representations of the envious and ignorant traducer of my sublime science.' By some strange oversight, however, Raphaël omits to mention anything respecting the future fortunes of Wellington, showing only how wonderfully Wellington's past career had corresponded with his horoscope.

[12] 'I have still observed,' says an old author, 'that your right Martialist doth seldom exceed in height, or be at the most above a yard or a yard and a half in height' (which is surely stint measure). 'It hath been always thus,' said that right Martialist Sir Geoffrey Hudson to Julian Peveril; 'and in the history of all ages, the clean tight dapper little fellow hath proved an overmatch for his burly antagonist. I need only instance, out of Holy Writ, the celebrated downfall of Goliath and of another lubbard, who had more fingers in his hand, and more inches to his stature, than ought to belong to an honest man, and who was slain by a nephew of good King David; and of many others whom I do not remember; nevertheless, they were all Philistines of gigantic stature. In the classics, also, you have Tydeus, and other tight compact heroes, whose diminutive bodies were the abode of large minds.'

but generous and magnanimous. This when Mars is well aspected; should the planet be evil aspected, then will the native be treacherous, thievish, treasonable, cruel, and wicked. The persons signified by Mars are generals, soldiers, sailors (if he is in a watery sign), surgeons, chemists, doctors, armourers, barbers, curriers, smiths, carpenters, bricklayers, sculptors, cooks, and tailors. When afflicted with Mercury or the moon, he denotes thieves, hangmen, and 'all cut throat people.' In fact, except the ploughboy, who belongs to Saturn, all the members of the old septet, 'tinker, tailor, soldier, sailor, apothecary, ploughboy, thief,' are favourites with Mars. The planet's influence is not quite so evil as Saturn's, nor are the effects produced by it so long-lasting. 'The influence of Saturn,' says an astrologer, 'may be compared to a lingering but fatal consumption; that of Mars to a burning fever.' He is the cause of anger, quarrels, violence, war, and slaughter.

The sun comes next; for it must be remembered that, according to the old system of astronomy, the sun was a planet. Persons born under the sun as the planet ruling their ascendant, would be more apt to be aware of the fact than Saturnine, Jovial, Martial, or any other folk, because the hour of birth, if remembered, at once determines whether the native is a solar subject or not. The solar native has generally a round face (like pictures of the sun in old books of astronomy), with a short chin; his complexion somewhat sanguine; curling sandy hair, and a white tender skin. As to character, he is bold and resolute,

desirous of praise, of slow speech and composed judgment; outwardly decorous, but privately not altogether virtuous. The sun, in fact, according to astrologers, is the natural significator of respectability; for which I can discover no reason, unless it be that the sun travelling always in the ecliptic has no latitude, and so solar folk are allowed none. When the sun is ill aspected, the native is both proud and mean, tyrannical and sycophantic, exceedingly unamiable, and generally disliked because of his arrogance and ignorant pomposity. The persons signified by the sun are emperors, kings, and titled folk generally, goldsmiths, jewellers, and coiners. When 'afflicted,' the sun signifies pretenders either to power or knowledge. The sun's influence is not in itself either good or evil, but is most powerful for good when he is favourably aspected, and for evil when he is afflicted by other planets.

Venus, the next in order, bore the same relation to the Greater Fortune Jupiter which Mars bore to Saturn the Greater Ill-fortune. She was the Lesser Fortune, and her influence was in nearly all respects benevolent. The persons born under the influence of this planet are handsome, with beautiful sparkling hazel or black eyes (but another authority assigns the subject of Venus, 'a full eye, usually we say goggle-eyed,' by which we do not usually imply beauty), ruddy lips, the upper lip short, soft smooth hair, dimples in the cheek and chin, an amorous look and a sweet voice. One old astrologer puts the matter thus pleasantly: —'The native of Venus hath,' quoth he, 'a love-dimple in the

chin, a lovely mouth, cherry lips, and a right merry countenance.' In character the native of Venus is merry 'to a fault,' but of temper engaging, sweet and cheerful, unless she be ill aspected, when her native is apt to be too fond of pleasure and amusement. That her influence is good is shown (in the opinion of Raphaël, writing in 1828) by the character of George IV., 'our present beloved monarch and most gracious majesty, who was born just as this benevolent star' was in the ascendant; 'for it is well known to all Europe what a refined and polished genius, and what exquisite taste, the King of England possesses, which therefore may be cited as a most illustrious proof of the celestial science; a proof likewise which is palpably demonstrable, even to the most casual observer, since the time of his nativity is taken from the public journals of the period, and cannot be gainsaid.' 'This illustrious and regal horoscope is replete with wonderful verifications of planetary influence, and England cannot but prosper while she is blessed with the mild and beneficent sway of this potent monarch.' Strengthened in faith by this convincing proof of the celestial science, we proceed to notice that Venus is the protectrice of musicians, embroiderers, perfumers, classic modellers, and all who work in elegant attire or administer to the luxuries of the great; but when she is afflicted, she represents 'the lower orders of the votaries of voluptuousness.'

Mercury is considered by astrologers 'a cold, dry, melancholy star.' The Mercurial is neither dark nor fair, but between both, long-faced, with high forehead and thin sharp nose,

'thin beard (many times none at all), slender of body, and with small weak eyes;' long slender hands and fingers are 'especial marks of Mercury,' says Raphaël. In character the Mercurial is busy and prattling. But when well affected, Mercury gives his subjects a strong, vigorous, active mind, searching and exhaustive, a retentive memory, a natural thirst for knowledge.[13] The persons signified by Mercury are astrologers, philosophers, mathematicians, politicians, merchants, travellers, teachers, poets, artificers, men of science, and all ingenious, clever men. When he is ill affected, however, he represents pettifoggers, cunning vile persons, thieves, messengers, footmen, and servants, etc.

The moon comes last in planetary sequence, as nearest to the earth. She is regarded by astrologers as a cold, moist, watery, phlegmatic planet, variable to an extreme, and, like the sun, partaking of good or evil according as she is aspected favourably or the reverse. Her natives are of good stature, fair, and pale, moon-faced, with grey eyes, short arms, thick hands and feet, smooth, corpulent and phlegmatic body. When she is in watery signs, the native has freckles on the face, or, says Lilly, 'he or she is blub-cheeked, not a handsome body, but a muddling creature.' Unless the moon is very well aspected, she ever signifies an ordinary vulgar person. She signifies sailors (not as Mars does, the fighting-men of war-ships, but nautical folk generally) and

[13] It is likely that Swedenborg in his youth studied astrology, for in his visions the Mercurial folk have this desire of knowledge as their distinguishing characteristic.

all persons connected with water or any kind of fluid; also all who are engaged in inferior and common offices.

We may note, in passing, that to each planet a special metal is assigned, as also particular colours. Chaucer, in the Chanones Yemannes' Tale, succinctly describes the distribution of the metals among the planets:—

> Sol gold is, and Luna silver we threpe;
> Mars iren, Mercurie silver we clepe:
> Saturnus led, and Jupiter is tin,
> And Venus coper, by my [the Chanones Yemannes'] faderkin.

The colours are thus assigned:—to Saturn, black; to Jupiter, mixed red and green; to Mars, red; to the sun, yellow or yellow-purple; to Venus, white or purple; to Mercury, azure blue; to the moon, a colour spotted with white and other mixed colours.

Again, the planets were supposed to have special influence on the seven ages of human life. The infant, 'mewling and puking in the nurse's arms,' was very appropriately dedicated to the moist moon; the whining schoolboy (did schoolboys whine in the days of good Queen Bess?) was less appropriately assigned to Mercury, the patron of those who eagerly seek after knowledge: then very naturally, the lover sighing like furnace was regarded as the special favourite of Venus. Thus far the order has been that of the seven planets of the ancient astrology, in supposed distance. Now, however, we have to pass over the sun, finding Mars the

patron of mid life, appropriately (in this respect) presiding over the soldier full of strange oaths, and so forth; the 'justice in fair round belly with good capon lined' is watched over by the respectable sun; maturer age by Jupiter; and, lastly, old age by Saturn.

Colours were also assigned to the twelve zodiacal signs—to Aries, white and red; to Taurus, white and lemon; to Gemini, white and red (the same as Aries); to Cancer, green or russet; to Leo, red or green; to Virgo, black speckled with blue; to Libra, black, or dark crimson, or tawny colour; to Scorpio, brown; to Sagittarius, yellow, or a green sanguine (this is as strange a colour as the *gris rouge* of Molière's *L'Avare*); Capricorn, black or russet, or a swarthy brown; to Aquarius, a sky-coloured blue; to Pisces, white glistening colour (like a fish just taken out of the water).

The chief fixed stars had various influences assigned to them by astrologers. These influences were mostly associated with the imaginary figures of the constellations. Thus the bright star in the head of Aries, called by some the Ram's Horn, was regarded as dangerous and evil, denoting bodily hurts. The star Menkar in the Whale's jaw denoted sickness, disgrace, and ill-fortune, with danger from great beasts. Betelgeux, the bright star on Orion's right shoulder, denoted martial honours or wealth; Bellatrix, the star on Orion's left shoulder, denoted military or civic honours; Rigel, on Orion's left foot, denoted honours; Sirius and Procyon, the greater and lesser Dog Stars, both implied wealth and

renown. Star clusters seem to have portended loss of sight; at least we learn that the Pleiades were 'eminent stars,' but denoting accidents to the sight or blindness, while the cluster Præsepe or the Beehive in like manner threatened blindness. The cluster in Perseus does not seem to have been noticed by astrologers. The variable star Algol or Caput Medusæ, which marks the head of Gorgon, was accounted 'the most unfortunate, violent, and dangerous star in the heavens.' It is tolerably clear that the variable character of this star had been detected long before Montanari (to whom the discovery is commonly attributed) noticed the phenomenon. The name Algol is only a variation of Al-ghúl, the monster or demon, and it cannot be doubted that the demoniac, Gorgonian character assigned to this star was suggested by its ominous change, as though it were the eye of some fierce monster slowly winking amid the gloom of space. The two stars called the Aselli, which lie on either side of the cluster Præsepe, 'are said' (by astrologers) 'to be of a burning nature, and to give great indications of a violent death, or of violent and severe accidents by fire.' The star called Cor Hydræ, or the serpent's heart, denotes trouble through women (said I not rightly that Astrology was a masculine science?); the Lion's heart, Regulus, implied glory and riches; Deneb, the Lion's tail, misfortune and disgrace. The southern scale of Libra meant bad fortune, while the northern was eminently fortunate.

Astrology was divided into three distinct branches—the doctrine of nativities, horary astrology, and state astrology. The

first assigned the rules for determining the general fortunes of the native, by drawing up his scheme of nativity or casting his horoscope. It took into account the positions of the various planets, signs, stars, etc., at the time of the native's birth; and as the astrologer could calculate the movements of the planets thereafter, he could find when those planets which were observed by the horoscope to be most closely associated with the native's fortunes would be well aspected or the reverse. Thus the auspicious and unlucky epochs of the native's life could be predetermined. The astrologer also claimed some degree of power to rule the planets, not by modifying their movements in any way, but by indicating in what way the ill effects portended by their positions could be prevented. The Arabian and Persian astrologers, having less skill than the followers of Ptolemy, made use of a different method of determining the fortunes of men, not calculating the positions of the planets for many years following the birth of the native, but assigning to every day after his birth a whole year of his life and for every two hours' motion of the moon one month. Thus the positions of the stars and planets, twenty-one days after the birth of the native, would indicate the events corresponding to the time when he would have completed his twenty-first year. There was another system called the Placidian, in which the effects of the positions of the planets were judged with sole reference to the motion of the earth upon her axis. It is satisfactory to find astrologers in harmony amongst each other as to these various methods, which one would have

supposed likely to give entirely different results. 'Each of them,' says a modern astrologer, 'is not only correct and approved by long-tried practice, but may be said to defy the least contradiction from those who will but take the pains to examine them (and no one else should deliver an opinion upon the subject). Although each of the above methods are different, yet they by no means contradict each other, but each leads to *true results*, and in many instances they each lead to the foreknowledge of the same event; in which respect they may be compared to the ascent of a mountain by different paths, where, although some paths are longer and more difficult than others, they notwithstanding all lead to the same object.' All which, though plausible in tone labours under the disadvantage of being untrue.

Ptolemy is careful to point out, in his celebrated work the 'Tetrabiblos,' that, of all events whatsoever which take place after birth, the most essential is the continuance of life. 'It is useless,' he says, 'to consider what events might happen to the native in later years if his life does not extend, for instance, beyond one year. So that the enquiry into the duration of life takes precedence of all others.' In order to deal properly with this question, it is necessary to determine what planet shall be regarded as the Hyleg, Apheta, or Lord of Life, for the native. Next the Anareta, or Destroyer of Life, must be ascertained. The Anaretic planets are, by nature, Saturn, Mars, and Uranus, though the sun, moon, and Mercury may be endowed with the same fatal influence, if suitably afflicted. The various

ways in which the Hyleg, or Giver of Life, may be afflicted by the Anareta, correspond to the various modes of death. But astrologers have always been singularly careful, in casting horoscopes, to avoid definite reference to the native's death. There are but few cases where the actual day of death is said to have been assigned. One is related in Clarendon's 'History of the Rebellion.' He tells us that William Earl of Pembroke died at the age of fifty, on the day upon which his tutor Sandford had predicted his decease. Burton, the author of the 'Anatomy of Melancholy,' having cast his own horoscope, and ascertained that he was to die on January 23, 1639, is said to have committed suicide in order that the accuracy of his calculations might not be called in question. A similar story is related of Cardan by Dr. Young (Sidrophel Vapulans), on the authority of Gassendi, who, however, says only that either Cardan starved himself, or, being confident in his art, took the predicted day for a fatal one, and by his fears made it so. Gassendi adds that while Cardan pretended to describe the fates of his children in his voluminous commentaries, he all the while never suspected, from the rules of his great art, that his dearest son would be condemned in the flower of his youth to be beheaded on a scaffold, by an executioner of justice, for destroying his own wife by poison.

Horary astrology relates to particular questions, and is a comparatively easy branch of the science. The art of casting nativities requires many years of study; but horary astrology 'may be well understood,' says Lilly, 'in less than a quarter of a

year.' 'If a proposition of any nature,' he adds, 'be made to any individual, about the result of which he is anxious, and therefore uncertain whether to accede to it or not, let him but note the hour and minute when it was *first* made, and erect a figure of the heavens, and his doubts will be instantly resolved. He may thus in five minutes learn whether the affair will succeed or not: and consequently whether it is prudent to accept the offer made or not. If he examine the sign on the first house of the figure, the planet therein, or the planet ruling the sign, *will exactly describe the party making the offer*, both in person and character, and this may at once convince the enquirer for truth of the reality of the principles of the science. Moreover, the descending sign, etc., *will describe his own person and character*—a farther proof of the truth of the science.'

There is one feature of horary astrology which is probably almost as ancient as any portion of the science, yet which remains even to the present day, and will probably remain for many years to come. I refer to the influence which the planets were supposed to exert on the successive hours of every day—a belief from which the division of time into weeks of seven days unquestionably had its origin—though we may concede that the subdivision of the lunar month into four equal parts was also considered in selecting this convenient measure of time. Every hour had its planet. Now dividing twenty-four by seven, we get three and three over; whence, each day containing twenty-four hours, it follows that in each day the complete series of seven

planets was run through three times, and three planets of the next series were used. The order of the planets was that of their distances, as indicated above. Saturn came first, then Jupiter, Mars, the Sun, Venus, Mercury, and the Moon. Beginning with Saturn, as ruling the first hour of Saturn's day (Saturday), we get through the above series three times, and have for the last three hours of the day, Saturn, Jupiter, and Mars. Thus the next hour, the first hour of the next day, belongs to the sun—Sunday follows Saturday. We again run three times through the series, and the three remaining hours are governed by the sun, Venus, and Mercury,—giving the moon as the first planet for the next day. Monday thus follows Sunday. The last three hours of Monday are ruled by the moon, Saturn, and Jupiter; leaving Mars to govern the next day—Martis dies, Mardi, Tuesday or Tuisco's day. Proceeding in the same way, we get Mercury for the next day, Mercurii dies, Mercredi, Wednesday or Woden's day; Jupiter for the next day, Jovis dies, Jeudi, Thursday or Thor's day; Venus for the next day, Veneris dies, Vendredi, Friday or Freya's day; and so we come to Saturday again.[14]

---

[14] It is singular that, when there is this perfectly simple explanation of the origin of the nomenclature of the days of the week, an explanation given by ancient historians and generally received, Whewell should have stated that 'various accounts are given, all the methods proceeding upon certain arbitrary arithmetical processes connected in some way with astrological views.' Speaking of the arrangement of the planets in the order of their supposed distances, and of the order in which the planets appear in the days of the week, he says, 'It would be difficult to determine with certainty why the former order was adopted, and how and why the latter was derived from it.' But, in reality, there is no difficulty about either point. The former arrangement

The period of seven days, which had its origin in, and derived its nomenclature from astrological ideas, shows by its wide prevalence how widely astrological superstitions were once spread among the nations. As Whewell remarks (though, for reasons which will readily be understood he was by no means anxious to dwell upon the true origin of the Sabbatical week), 'the usage is found over all the East; it existed among the Arabians, Assyrians, and Egyptians. The same week is found in India, among the Brahmins; it has there also its days marked by the names of the heavenly bodies; and it has been ascertained that the same day has, in that country, the name corresponding with its designation in other nations.... The period has gone on without interruption or irregularity from the earliest recorded times to our own days, traversing the extent of ages and the revolutions of empires; the names of ancient deities, which were associated with the stars, were replaced by those of the objects of the

---

corresponded precisely with the periodic times of the seven planets of the old Egyptian system (unquestionably far more ancient than the system adopted by the Greeks), while the latter springs directly from the former. Assign to the hours of the day, successively, the seven planets in the former order, continuing the sequence without interruption day after day, and in the course of seven days each one of the planets will have ruled the first hour of a day, in the order,—Saturn, the sun, the moon, Mars, Mercury, Jupiter, and Venus. What arbitrary arithmetical process there is in this it would be difficult to conceive. Arithmetic does not rule the method at all. Nor has any other method ever been suggested; though this method has been presented in several ways, some arithmetical and some geometrical. We need then have no difficulty in understanding what seems so perplexing to Whewell, the universality, namely, of the notions 'which have produced this result,' for the notions were not fantastic, but such as naturally sprang from the ideas on which astrology itself depends.

worship of our Teutonic ancestors, according to their views of the correspondence of the two mythologies; and the Quakers, in rejecting these names of days, have cast aside the most ancient existing relic of astrological as well as idolatrous superstition.

Not only do the names remain, but some of the observances connected with the old astrological systems remain even to this day. As ceremonies derived from Pagan worship are still continued, though modified in form, and with a different interpretation, in Christian and especially Roman Catholic observances, so among the Jews and among Christians the rites and ceremonies of the old Egyptian and Chaldæan astrology are still continued, though no longer interpreted as of yore. The great Jewish Lawgiver and those who follow him seem, for example, to have recognised the value of regular periods of rest (whether really required by man or become a necessity through long habit), but to have been somewhat in doubt how best to continue the practice without sanctioning the superstitions with which it had been connected. At any rate two different and inconsistent interpretations were given in the earlier and later codes of law. But whether the Jews accepted the Sabbath because they believed that an All-powerful Being, having created the world in six days, required and took rest ('and was refreshed') on the seventh, as stated in Exodus (xx. 11 and xxxi. 17), or whether they did so in remembrance of their departure from Egypt, as stated in Deuteronomy (v. 15), there can be no question that among the Egyptians the Sabbath or Saturn's day was a day

of rest because of the malignant nature of the powerful planet-deity who presided over that day. Nor can it be seriously doubted that the Jews descended from the old Chaldæans, among whom (as appears from stone inscriptions recently discovered) the very word Sabbath was in use for a seventh day of rest connected with astrological observances, were familiar with the practice even before their sojourn in Egypt. They had then probably regarded it as a superstitious practice to be eschewed like those idolatrous observances which had caused Terah to remove with Abraham and Lot from Ur of the Chaldees. At any rate, we find no mention of the seventh day of rest as a religious observance until after the Exodus.[15] It was not their only religious observance

[15] The following remarks by the Astronomer-Royal on this subject seem to me just, in the main. They accord with what I had said earlier in my essay on Saturn and the Sabbath of the Jews ('Our Place among Infinities,' 11th essay). 'The importance which Moses attached to it [the hebdomadal rest] is evident; and, with all reverence, I recognise to the utmost degree the justice of his views. No direction was given for religious ceremonial' (he seems to have overlooked Numbers xxviii. 9, and cognate passages), 'but it was probably seen that the health given to the mind by a rest from ordinary cares, and by the opportunity of meditation, could not fail to have a most beneficial religious effect. But, to give sanction to this precept, the authority of at least a myth was requisite. I believe it was simply for this reason that the myth of the six days of creation was preserved. It is expressly cited in the first delivery of the commandments, as the solemn authority (Exodus xxxi. 17) for the command. It is remarkable that at the second mention of the commandment (Deuteronomy v.) no reference is made to the creation; perhaps, after the complete establishment of Jehovistic ideas in the minds of the Israelites, they had nearly lost the recollection of the Elohistic account, and it was not thought desirable to refer to it' (Airy, 'On the Early Hebrew Scriptures,' p. 17). It must be regarded as a singular instance of the persistency of myths, if this view be correct, that a myth which had become obsolete for the Jews

having in reality an astrological origin. Indeed, if we examine the Jewish sacrificial system as described in Numbers xxviii. and elsewhere, we shall find throughout a tacit reference to the motions or influences of the celestial bodies. There was the morning and evening sacrifice guided by the movements of the sun; the Sabbath offering, determined by the predominance of Saturn; the offering of the new moon, depending on the motions of the moon; and lastly, the Paschal sacrifice, depending on the combined movements of the sun and moon—made, in fact, during the lunation following the sun's ascending passage of the equator at the sign of Aries.

Let us return, however, after this somewhat long digression, to astrological matters.

Horary astrology is manifestly much better fitted than the casting of nativities for filling the pocket of the astrologer himself; because only one nativity can be cast, but any number of horary questions can be asked. It is on account of their skill in horary astrology that the Zadkiels of our own time have occasionally found their way into the twelfth house, or House of Enemies. Even Lilly himself, not devoting, it would seem, five minutes to inquire into the probable success of the affair, was indicted in 1655 by a half-witted young woman, because he had given judgment respecting stolen goods, receiving two shillings

---

between the time of Moses and that of the writer (whoever he may have been) who produced the so-called Mosaic book of Deuteronomy, should thereafter have been revived, and have come to be regarded by the Jews themselves and by Christians as the Word of God.

and sixpence, contrary to an Act made under and provided by the wise and virtuous King James, First of England and Sixth of Scotland.

State astrology relates to the destinies of kingdoms, thrones, empires, and may be regarded as a branch of horary science relating to subjects (and rulers) of more than ordinary importance.

In former ages all persons likely to occupy an important position in the history of the world had their horoscopes erected; but in these degenerate days neither the casting of nativities nor the art of ruling the planets flourishes as it should do. Our Zadkiels and Raphaëls publish, indeed, the horoscopes of kings and emperors, princes and princesses, and so forth; but their fate is as that of Benedict (according to Beatrice)—men 'wonder they will still be talking, for nobody marks them.' Even those whose horoscopes have been erected show no proper respect for the predictions made in their behalf. Thus the Prince of Wales being born when Sagittarius was in the ascendant should have been, according to Zadkiel, a tall man, with oval face, ruddy complexion, somewhat dusky, and so forth; but I understand he has by no means followed these directions as to his appearance. The sun, being well aspected, prognosticated honours—a most remarkable and unlooked-for circumstance, strangely fulfilled by the event; but then being in Cancer, in sextile with Mars, the Prince of Wales was to be partial to maritime affairs and attain naval glory, whereas as a field-marshal he can only win

military glory. (I would not be understood to say that he is not quite as competent to lead our fleets as our battalions into action.) The House of Wealth was occupied by Jupiter, aspected by Saturn, which betokened great wealth through inheritance—a prognostication, says Professor Miller, which is not unlikely to come true. The House of Marriage was unsettled by the conflicting influences of Venus, Mars, and Saturn; but the first predominating, the Prince, after some trouble in his matrimonial speculations, was to marry a Princess of high birth, and one not undeserving of his kindest and most affectionate attention, probably in 1862. As to the date, an almanack informs me that the Prince married a Danish Princess in March 1863, which looks like a most culpable neglect of the predictions of our national astrologer. Again, in May 1870, when Saturn was stationary in the ascending degree, the Prince ought to have been injured by a horse, and also to have received a blow on the left side of the head, near the ear; but reprehensibly omitted both these ceremonies. A predisposition to fever and epileptic attacks was indicated by the condition of the House of Sickness. The newspapers described, a few years since, a serious attack of fever; but as most persons have some experience of the kind, the fulfilment of the prediction can hardly be regarded as very wonderful. Epileptic attacks, which, as less common, might have saved the credit of the astrologers, have not visited 'this royal native.' The position of Saturn in Capricorn betokened loss or disaster in one or other of the places ruled over by Capricorn—

which, as we have seen, are India, Macedonia, Thrace, Greece, Mexico, Saxony, Wilna, Mecklenburgh, Brandenburgh, and Oxford. Professor Miller expresses the hope that Oxford was the place indicated, and the disaster nothing more serious than some slight scrape with the authorities of Christchurch. But princes never get into scrapes with college dons. Probably some one or other of the 'hair-breadth 'scapes' chronicled by the reporters of his travels in India was the event indicated by the ominous position of Saturn in Capricorn.

A remarkable list of characteristics were derived by Zadkiel from the positions of the various planets and signs in the twelve houses of the 'royal native.' Some, of course, were indicated in more ways than one, which will explain the parenthetical notes in the following alphabetical table which Professor Miller has been at the pains to draw up from Zadkiel's predictions. The prince was to be 'acute, affectionate, amiable, amorous, austere, avaricious, beneficent, benevolent, brave, brilliant, calculated for government' (a quality which may be understood two ways), 'candid, careful of his person, careless, compassionate, courteous (twice over), delighting in eloquence, discreet, envious, fond of glory, fond of learning, fond of music, fond of poetry, fond of sports, fond of the arts and sciences, frank, full of expedients, generous (three times), gracious, honourable, hostile to crime, impervious, ingenious, inoffensive, joyous, just (twice), laborious, liberal, lofty, magnanimous, modest, noble, not easy to be understood (!), parsimonious, pious (twice), profound

in opinion, prone to regret his acts, prudent, rash, religious, reverent, self-confident, sincere, singular in mode of thinking, strong, temperate, unreserved, unsteady, valuable in friendship, variable, versatile, violent, volatile, wily, and worthy.' Zadkiel concludes thus:—'The square of Saturn to the moon will add to the gloomy side of the picture, and give a tinge of melancholy at times to the native's character, and also a disposition to look at the dark side of things, and lead him to despondency; nor will he be at all of a sanguine character, but cool and calculating, though occasionally rash. Yet, all things considered, though firm and sometimes positive in opinion, this royal native, if he live to mount the throne, will sway the sceptre of these realms in moderation and justice, and be a pious and benevolent man, and a merciful sovereign.' Fortunately, the time has long since passed when swaying the sceptre of these realms had any but a figurative meaning, or when Englishmen who obeyed their country's laws depended on the mercy of any man, or when even bad citizens were judged by princes. But we still prefer that princes should be well-mannered gentlemen, and therefore it is sincerely to be hoped that Zadkiel's prediction, so far as it relates to piety and benevolence, may be fulfilled, should this 'royal native' live to mount the throne. As for mercy, it is a goodly quality even in these days and in this country; for if the law no longer tolerates cruelty to men, even on the part of princes, who once had prescribed rights in that direction, there are still some cruel, nay brutal sports in which 'royal natives' might sometimes

be tempted to take part. Wherefore let us hope that, even in regard to mercy, the predictions of astrologers respecting this 'royal native' may be fulfilled.

Passing however, from trivialities, let us consider the lessons which the history of astrology teaches us respecting the human mind, its powers and weaknesses. It has been well remarked by Whewell that for many ages 'mysticism in its various forms was a leading character both of the common mind and the speculations of the most intelligent and profound reasoners.' Thus mysticism was the opposite of that habit of thought which science requires, 'namely, clear ideas, distinctly employed to connect well-ascertained facts; inasmuch as the ideas in which it dealt were vague and unstable, and the temper in which they were contemplated was an urgent and aspiring enthusiasm, which could not submit to a calm conference with experience upon even terms.' We have seen what has been the history of one particular form of the mysticism of ancient and mediæval ages. If we had followed the history of alchemy, magic, and other forms of mysticism, we should have seen similar results. True science has gradually dispossessed science falsely so called, until now none but the weaker minds hold by the tenets formerly almost universally adopted. In mere numbers, believers in the ancient superstitions may be by no means insignificant; but they no longer have any influence. It has become a matter of shame to pay any attention to what those few say or do who not merely hold but proclaim the ancient faith in these

matters. We can also see why this has been. In old times enthusiasm usurped the place of reason in these cases; but opinions so formed and so retained could not maintain their ground in the presence of reasoning and experience. So soon as intelligent and thoughtful men perceived that facts were against the supposed mysterious influences of the stars, the asserted powers of magicians, the pretended knowledge of alchemists, the false teachings of magic, alchemy, and astrology, were rejected. The lesson thus learned respecting erroneous doctrines which were once widely prevalent has its application in our time, when, though the influence of those teachings has passed away, other doctrines formerly associated with them still hold their ground. Men in old times, influenced by erroneous teachings, wasted their time and energies in idle questionings of the stars, vain efforts to find Arcana of mysterious power, and to acquire magical authority over the elements. Is it altogether clear that in these our times men are not hampered, prevented to some degree from doing all the good they might do in the short life-time allotted to them, by doctrines of another kind? Is there in our day no undue sacrifice of present good in idle questionings? is there no tendency to trust in a vain fetishism to prevent or remove evils which energy could avert or remedy? The time will come, in my belief, when the waste of those energies which in these days are devoted (not merely with the sanction, but the high approval, of some of the best among us) to idle aims, will be deplored as regretfully—but, alas, as idly—as the wasted speculations

and labours of those whom Whewell has justly called the most intelligent and profound reasoners of the 'stationary age' of science. The words with which Whewell closes his chapter on the 'Mysticism of the Middle Ages' have their application to the mysticism of the nineteenth century:—'Experience collects her stores in vain, or ceases to collect them, when she can only pour them into the flimsy folds of the lap of Mysticism, who is, in truth, so much absorbed in looking for the treasures which are to fall from the skies, that she heeds little how scantily she obtains, or how loosely she holds, such riches as she might find beside her.'

II.
THE RELIGION OF THE GREAT PYRAMID

During the last few years a new sect has appeared which, though as yet small in numbers, is full of zeal and fervour. The faith professed by this sect may be called the religion of the Great Pyramid, the chief article of their creed being the doctrine that that remarkable edifice was built for the purpose of revealing—in the fulness of time, now nearly accomplished—certain noteworthy truths to the human race. The founder of the pyramid religion is described by one of the present leaders of the sect as 'the late worthy John Taylor, of Gower Street, London;' but hitherto the chief prophets of the new faith have been in this country Professor Smyth, Astronomer Royal for Scotland, and in France the Abbé Moigno. I propose to examine here some of the facts most confidently urged by pyramidalists in support of their views.

But it will be well first to indicate briefly the doctrines of the new faith. They may be thus presented:

The great pyramid was erected, it would seem, under the instructions of a certain Semitic king, probably no other than Melchizedek. By supernatural means, the architects were instructed to place the pyramid in latitude 30° north; to select

for its figure that of a square pyramid, carefully oriented; to employ for their unit of length the sacred cubit corresponding to the 20,000,000th part of the earth's polar axis; and to make the side of the square base equal to just so many of these sacred cubits as there are days and parts of a day in a year. They were further, by supernatural help, enabled to square the circle, and symbolised their victory over this problem by making the pyramid's height bear to the perimeter of the base the ratio which the radius of a circle bears to the circumference. Moreover, the great precessional period, in which the earth's axis gyrates like that of some mighty top around the perpendicular to the ecliptic, was communicated to the builders with a degree of accuracy far exceeding that of the best modern determinations, and they were instructed to symbolise that relation in the dimensions of the pyramid's base. A value of the sun's distance more accurate by far than modern astronomers have obtained (even since the recent transit) was imparted to them, and they embodied that dimension in the height of the pyramid. Other results which modern science has achieved, but which by merely human means the architects of the pyramid could not have obtained, were also supernaturally communicated to them; so that the true mean density of the earth, her true shape, the configuration of land and water, the mean temperature of the earth's surface, and so forth, were either symbolised in the great pyramid's position, or in the shape and dimensions of its exterior and interior. In the pyramid also were preserved the true, because supernaturally communicated,

standards of length, area, capacity, weight, density, heat, time, and money. The pyramid also indicated, by certain features of its interior structure, that when it was built the holy influences of the Pleiades were exerted from a most effective position—the meridian, through the points where the ecliptic and equator intersect. And as the pyramid thus significantly refers to the past, so also it indicates the future history of the earth, especially in showing when and where the millennium is to begin. Lastly, the apex or crowning stone of the pyramid was no other than the antitype of that stone of stumbling and rock of offence, rejected by builders who knew not its true use, until it was finally placed as the chief stone of the corner. Whence naturally, 'whosoever shall fall upon it'—that is, upon the pyramid religion—'shall be broken; but on whomsoever it shall fall it will grind him to powder.'

If we examine the relations actually presented by the great pyramid—its geographical position, dimensions, shape, and internal structure—without hampering ourselves with the tenets of the new faith on the one hand, or on the other with any serious anxiety to disprove them, we shall find much to suggest that the builders of the pyramid were ingenious mathematicians, who had made some progress in astronomy, though not so much as they had made in the mastery of mechanical and scientific difficulties.

The first point to be noticed is the geographical position of the great pyramid, so far, at least, as this position affects the aspect of the heavens, viewed from the pyramid as from

an observatory. Little importance, I conceive, can be attached to purely geographical relations in considering the pyramid's position. Professor Smyth notes that the pyramid is peculiarly placed with respect to the mouth of the Nile, standing 'at the southern apex of the Delta-land of Egypt.' This region being shaped like a fan, the pyramid, set at the part corresponding to the handle, was, he considers, 'that monument pure and undefiled in its religion through an idolatrous land, alluded to by Isaiah; the monument which was both "an altar to the Lord in the midst of the land of Egypt, and a pillar at the border thereof," and destined withal to become a witness in the latter days, and before the consummation of all things, to the same Lord, and to what He hath purposed upon man kind.' Still more fanciful are some other notes upon the pyramid's geographical position: as (i.) that there is more land along the meridian of the pyramid than on any other all the world round; (ii.) that there is more land in the latitude of the pyramid than in any other; and (iii.) that the pyramid territory of Lower Egypt is at the centre of the dry land habitable by man all the world over.

It does not seem to be noticed by those who call our attention to these points that such coincidences prove too much. It might be regarded as not a mere accident that the great pyramid stands at the centre of the arc of shore-line along which lie the outlets of the Nile; or it might be regarded as not a mere coincidence that the great pyramid stands at the central point of all the habitable land-surface of the globe; or, again, any one of the other relations

above mentioned might be regarded as something more than a mere coincidence. But if, instead of taking only one or other of these four relations, we take all four of them, or even any two of them, together, we must regard peculiarities of the earth's configuration as the result of special design which certainly have not hitherto been so regarded by geographers. For instance, if it was by a special design that the pyramid was placed at the centre of the Nile delta, and also by special design that the pyramid was placed at the centre of the land-surface of the earth, if these two relations are each so exactly fulfilled as to render the idea of mere accidental coincidence inadmissible, then it follows, of necessity, that it is through no merely accidental coincidence that the centre of the Nile delta lies at the centre of the land-surface of the earth; in other words, the shore-line along which lie the mouths of the Nile has been designedly curved so as to have its centre so placed. And so of the other relations. The very fact that the four conditions *can* be fulfilled simultaneously is evidence that a coincidence of the sort may result from mere accident.[16] Indeed, the peculiarity of geographical position which really seems to have been in the thoughts of the pyramid architects, introduces yet a fifth condition which by accident could be fulfilled along

[16] Of course it may be argued that nothing in the world is the result of *mere* accident, and some may assert that even matters which are commonly regarded as entirely casual have been specially designed. It would not be easy to draw the precise line dividing events which all men would regard as to all intents and purposes accidental from those which some men would regard as results of special providence. But common sense draws a sufficient distinction, at least for our present purpose.

with the four others.

It would seem that the builders of the pyramid were anxious to place it in latitude 30°, as closely as their means of observation permitted. Let us consider what result they achieved, and the evidence thus afforded respecting their skill and scientific attainments. In our own time, of course, the astronomer has no difficulty in determining with great exactness the position of any given latitude-parallel. But at the time when the great pyramid was built it must have been a matter of very serious difficulty to determine the position of any required latitude-parallel with a great degree of exactitude. The most obvious way of dealing with the difficulty would have been by observing the length of shadows thrown by upright posts at noon in spring and autumn. In latitude 30° north, the sun at noon in spring (or, to speak precisely, on the day of the vernal equinox) is just twice as far from the horizon as he is from the point vertically overhead; and if a pointed post were set exactly upright at true noon (supposed to occur at the moment of the vernal or autumnal equinox), the shadow of the post would be exactly half as long as a line drawn from the top of the pole to the end of the shadow. But observations based on this principle would have presented many difficulties to the architects of the pyramid. The sun not being a point of light, but a globe, the shadow of a pointed rod does not end in a well-defined point. The moment of true noon, which is not the same as ordinary or civil noon, never does agree exactly with the time of the vernal or autumnal

equinox, and may be removed from it by any interval of time not exceeding twelve hours. And there are many other circumstances which would lead astronomers, like those who doubtless presided over the scientific preparations for building the great pyramid, to prefer a means of determining the latitude depending on another principle. The stellar heavens would afford practically unchanging indications for their purpose. The stars being all carried round the pole of the heavens, as if they were fixed points in the interior of a hollow revolving sphere, it becomes possible to determine the position of the pole of the star sphere, even though no bright conspicuous star actually occupies that point. Any bright star close by the pole is seen to revolve in a very small circle, whose centre is the pole itself. Such a star is our present so-called pole-star; and, though in the days when the great pyramid was built, that star was not near the pole, another, and probably a brighter star lay near enough to the pole[17] to

[17] This star, called *Thuban* from the Arabian *al-Thúban*, the Dragon, is now not very bright, being rated at barely above the fourth magnitude, but it was formerly the brightest star of the constellation, as its name indicates. Bayer also assigned to it the first letter of the Greek alphabet; though this is not absolutely decisive evidence that so late as his day it retained its superiority over the second magnitude stars to which Bayer assigned the second and third Greek letters. In the year 2790 b.c., or thereabouts, the star was at its nearest to the true north pole of the heavens, the diameter of the little circle in which it then moved being considerably less than one-fourth the apparent diameter of the moon. At that time the star must have seemed to all ordinary observation an absolutely fixed centre, round which all the other stars revolved. At the time when the pyramid was built this star was about sixty times farther removed from the true pole, revolving in a circle whose apparent diameter was about seven times as great as the moon's. Yet it would still be regarded as a very useful pole-

serve as a pole-star, and to indicate by its circling motion the position of the actual pole of the heavens. This was at that time, and for many subsequent centuries, the leading star of the great constellation called the Dragon.

The pole of the heavens, we know, varies in position according to the latitude of the observer. At the north pole it is exactly overhead; at the equator the poles of the heavens are both on the horizon; and, as the observer travels from the equator towards the north or south pole of the earth, the corresponding pole of the heavens rises higher and higher above the horizon. In latitude 30° north, or one-third of the way from the equator to the pole, the pole of the heavens is raised one-third of the way from the horizon to the point vertically overhead; and when this is the case the observer knows that he is in latitude 30°. The builders of the great pyramid, with the almost constantly clear skies of Egypt, may reasonably be supposed to have adopted this means of determining the true position of that thirtieth parallel on which they appear to have designed to place the great building they were about to erect.

It so happens that we have the means of forming an opinion on the question whether they used one method or the other; whether they employed the sun or the stars to guide them to the geographical position they required. In fact, were it not for this circumstance, I should not have thought it worth while to discuss the qualities of either method. It will presently be seen that the

---

star, especially as there are very few conspicuous stars in the neighbourhood.

discussion bears importantly on the opinion we are to form of the skill and attainments of the pyramid architects. Every celestial object is apparently raised somewhat above its true position by the refractive power of our atmosphere, being most raised when nearest the horizon and least when nearest the point vertically overhead. This effect is, indeed, so marked on bodies close to the horizon that if the astronomers of the pyramid times had observed the sun, moon, and stars attentively when so placed, they could not have failed to discover the peculiarity. Probably, however, though they noted the time of rising and setting of the celestial bodies, they only made instrumental observations upon them when these bodies were high in the heavens. Thus they remained ignorant of the refractive powers of the air.[18] Now, if they had determined the position of the thirtieth parallel of latitude by observations of the noonday sun (in spring or autumn), then since, owing to refraction, they would have judged the sun to be higher than he really was, it follows that they would have supposed the latitude of any station from which they observed to be lower than it really was. For the lower the latitude the higher is the noonday sun at any given season. Thus, when really in latitude 30° they would have supposed themselves in a latitude lower than 30°, and would have travelled a little further north to find the proper place, as they would have supposed, for

[18] Even that skilful astronomer Hipparchus, who may be justly called the father of observational astronomy, overlooked this peculiarity, which Ptolemy would seem to have been the first to recognise.

erecting the great pyramid. On the other hand, if they determined the place from observations of the movements of stars near the pole of the heavens, they would make an error of a precisely opposite nature. For the higher the latitude the higher is the pole of the heavens; and refraction, therefore, which apparently raises the pole of the heavens, gives to a station the appearance of being in a higher latitude than it really is, so that the observer would consider he was in latitude 30 north when in reality somewhat south of that latitude. We have only then to inquire whether the great pyramid was set north or south of latitude 30°, to ascertain whether the pyramid architects observed the noonday sun or circumpolar stars to determine their latitude; always assuming (as we reasonably may) that those architects did propose to set the pyramid in that particular latitude, and that they were able to make very accurate observations of the apparent positions of the celestial bodies, but that they were not acquainted with the refractive effects of the atmosphere. The answer comes in no doubtful terms. The centre of the great pyramid's base lies about one mile and a third *south* of the thirtieth parallel of latitude; and from this position the pole of the heavens, as raised by refraction, would appear to be very near indeed to the required position. In fact, if the pyramid had been set about half a mile still farther south the pole would have *seemed* just right.

Of course, such an explanation as I have here suggested appears altogether heretical to the pyramidalists. According to them the pyramid architects knew perfectly well where the true

thirtieth parallel lay, and knew also all that modern science has discovered about refraction; but set the pyramid south of the true parallel and north of the position where refraction would just have made the apparent elevation of the pole correct, simply in order that the pyramid might correspond as nearly as possible to each of two conditions, whereof both could not be fulfilled at once. The pyramid would indeed, they say, have been set even more closely midway between the true and the apparent parallels of 30° north, but that the Jeezeh hill on which it is set does not afford a rock foundation any farther north. 'So very close,' says Professor Smyth, 'was the great pyramid placed to the northern brink of its hill, that the edges of the cliff might have broken off under the terrible pressure had not the builders banked up there most firmly the immense mounds of rubbish which came from their work, and which Strabo looked so particularly for 1800 years ago, but could not find. Here they were, however, and still are, utilised in enabling the great pyramid to stand on the very utmost verge of its commanding hill, within the limits of the *two* required latitudes, as well as over the centre of the land's physical and radial formation, and at the same time on the sure and proverbially wise foundation of rock.'

The next circumstance to be noted in the position of the great pyramid (as of all the pyramids) is that the sides are carefully oriented. This, like the approximation to a particular latitude, must be regarded as an astronomical rather than a geographical relation. The accuracy with which the orientation has been

effected will serve to show how far the builders had mastered the methods of astronomical observation by which orientation was to be secured. The problem was not so simple as might be supposed by those who are not acquainted with the way in which the cardinal points are correctly determined. By solar observations, or rather by the observations of shadows cast by vertical shafts before and after noon, the direction of the meridian, or north and south line, can theoretically be ascertained. But probably in this case, as in determining the latitude, the builders took the stars for their guide. The pole of the heavens would mark the true north; and equally the pole-star, when below or above the pole, would give the true north, but, of course, most conveniently when below the pole. Nor is it difficult to see how the builders would make use of the pole-star for this purpose. From the middle of the northern side of the intended base they would bore a slant passage tending always from the position of the pole-star at its lower meridional passage, that star at each successive return to that position serving to direct their progress; while its small range, east and west of the pole, would enable them most accurately to determine the star's true mid-point below the pole; that is, the true north. When they had thus obtained a slant tunnel pointing truly to the meridian, and had carried it down to a point nearly below the middle of the proposed square base, they could, from the middle of the base, bore vertically downwards, until by rough calculation they were near the lower end of the slant tunnel; or both tunnels could be made at the

same time. Then a subterranean chamber would be opened out from the slant tunnel. The vertical boring, which need not be wider than necessary to allow a plumb-line to be suspended down it, would enable the architects to determine the point vertically below the point of suspension. The slant tunnel would give the direction of the true north, either from that point or from a point at some known small distance east or west of that point.[19] Thus, a line from some ascertained point near the mouth of the vertical boring to the mouth of the slant tunnel would lie due north and south, and serve as the required guide for the orientation of the pyramid's base. If this base extended beyond the opening of the slant tunnel, then, by continuing this tunnelling through the base tiers of the pyramid, the means would be obtained of correcting the orientation.

This, I say, would be the course naturally suggested to astronomical architects who had determined the latitude in the manner described above. It may even be described as the only very accurate method available before the telescope had been invented. So that if the accuracy of the orientation appears to be greater than could be obtained by the shadow method, the natural inference, even in the absence of corroborative evidence, would be that the stellar method, and no other, had

[19] It would only be by a lucky accident, of course, that the direction of the slant tunnel's axis and that of the vertical from the selected central point would lie in the same vertical plane. The object of the tunnelling would, in fact, be to determine how far apart the vertical planes through these points lay, and the odds would be great against the result proving to be zero.

been employed. Now, in 1779, Nouet, by refined observations, found the error of orientation measured by less than 20 minutes of arc, corresponding roughly to a displacement of the corners by about 37-½ inches from their true position, as supposed to be determined from the centre; or to a displacement of a southern corner by 53 inches on an east and west line from a point due south of the corresponding northern corner. This error, for a base length of 9140 inches, would not be serious, being only one inch in about five yards (when estimated in the second way). Yet the result is not quite worthy of the praise given to it by Professor Smyth. He himself, however, by much more exact observations, with an excellent altazimuth, reduced the alleged error from 20 minutes to only 4-½, or to 9/40ths of its formerly supposed value. This made the total displacement of a southern corner from the true meridian through the corresponding northern corner, almost exactly one foot, or one inch in about twenty-one yards —a degree of accuracy rendering it practically certain that some stellar method was used in orienting the base.

Now there *is* a slanting tunnel occupying precisely the position of the tunnel which should, according to this view, have been formed in order accurately to orient the pyramid's base, assuming that the time of the building of the pyramid corresponded with one of the epochs when the star Alpha Draconis was distant 3° 42' from the pole of the heavens. In other words, there is a slant tunnel directed northwards and upwards from a point deep

down below the middle of the pyramid's base, and inclined 26° 17' to the horizon, the elevation of Alpha Draconis at its lower culmination when 3° 42' from the pole. The last epoch when the star was thus placed was *circiter* 2160 b.c.; the epoch next before that was 3440 b.c. Between these two we should have to choose, on the hypothesis that the slant tunnel was really directed to that star when the foundations of the pyramid were laid. For the next epoch before the earlier of the two named was about 28,000 b.c., and the pyramid's date cannot have been more remote than 4000 b.c.

The slant tunnel, while admirably fulfilling the requirements suggested, seems altogether unsuited for any other. Its transverse height (that is, its width in a direction perpendicular to its upper and lower faces) did not amount to quite four feet; its breadth was not quite three feet and a half. It was, therefore, not well fitted for an entrance passage to the subterranean chamber immediately under the apex of the pyramid (with which chamber it communicates in the manner suggested by the above theory). It could not have been intended to be used for observing meridian transits of the stars in order to determine sidereal time; for close circumpolar stars, by reason of their slow motion, are the least suited of all for such a purpose. As Professor Smyth says, in arguing against this suggested use of the star, 'no observer in his senses, in any existing observatory, when seeking to obtain the time, would observe the transit of a circumpolar star for anything else than *to get the direction of the meridian to adjust his*

instrument by.' (The italics are his.) It is precisely such a purpose (the adjustment, however, not of an instrument, but of the entire structure of the pyramid itself), that I have suggested for this remarkable passage—this 'cream-white, stone-lined, long tube,' where it traverses the masonry of the pyramid, and below that dug through the solid rock to a distance of more than 350 feet.

Let us next consider the dimensions of the square base thus carefully placed in latitude 30° north to the best of the builders' power, with sides carefully oriented.

It seems highly probable that, whatever special purpose the pyramid was intended to fulfil, a subordinate idea of the builders would have been to represent symbolically in the proportions of the building such mathematical and astronomical relations as they were acquainted with. From what we know by tradition of the men of the remote time when the pyramid was built, and what we can infer from the ideas of those who inherited, however remotely, the modes of thought of the earliest astronomers and mathematicians, we can well believe that they would look with superstitious reverence on special figures, proportions, numbers, and so forth. Apart from this, they may have had a quasi-scientific desire to make a lasting record of their discoveries, and of the collected knowledge of their time.

It seems altogether probable, then, that the smaller unit of measurement used by the builders of the great Pyramid was intended, as Professor Smyth thinks, to be equal to the 500,000,000th part of the earth's diameter, determined from

their geodetical observations. It was perfectly within the power of mechanicians and mathematicians so experienced as they undoubtedly were—the pyramid attests so much—to measure with considerable accuracy the length of a degree of latitude. They could not possibly (always setting aside the theory of divine inspiration) have known anything about the compression of the earth's globe, and therefore could not have intended, as Professor Smyth supposes, to have had the 500,000,000th part of the earth's polar axis, as distinguished from any other, for their unit of length. But if they made observations in or near latitude 30° north on the supposition that the earth is a globe, their probable error would exceed the difference even between the earth's polar and equatorial diameters. Both differences are largely exceeded by the range of difference among the estimates of the actual length of the sacred cubit, supposed to have contained twenty-five of these smaller units. And, again, the length of the pyramid base-side, on which Smyth bases his own estimate of the sacred cubit, has been variously estimated, the largest measure being 9168 inches, and the lowest 9110 inches. The fundamental theory of the pyramidalists, that the sacred cubit was exactly one 20,000,000th part of the earth's polar diameter, and that the side of the base contained as many cubits and parts of a cubit as there are days and parts of a day in the tropical year (or year of seasons), requires that the length of the side should be 9140 inches, lying between the limits indicated, but still so widely removed from either that it would appear very unsafe

to base a theory on the supposition that the exact length is or was 9140 inches. If the measures 9168 inches and 9110 inches were inferior, and several excellent measures made by practised observers ranged around the length 9140 inches, the case would be different. But the best recent measures gave respectively 9110 and 9130 inches; and Smyth exclaims against the unfairness of Sir H. James in taking 9120 as 'therefore the [probable] true length of the side of the great pyramid when perfect,' calling this 'a dishonourable shelving of the honourable older observers with their larger results.' The only other measures, besides these two, are two by Colonel Howard Vyse and by the French *savants*, giving respectively 9168 and 9163·44 inches. The pyramidalists consider 9140 inches a fair mean value from these four. The natural inference, however, is, that the pyramid base is not now in a condition to be satisfactorily measured; and assuredly no such reliance can be placed on the mean value 9140 inches that, on the strength of it, we should believe what otherwise would be utterly incredible, viz. that the builders of the great pyramid knew 'both the size and shape of the earth exactly.' 'Humanly, or by human science, finding it out in that age was, of course, utterly impossible,' says Professor Smyth. But he is so confident of the average value derived from widely conflicting base measures as to assume that this value, not being humanly discoverable, was of necessity 'attributable to God and to His Divine inspiration.' We may agree, in fine, with Smyth, that the builders of the pyramid knew the earth to be a globe; that they took for their measure

of length the sacred cubit, which, by their earth measures, they made very fairly approximate to the 20,000,000th part of the earth's mean diameter; but there seems no reason whatever for supposing (even if the supposition were not antecedently of its very nature inadmissible) that they knew anything about the compression of the earth, or that they had measured a degree of latitude in their own place with very wonderful accuracy.[20]

But here a very singular coincidence may be noticed, or, rather, is forced upon our notice by the pyramidalists, who strangely enough recognise in it fresh evidence of design, while the unbeliever finds in it proof that coincidences are no sure evidence of design. The side of the pyramid containing 365-$^1/_4$ times the sacred cubit of 25 pyramid inches, it follows that

[20] It may, perhaps, occur to the reader to inquire what diameter of the earth, supposed to be a perfect sphere, would be derived from a degree of latitude measured with absolute accuracy near latitude 30°. A degree of latitude measured in polar regions would indicate a diameter greater even than the equatorial; one measured in equatorial regions would indicate a diameter less even than the polar. Near latitude 30° the measurement of a degree of latitude would indicate a diameter very nearly equal to the true polar diameter of the earth. In fact, if it could be proved that the builders of the pyramid used for their unit of length an exact subdivision of the polar diameter, the inference would be that, while the coincidence itself was merely accidental, their measurement of a degree of latitude in their own country had been singularly accurate. By an approximate calculation I find that, taking the earth's compression at $^1/_{300}$, the diameter of the earth, estimated from the accurate measurement of a degree of latitude in the neighbourhood of the great pyramid, would have made the sacred cubit —taken at one 20,000,000th of the diameter—equal to 24·98 British inches; a closer approximation than Professor Smyth's to the estimated mean probable value of the sacred cubit.

the diagonal of the base contains 12,912 such inches, and the two diagonals together contain 25,824 pyramid inches, or almost exactly as many inches as there are years in the great precessional period. 'No one whatever amongst men,' says Professor Smyth after recording various estimates of the precessional period, 'from his own or school knowledge, knew anything about such a phenomenon, until Hipparchus, some 1900 years after the great pyramid's foundation, had a glimpse of the fact; and yet it had been ruling the heavens for ages, and was recorded in Jeezeh's ancient structure.' To minds not moved to most energetic forgetfulness by the spirit of faith, it would appear that when a square base had been decided upon, and its dimensions fixed, with reference to the earth's diameter and the year, the diagonals of the square base were determined also; and, if it so chanced that they corresponded with some other perfectly independent relation, the fact was not to be credited to the architects. Moreover it is manifest that the closeness of such a coincidence suggests grave doubts how far other coincidences can be relied upon as evidence of design. It seems, for instance, altogether likely that the architects of the pyramid took the sacred cubit equal to one 20,000,000th part of the earth's diameter for their chief unit of length, and intentionally assigned to the side of the pyramid's square base a length of just so many cubits as there are days in the year; and the closeness of the coincidence between the measured length and that indicated by this theory strengthens the idea that this was the builder's purpose. But when we find that

an even closer coincidence immediately presents itself, which manifestly is a coincidence *only*, the force of the evidence before derived from mere coincidence is *pro tanto* shaken. For consider what this new coincidence really means. Its nature may be thus indicated: Take the number of days in the year, multiply that number by 50, and increase the result in the same degree that the diagonal of a square exceeds the side—then the resulting number represents very approximately the number of years in the great precessional period. The error, according to the best modern estimates, is about one 575th part of the true period. This is, of course, a merely accidental coincidence, for there is no connection whatever in nature between the earth's period of rotation, the shape of a square, and the earth's period of gyration. Yet this merely accidental coincidence is very much closer than the other supposed to be designed could be proved to be. It is clear, then, that mere coincidence is a very unsafe evidence of design.

Of course the pyramidalists find a ready reply to such reasoning. They argue that, in the first place, it may have been by express design that the period of the earth's rotation was made to bear this particular relation to the period of gyration in the mighty precessional movement: which is much as though one should say that by express design the height of Monte Rosa contains as many feet as there are miles in the 6000th part of the sun's distance.[21] Then, they urge, the architects were not bound

[21] It is, however, almost impossible to mark any limits to what may be regarded

to have a square base for the pyramid; they might have had an oblong or a triangular base, and so forth—all which accords very ill with the enthusiastic language in which the selection of a square base had on other accounts been applauded.

Next let us consider the height of the pyramid. According to the best modern measurements, it would seem that the height when (if ever) the pyramid terminated above in a pointed apex, must have been about 486 feet. And from the comparison of the best estimates of the base side with the best estimates of the height, it seems very likely indeed that the intention of the builders was to make the height bear to the perimeter of the base the same ratio which the radius of a circle bears to the circumference. Remembering the range of difference in the base measures it might be supposed that the exactness of the approximation to this ratio could not be determined very satisfactorily. But as certain casing stones have been discovered

---

as evidence of design by a coincidence-hunter. I quote the following from the late Professor De Morgan's *Budget of Paradoxes*. Having mentioned that 7 occurs less frequently than any other digit in the number expressing the ratio of circumference to diameter of a circle, he proceeds: 'A correspondent of my friend Piazzi Smyth notices that 3 is the number of most frequency, and that $3\text{-}\frac{1}{7}$ is the nearest approximation to it in simple digits. Professor Smyth, whose work on Egypt is paradox of a very high order, backed by a great quantity of useful labour, the results of which will be made available by those who do not receive the paradoxes, is inclined to see confirmation for some of his theory in these phenomena.' In passing, I may mention as the most singular of these accidental digit relations which I have yet noticed, that in the first 110 digits of the square root of 2, the number 7 occurs more than twice as often as either 5 or 9, which each occur eight times, 1 and 2 occurring each nine times, and 7 occurring no less than eighteen times.

which indicate with considerable exactness the slope of the original plane-surfaces of the pyramid, the ratio of the height to the side of the base may be regarded as much more satisfactorily determined than the actual value of either dimension. Of course the pyramidalists claim a degree of precision indicating a most accurate knowledge of the ratio between the diameter and the circumference of a circle; and the angle of the only casing stone measured being diversely estimated at 51° 50' and 51° 52-$^1/_4$', they consider 50° 51' 14·3" the true value, and infer that the builders regarded the ratio as 3·14159 to 1. The real fact is, that the modern estimates of the dimensions of the casing stones (which, by the way, ought to agree better if these stones are as well made as stated) indicate the values 3·1439228 and 3·1396740 for the ratio; and all we can say is, that the ratio really used lay *probably* between these limits, though it may have been outside either. Now the approximation of either is not remarkably close. It requires no mathematical knowledge at all to determine the circumference of a circle much more exactly. 'I thought it very strange,' wrote a circle-squarer once to De Morgan (*Budget of Paradoxes*, p. 389), 'that so many great scholars in all ages should have failed in finding the true ratio, and have been determined to try myself.' 'I have been informed,' proceeds De Morgan, 'that this trial makes the diameter to the circumference as 64 to 201, giving the ratio equal to 3·1410625 exactly. The result was obtained by the discoverer in three weeks after he first heard of the existence of

the difficulty. This quadrator has since published a little slip and entered it at Stationers' Hall. He says he has done it by actual measurement; and I hear from a private source that he uses a disc of twelve inches diameter which he rolls upon a straight rail.' The 'rolling is a very creditable one; it is as much below the mark as Archimedes was above it. Its performer is a joiner who evidently knows well what he is about when he measures; he is not wrong by 1 in 3000.' Such skilful mechanicians as the builders of the pyramid could have obtained a closer approximation still by mere measurement. Besides, as they were manifestly mathematicians, such an approximation as was obtained by Archimedes must have been well within their power; and that approximation lies well within the limits above indicated. Professor Smyth remarks that the ratio was 'a quantity which men in general, and all human science too, did not begin to trouble themselves about until long, long ages, languages, and nations had passed away after the building of the great pyramid; and after the sealing up, too, of that grand primeval and prehistoric monument of the patriarchal age of the earth according to Scripture.' I do not know where the Scripture records the sealing up of the great pyramid; but it is all but certain that during the very time when the pyramid was being built astronomical observations were in progress which, for their interpretation, involved of necessity a continual reference to the ratio in question. No one who considers the wonderful accuracy with which, nearly two thousand years before the Christian era, the Chaldæans had determined the famous cycle of the Saros,

can doubt that they must have observed the heavenly bodies for several centuries before they could have achieved such a success; and the study of the motions of the celestial bodies compels 'men to trouble themselves' about the famous ratio of the circumference to the diameter.

We now come upon a new relation (contained in the dimensions of the pyramid as thus determined) which, by a strange coincidence, causes the height of the pyramid to appear to symbolise the distance of the sun. There were 5813 pyramid inches, or 5819 British inches, in the height of the pyramid according to the relations already indicated. Now, in the sun's distance, according to an estimate recently adopted and freely used,[22] there are 91,400,000 miles or 5791 thousand millions of inches—that is, there are approximately as many thousand millions of inches in the sun's distance as there are inches in the height of the pyramid. If we take the relation as exact we should infer for the sun's distance 5819 thousand millions of inches, or 91,840,000 miles—an immense improvement on the estimate which for so many years occupied a place of honour in our books of astronomy. Besides, there is strong reason for believing that, when the results of recent observations are worked out, the estimated sun distance will be much nearer this pyramid value than even to the value 91,400,000 recently adopted. This

[22] I have substituted this value in the article 'Astronomy,' of the *British Encyclopædia*, for the estimate formerly used, viz. 95,233,055 miles. But there is good reason for believing that the actual distance is nearly 92,000,000 miles.

result, which one would have thought so damaging to faith in the evidence from coincidence—nay, quite fatal after the other case in which a close coincidence had appeared by merest accident —is regarded by the pyramidalist as a perfect triumph for their faith.

They connect it with another coincidence, viz. that, assuming the height determined in the way already indicated, then it so happens that the height bears to half a diagonal of the base the ratio 9 to 10. Seeing that the perimeter of the base symbolises the annual motion of the earth round the sun, while the height represents the radius of a circle with that perimeter, it follows that the height should symbolise the sun's distance. 'That line, further,' says Professor Smyth (speaking on behalf of Mr. W. Petrie, the discoverer of this relation), 'must represent' this radius 'in the proportion of 1 to 1,000,000,000' (or *ten* raised to power *nine*), 'because amongst other reasons 10 to 9 is practically the shape of the great pyramid.' For this building 'has such an angle at the corners, that for every ten units its structure advances inwards on the diagonal of the base, it practically rises upwards, or points to sunshine' (*sic*) 'by *nine*. Nine, too, out of the ten characteristic parts (viz. five angles and five sides) being the number of those parts which the sun shines on in such a shaped pyramid, in such a latitude near the equator, out of a high sky, or, as the Peruvians say, when the sun sets on the pyramid with all its rays.' The coincidence itself on which this perverse reasoning rests is a singular one—singular, that is, as showing how close

an accidental coincidence may run. It amounts to this, that if the number of days in the year be multiplied by 100, and a circle be drawn with a circumference containing 100 times as many inches as there are days in the year, the radius of the circle will be very nearly one 1,000,000,000th part of the sun's distance. Remembering that the pyramid inch is assumed to be one 500,000,000th part of the earth's diameter, we shall not be far from the truth in saying that, as a matter of fact, the earth by her orbital motion traverses each day a distance equal to two hundred times her own diameter. But, of course, this relation is altogether accidental. It has no real cause in nature.[23]

Such relations show that mere numerical coincidences, however close, have little weight as evidence, except where they occur in series. Even then they require to be very cautiously regarded, seeing that the history of science records many instances where the apparent law of a series has been found to be falsified when the theory has been extended. Of course this

---

[23] It may be matched by other coincidences as remarkable and as little the result of the operation of any natural law. For instance, the following strange relation, introducing the dimensions of the sun himself, nowhere, so far as I have yet seen, introduced among pyramid relations, even by pyramidalists: 'If the plane of the ecliptic were a true surface, and the sun were to commence rolling along that surface towards the part of the earth's orbit where she is at her mean distance, while the earth commenced rolling upon the sun (round one of his great circles), each globe turning round in the same time,—then, by the time the earth had rolled its way once round the sun, the sun would have almost exactly reached the earth's orbit. This is only another way of saying that the sun's diameter exceeds the earth's in almost exactly the same degree that the sun's distance exceeds the sun's diameter.'

reason is not quoted in order to throw doubt on the supposition that the height of the pyramid was intended to symbolise the sun's distance. That supposition is simply inadmissible if the hypothesis, according to which the height was already independently determined in another way, is admitted. Either hypothesis might be admitted were we not certain that the sun's distance could not possibly have been known to the builders of the pyramid; or both hypotheses may be rejected: but to admit both is out of the question.

Considering the multitude of dimensions of length, surface, capacity, and position, the great number of shapes, and the variety of material existing within the pyramid, and considering, further, the enormous number of relations (presented by modern science) from among which to choose, can it be wondered at if fresh coincidences are being continually recognised? If a dimension will not serve in one way, use can be found for it in another; for instance, if some measure of length does not correspond closely with any known dimension of the earth or of the solar system (an unlikely supposition), then it can be understood to typify an interval of time. If, even after trying all possible changes of that kind, no coincidence shows itself (which is all but impossible), then all that is needed to secure a coincidence is that the dimensions should be manipulated a little.

Let a single instance suffice to show how the pyramidalists (with perfect honesty of purpose) hunt down a coincidence. The slant tunnel already described has a transverse height, once

no doubt uniform, now giving various measures from 47·14 pyramid inches to 47·32 inches, so that the vertical height from the known inclination of the tunnel would be estimated at somewhere between 52·64 inches and 52·85. Neither dimension corresponds very obviously with any measured distance in the earth or solar system. Nor when we try periods, areas, etc., does any very satisfactory coincidence present itself. But the difficulty is easily turned into a new proof of design. Putting all the observations together (says Professor Smyth), 'I deduced 47·24 pyramid inches to be the transverse height of the entrance passage; and computing from thence with the observed angle of inclination the vertical height, that came out 52·76 of the same inches. But the sum of those two heights, or the height taken up and down, equals 100 inches, which length, as elsewhere shown, is the general pyramid linear representation of a day of twenty-four hours. And the mean of the two heights, or the height taken one way only, and impartially to the middle point between them, equals fifty inches; which quantity is, therefore, the general pyramid linear representation of only half a day. In which case, let us ask what the entrance passage has to do with half rather than a whole day?'

On relations such as these, which, if really intended by the architect, would imply an utterly fatuous habit of concealing elaborately what he desired to symbolise, the pyramidalists base their belief that 'a Mighty Intelligence did both think out the plans for it, and compel unwilling and ignorant idolators, in a

primal age of the world, to work mightily both for the future glory of the one true God of Revelation, and to establish lasting prophetic testimony touching a further development, still to take place, of the absolutely Divine Christian dispensation.'

III.
THE MYSTERY OF THE PYRAMIDS

Few subjects of inquiry have proved more perplexing than the question of the purpose for which the pyramids of Egypt were built. Even in the remotest ages of which we have historical record, nothing seems to have been known certainly on this point. For some reason or other, the builders of the pyramids concealed the object of these structures, and this so successfully that not even a tradition has reached us which purports to have been handed down from the epoch of the pyramids' construction. We find, indeed, some explanations given by the earliest historians; but they were professedly only hypothetical, like those advanced in more recent times. Including ancient and modern theories, we find a wide range of choice. Some have thought that these buildings were associated with the religion of the early Egyptians; others have suggested that they were tombs; others, that they combined the purposes of tombs and temples, that they were astronomical observatories, defences against the sands of the Great Desert, granaries like those made under Joseph's direction, places of resort during excessive overflows of the Nile; and many other uses have been suggested for them. But none of these ideas are found on close examination to be tenable as representing the sole purpose of the pyramids, and

few of them have strong claims to be regarded as presenting even a chief object of these remarkable structures. The significant and perplexing history of the three oldest pyramids—the Great Pyramid of Cheops, Shofo, or Suphis, the pyramid of Chephren, and the pyramid of Mycerinus; and the most remarkable of all the facts known respecting the pyramids generally, viz., the circumstance that one pyramid after another was built as though each had become useless soon after it was finished, are left entirely unexplained by all the theories above mentioned, save one only, the tomb theory, and that does not afford by any means a satisfactory explanation of the circumstances.

I propose to give here a brief account of some of the most suggestive facts known respecting the pyramids, and, after considering the difficulties which beset the theories heretofore advanced, to indicate a theory (new so far as I know) which seems to me to correspond better with the facts than any heretofore advanced; I suggest it, however, rather for consideration than because I regard it as very convincingly supported by the evidence. In fact, to advance any theory at present with confident assurance of its correctness, would be simply to indicate a very limited acquaintance with the difficulties surrounding the subject.

Let us first consider a few of the more striking facts recorded by history or tradition, noting, as we proceed, whatever ideas they may suggest as to the intended character of these structures.

It is hardly necessary to say, perhaps, that the history

of the Great Pyramid is of paramount importance in this inquiry. Whatever purpose pyramids were originally intended to subserve, must have been conceived by the builders of *that* pyramid. New ideas may have been superadded by the builders of later pyramids, but it is unlikely that the original purpose can have been entirely abandoned. Some great purpose there was, which the rulers of ancient Egypt proposed to fulfil by building very massive pyramidal structures on a particular plan. It is by inquiring into the history of the first and most massive of these structures, and by examining its construction, that we shall have the best chance of finding out what that great purpose was.

According to Herodotus, the kings who built the pyramids reigned not more than twenty-eight centuries ago; but there can be little doubt that Herodotus misunderstood the Egyptian priests from whom he derived his information, and that the real antiquity of the pyramid-kings was far greater. He tells us that, according to the Egyptian priests, Cheops 'on ascending the throne plunged into all manner of wickedness. He closed the temples, and forbade the Egyptians to offer sacrifice, compelling them instead to labour one and all in his service, viz., in building the Great Pyramid.' Still following his interpretation of the Egyptian account, we learn that one hundred thousand men were employed for twenty years in building the Great Pyramid, and that ten years were occupied in constructing a causeway by which to convey the stones to the place and in conveying them there. 'Cheops reigned fifty years; and was succeeded by his brother

Chephren, who imitated the conduct of his predecessor, built a pyramid—but smaller than his brother's—and reigned fifty-six years. Thus during one hundred and six years, the temples were shut and never opened.' Moreover, Herodotus tells us that 'the Egyptians so detested the memory of these kings, that they do not much like even to mention their names. Hence they commonly call the pyramids after Philition, a shepherd who at that time fed his flocks about the place.' 'After Chephren, Mycerinus, son of Cheops, ascended the throne, he reopened the temples, and allowed the people to resume the practice of sacrifice. He, too, left a pyramid, but much inferior in size to his father's. It is built, for half of its height, of the stone of Ethiopia,' or, as Professor Smyth (whose extracts from Rawlinson's translation I have here followed) adds 'expensive red granite.' 'After Mycerinus, Asychis ascended the throne. He built the eastern gateway of the Temple of Vulcan (Phtha); and, being desirous of eclipsing all his predecessors on the throne, left as a monument of his reign a pyramid of brick.'

This account is so suggestive, as will presently be shown, that it may be well to inquire whether it can be relied on. Now, although there can be no doubt that Herodotus misunderstood the Egyptians in some matters, and in particular as to the chronological order of the dynasties, placing the pyramid kings far too late, yet in other respects he seems not only to have understood them correctly, but also to have received a correct account from them. The order of the kings above named

corresponds with the sequence given by Manetho, and also found in monumental and hieroglyphic records. Manetho gives the names Suphis I., Suphis II., and Mencheres, instead of Cheops, Chephren, and Mycerinus; while, according to the modern Egyptologists, Herodotus's Cheops was Shofo, Shufu, or Koufou; Chephren was Shafre, while he was also called Nou-Shofo or Noum-Shufu as the brother of Shofo; and Mycerinus was Menhere or Menkerre. But the identity of these kings is not questioned. As to the true dates there is much doubt, and it is probable that the question will long continue open; but the determination of the exact epochs when the several pyramids were built is not very important in connection with our present inquiry. We may, on the whole, fairly take the points quoted above from Herodotus, and proceed to consider the significance of the narrative, with sufficient confidence that in all essential respects it is trustworthy.

There are several very strange features in the account.

In the first place, it is manifest that Cheops (to call the first king by the name most familiar to the general reader) attached great importance to the building of his pyramid. It has been said, and perhaps justly, that it would be more interesting to know the plan of the architect who devised the pyramid than the purpose of the king who built it. But the two things are closely connected. The architect must have satisfied the king that some highly important purpose in which the king himself was interested, would be subserved by the structure. Whether the

king was persuaded to undertake the work as a matter of duty, or only to advance his own interests, may not be so clear. But that the king was most thoroughly in earnest about the work is certain. A monarch in those times would assuredly not have devoted an enormous amount of labour and material to such a scheme unless he was thoroughly convinced of its great importance. That the welfare of his people was not considered by Cheops in building the Great Pyramid is almost equally certain. He might, indeed, have had a scheme for their good which either he did not care to explain to them or which they could not understand. But the most natural inference from the narrative is that his purpose had no reference whatever to their welfare. For though one could understand his own subjects hating him while he was all the time working for their good, it is obvious that his memory would not have been hated if some important good had eventually been gained from his scheme. Many a far-seeing ruler has been hated while living on account of the very work for which his memory has been revered. But the memory of Cheops and his successors was held in detestation.

May we, however, suppose that, though Cheops had not the welfare of his own people in his thoughts, his purpose was nevertheless not selfish, but intended in some way to promote the welfare of the human race? I say his purpose, because, whoever originated the scheme, Cheops carried it out; it was by means of his wealth and through his power that the pyramid was built. This is the view adopted by Professor Piazzi Smyth

and others, in our own time, and first suggested by John Taylor. 'Whereas other writers,' says Smyth, 'have generally esteemed that the mysterious persons who directed the building of the Great Pyramid (and to whom the Egyptians, in their traditions, and for ages afterwards, gave an immoral and even abominable character) must therefore have been very bad indeed, so that the world at large has always been fond of standing on, kicking, and insulting that dead lion, whom they really knew not; he, Mr. John Taylor, seeing how religiously bad the Egyptians themselves were, was led to conclude, on the contrary, that those *they* hated (and could never sufficiently abuse) might, perhaps, have been pre-eminently good; or were, at all events, of *different religious faith* from themselves.' 'Combining this with certain unmistakable historical facts,' Mr. Taylor deduced reasons for believing that the directors of the building designed to record in its proportions, and in its interior features, certain important religious and scientific truths, not for the people then living, but for men who were to come 4000 years or so after.

I have already considered at length (see the preceding Essay) the evidence on which this strange theory rests. But there are certain matters connecting it with the above narrative which must here be noticed. The mention of the shepherd Philition, who fed his flocks about the place where the Great Pyramid was built, is a singular feature of Herodotus's narrative. It reads like some strange misinterpretation of the story related to him by the Egyptian priests. It is obvious that if the word Philition did

not represent a people, but a person, this person must have been very eminent and distinguished—a shepherd-king, not a mere shepherd. Rawlinson, in a note on this portion of the narrative of Herodotus, suggests that Philitis was probably a shepherd-prince from Palestine, perhaps of Philistine descent, 'but so powerful and domineering, that it may be traditions of his oppressions in that earlier age which, mixed up afterwards in the minds of later Egyptians with the evils inflicted on their country by the subsequent shepherds of better known dynasties, lent so much fear to their religious hate of Shepherd times and that name.' Smyth, somewhat modifying this view, and considering certain remarks of Manetho respecting an alleged invasion of Egypt by shepherd-kings, 'men of an ignoble race (from the Egyptian point of view) who had the confidence to invade our country, and easily subdued it to their power without a battle,' comes to the conclusion that some Shemite prince, 'a contemporary of, but rather older than, the Patriarch Abraham,' visited Egypt at this time, and obtained such influence over the mind of Cheops as to persuade him to erect the pyramid. According to Smyth, the prince was no other than Melchizedek, king of Salem, and the influence he exerted was supernatural. With such developments of the theory we need not trouble ourselves. It seems tolerably clear that certain shepherd-chiefs who came to Egypt during Cheops' reign were connected in some way with the designing of the Great Pyramid. It is clear also that they were men of a different religion from the Egyptians, and persuaded

Cheops to abandon the religion of his people. Taylor, Smyth, and the Pyramidalists generally, consider this sufficient to prove that the pyramid was erected for some purpose connected with religion. 'The pyramid,' in fine, says Smyth, 'was charged by God's inspired shepherd-prince, in the beginning of human time, to keep a certain message secret and inviolable for 4000 years, and it has done so; and in the next thousand years it was to enunciate that message to all men, with more than traditional force, more than all the authenticity of copied manuscripts or reputed history; and that part of the pyramid's usefulness is now beginning.'

There are many very obvious difficulties surrounding this theory; as, for example (i.) the absurd waste of power in setting supernatural machinery at work 4000 years ago with cumbrous devices to record its object, when the same machinery, much more simply employed now, would effect the alleged purpose far more thoroughly; (ii.) the enormous amount of human misery and its attendant hatreds brought about by this alleged divine scheme; and (iii.) the futility of an arrangement by which the pyramid was only to subserve its purpose when it had lost that perfection of shape on which its entire significance depended, according to the theory itself. But, apart from these, there is a difficulty, nowhere noticed by Smyth or his followers, which is fatal, I conceive, to this theory of the pyramid's purpose. The second pyramid, though slightly inferior to the first in size, and probably far inferior in quality of masonry, is still a structure

of enormous dimensions, which must have required many years of labour from tens of thousands of workmen. Now, it seems impossible to explain why Chephren built this second pyramid, if we adopt Smyth's theory respecting the first pyramid. For either Chephren knew the purpose for which the Great Pyramid was built, or he did not know it. If he knew that purpose, and it was that indicated by Smyth, then he also knew that no second pyramid was wanted. On that hypothesis, all the labour bestowed on the second pyramid was wittingly and wilfully wasted. This, of course is incredible. But, on the other hand, if Chephren did not know what was the purpose for which the Great Pyramid was built, what reason could Chephren have had for building a pyramid at all? The only answer to this question seems to be that Chephren built the second pyramid in hopes of finding out why his brother had built the first, and this answer is simply absurd. It is clear enough that whatever purpose Cheops had in building the first pyramid, Chephren must have had a similar purpose in building the second; and we require a theory which shall at least explain why the first pyramid did not subserve for Chephren the purpose which it subserved or was meant to subserve for Cheops. The same reasoning may be extended to the third pyramid, to the fourth, and in fine to all the pyramids, forty or so in number, included under the general designation of the Pyramids of Ghizeh or Jeezeh. The extension of the principle to pyramids later than the second is especially important as showing that the difference of religion insisted on by Smyth has no direct bearing

on the question of the purpose for which the Great Pyramid itself was constructed. For Mycerinus either never left or else returned to the religion of the Egyptians. Yet he also built a pyramid, which, though far inferior in size to the pyramids built by his father and uncle, was still a massive structure, and relatively more costly even than theirs, because built of expensive granite. The pyramid built by Asychis, though smaller still, was remarkable as built of brick; in fact, we are expressly told that Asychis desired to eclipse all his predecessors in such labours, and accordingly left this brick pyramid as a monument of his reign.

We are forced, in fact, to believe that there was some special relation between the pyramid and its builder, seeing that each one of these kings wanted a pyramid of his own. This applies to the Great Pyramid quite as much as to the others, despite the superior excellence of that structure. Or rather, the argument derives its chief force from the superiority of the Great Pyramid. If Chephren, no longer perhaps having the assistance of the shepherd-architects in planning and superintending the work, was unable to construct a pyramid so perfect and so stately as his brother's, the very fact that he nevertheless built a pyramid shows that the Great Pyramid did not fulfil for Chephren the purpose which it fulfilled for Cheops. But, if Smyth's theory were true, the Great Pyramid would have fulfilled finally and for all men the purpose for which it was built. Since this was manifestly not the case, that theory is, I submit, demonstrably erroneous.

It was probably the consideration of this point, viz. that

each king had a pyramid constructed for himself, which led to the theory that the pyramids were intended to serve as tombs. This theory was once very generally entertained. Thus we find Humboldt, in his remarks on American pyramids, referring to the tomb theory of the Egyptian pyramids as though it were open to no question. 'When we consider,' he says, 'the pyramidical monuments of Egypt, of Asia, and of the New Continent, from the same point of view, we see that, though their form is alike, their destination was altogether different. The group of pyramids of Ghizeh and at Sakhara in Egypt; the triangular pyramid of the Queen of the Scythians, Zarina, which was a stadium high and three in circumference, and which was decorated with a colossal figure; the fourteen Etruscan pyramids, which are said to have been enclosed in the labyrinth of the king Porsenna, at Clusium —were reared to serve as the sepulchres of the illustrious dead. Nothing is more natural to men than to commemorate the spot where rest the ashes of those whose memory they cherish whether it be, as in the infancy of the race, by simple mounds of earth, or, in later periods, by the towering height of the tumulus. Those of the Chinese and of Thibet have only a few metres of elevation. Farther to the west the dimensions increase; the tumulus of the king Alyattes, father of Crœsus, in Lydia, was six stadia, and that of Ninus was more than ten stadia in diameter. In the north of Europe the sepulchre of the Scandinavian king Gormus and the queen Daneboda, covered with mounds of earth, are three hundred metres broad, and more than thirty high.'

But while we have abundant reason for believing that in Egypt, even in the days of Cheops and Chephren, extreme importance was attached to the character of the place of burial for distinguished persons, there is nothing in what is known respecting earlier Egyptian ideas to suggest the probability that any monarch would have devoted many years of his subjects' labour, and vast stores of material, to erect a mass of masonry like the Great Pyramid, solely to receive his own body after death. Far less have we any reason for supposing that many monarchs in succession would do this, each having a separate tomb built for him. It might have been conceivable, had only the Great Pyramid been erected, that the structure had been raised as a mausoleum for all the kings and princes of the dynasty. But it seems utterly incredible that such a building as the Great Pyramid should have been erected for one king's body only —and that, not in the way described by Humboldt, when he speaks of men commemorating the spot where rest the remains of those whose memory they cherish, but at the expense of the king himself whose body was to be there deposited. Besides, the first pyramid, the one whose history must be regarded as most significant of the true purpose of these buildings, was not built by an Egyptian holding in great favour the special religious ideas of his people, but by one who had adopted other views and those not belonging, so far as can be seen, to a people among whom sepulchral rites were held in exceptional regard.

A still stronger objection against the exclusively tombic theory

resides in the fact that this theory gives no account whatever of the characteristic features of the pyramids themselves. These buildings are all, without exception, built on special astronomical principles. Their square bases are so placed as to have two sides lying east and west, and two lying north and south, or, in other words, so that their four faces front the four cardinal points. One can imagine no reason why a tomb should have such a position. It is not, indeed, easy to understand why any building at all, except an astronomical observatory, should have such a position. A temple perhaps devoted to sun-worship, and generally to the worship of the heavenly bodies, might be built in that way. For it is to be noticed that the peculiar figure and position of the pyramids would bring about the following relations:—When the sun rose and set south of the east and west points, or (speaking generally) between the autumn and the spring equinoxes, the rays of the rising and setting sun illuminated the southern face of the pyramid; whereas during the rest of the year, that is, during the six months between the spring and autumn equinoxes, the rays of the rising and setting sun illuminated the northern face. Again, all the year round the sun's rays passed from the eastern to the western face at solar noon. And lastly, during seven months and a half of each year, namely, for three months and three quarters before and after midsummer, the noon rays of the sun fell on all four faces of the pyramid, or, according to a Peruvian expression (so Smyth avers), the sun shone on the pyramid 'with all his rays.' Such conditions as these might have been

regarded as very suitable for a temple devoted to sun-worship. Yet the temple theory is as untenable as the tomb theory. For, in the first place, the pyramid form—as the pyramids were originally built, with perfectly smooth slant-faces, not terraced into steps as now through the loss of the casing-stones—was entirely unsuited for all the ordinary requirements of a temple of worship. And further, this theory gives no explanation of the fact that each king built a pyramid, and each king only one. Similar difficulties oppose the theory that the pyramids were intended to serve as astronomical observatories. For while their original figure, however manifestly astronomical in its relations, was quite unsuited for observatory work, it is manifest that if such had been the purpose of pyramid-building, so soon as the Great Pyramid had once been built, no other would be needed. Certainly none of the pyramids built afterwards could have subserved any astronomical purpose which the first did not subserve, or have subserved nearly so well as the Great Pyramid those purposes (and they are but few) which that building may be supposed to have fulfilled as an astronomical observatory.

Of the other theories mentioned at the beginning of this paper none seem to merit special notice, except perhaps the theory that the pyramids were made to receive the royal treasures, and this theory rather because of the attention it received from Arabian literati, during the ninth and tenth centuries, than because of any strong reasons which can be suggested in its favour. 'Emulating,' says Professor Smyth, 'the enchanted tales

of Bagdad,' the court poets of Al Mamoun (son of the far-famed Haroun al Raschid) 'drew gorgeous pictures of the contents of the pyramid's interior.... All the treasures of Sheddad Ben Ad the great Antediluvian king of the earth, with all his medicines and all his sciences, they declared were there, told over and over again. Others, though, were positive that the founder-king was no other than Saurid Ibn Salhouk, a far greater one than the other; and these last gave many more minute particulars, some of which are at least interesting to us in the present day, as proving that, amongst the Egypto-Arabians of more than a thousand years ago, the Jeezeh pyramids, headed by the grand one, enjoyed a pre-eminence of fame vastly before all the other pyramids of Egypt put together; and that if any other is alluded to after the Great Pyramid (which has always been the notable and favourite one, and chiefly was known then as the East pyramid), it is either the second one at Jeezeh, under the name of the West pyramid; or the third one, distinguished as the Coloured pyramid, in allusion to its red granite, compared with the white limestone casings of the other two (which, moreover, from their more near, but by no means exact, equality of size, went frequently under the affectionate designation of "the pair").'

The report of Ibn Abd Alkohm, as to what was to be found in each of these three pyramids, or rather of what, according to him, was put into them originally by King Saurid, runs as follows: 'In the Western pyramid, thirty treasuries filled with store of riches and utensils, and with signatures made of precious stones,

and with instruments of iron and vessels of earth, and with arms which rust not, and with glass which might be bended and yet not broken, and with strange spells, and with several kinds of *alakakirs* (magical precious stones) single and double, and with deadly poisons, and with other things besides. He made also in the East' (the Great Pyramid) 'divers celestial spheres and stars, and what they severally operate in their aspects, and the perfumes which are to be used to them, and the books which treat of these matters. He put also into the coloured pyramid the commentaries of the priests in chests of black marble, and with every priest a book, in which the wonders of his profession and of his actions and of his nature were written, and what was done in his time, and what is and what shall be from the beginning of time to the end of it.' The rest of this worthy's report relates to certain treasurers placed within these three pyramids to guard their contents, and (like all or most of what I have already quoted) was a work of imagination. Ibn Abd Alkohm, in fact, was a romancist of the first water.

Perhaps the strongest argument against the theory that the pyramids were intended as strongholds for the concealment of treasure, resides in the fact that, search being made, no treasure has been discovered. When the workmen employed by Caliph Al Mamoun, after encountering manifold difficulties, at length broke their way into the great ascending passage leading to the so-called King's Chamber, they found 'a right noble apartment, thirty-four feet long, seventeen broad, and nineteen high, of

polished red granite throughout, walls, floor, and ceiling, in blocks squared and true, and put together with such exquisite skill that the joints are barely discernible to the closest inspection. But where is the treasure—the silver and the gold, the jewels, medicines, and arms?—These fanatics look wildly around them, but can see nothing, not a single *dirhem* anywhere. They trim their torches, and carry them again and again to every part of that red-walled, flinty hall, but without any better success. Nought but pure polished red granite, in mighty slabs, looks upon them from every side. The room is clean, garnished too, as it were, and, according to the ideas of its founders, complete and perfectly ready for its visitors so long expected, so long delayed. But the gross minds who occupy it now, find it all barren, and declare that there is nothing whatever for them in the whole extent of the apartment from one end to another; nothing except an empty stone chest without a lid.'

It is, however, to be noted that we have no means of learning what had happened between the time when the pyramid was built and when Caliph Al Mamoun's workmen broke their way into the King's Chamber. The place may, after all, have contained treasures of some kind; nor, indeed, is it incompatible with other theories of the pyramid to suppose that it was used as a safe receptacle for treasures. It is certain, however, that this cannot have been the special purpose for which the pyramids were designed. We should find in such a purpose no explanation whatever of any of the most stringent difficulties encountered

in dealing with other theories. There could be no reason why strangers from the East should be at special pains to instruct an Egyptian monarch how to hide and guard his treasures. Nor, if the Great Pyramid had been intended to receive the treasures of Cheops, would Chephren have built another for his own treasures, which must have included those gathered by Cheops. But, apart from this, how inconceivably vast must a treasure-hoard be supposed to be, the safe guarding of which would have repaid the enormous cost of the great Pyramid in labour and material! And then, why should a mere treasure-house have the characteristics of an astronomical observatory? Manifestly, if the pyramids were used at all to receive treasures, it can only have been as an entirely subordinate though perhaps convenient means of utilising these gigantic structures.

Having thus gone through all the suggested purposes of the pyramids save two or three which clearly do not possess any claim to serious consideration, and having found none which appear to give any sufficient account of the history and principal features of these buildings, we must either abandon the inquiry or seek for some explanation quite different from any yet suggested. Let us consider what are the principal points of which the true theory of the pyramids should give an account.

In the first place, the history of the pyramids shows that the erection of the first great pyramid was in all probability either suggested to Cheops by wise men who visited Egypt from the East, or else some important information conveyed

to him by such visitors caused him to conceive the idea of building the pyramid. In either case we may suppose, as the history indeed suggests, that these learned men, whoever they may have been, remained in Egypt to superintend the erection of the structure. It may be that the architectural work was not under their supervision; in fact, it seems altogether unlikely that shepherd-rulers would have much to teach the Egyptians in the matter of architecture. But the astronomical peculiarities which form so significant a feature of the Great Pyramid were probably provided for entirely under the instructions of the shepherd chiefs who had exerted so strange an influence upon the mind of King Cheops.

Next, it seems clear that self-interest must have been the predominant reason in the mind of the Egyptian king for undertaking this stupendous work. It is true that his change of religion implies that some higher cause influenced him. But a ruler who could inflict such grievous burdens on his people in carrying out his purpose that for ages afterwards his name was held in utter detestation, cannot have been solely or even chiefly influenced by religious motives. It affords an ample explanation of the behaviour of Cheops, in closing the temples and forsaking the religion of his country, to suppose that the advantages which he hoped to secure by building the pyramid depended in some way on his adopting this course. The visitors from the East may have refused to give their assistance on any other terms, or may have assured him that the expected benefit could not be obtained

if the pyramid were erected by idolaters. It is certain, in any case, that they were opposed to idolatry; and we have thus some means of inferring who they were and whence they came. We know that one particular branch of one particular race in the East was characterised by a most marked hatred of idolatry in all its forms. Terah and his family, or, probably, a sect or division of the Chaldæan people, went forth from Ur of the Chaldees, to go into the land of Canaan—and the reason why they went forth we learn from a book of considerable historical interest (the book of Judith) to have been because 'they would not worship the gods of their fathers who were in the land of the Chaldæans.' The Bible record shows that members of this branch of the Chaldæan people visited Egypt from time to time. They were shepherds, too, which accords well with the account of Herodotus above quoted. We can well understand that persons of this family would have resisted all endeavours to secure their acquiescence in any scheme associated with idolatrous rites. Neither promises nor threats would have had much influence on them. It was a distinguished member of the family, the patriarch Abraham, who said: 'I have lift up mine hand unto the Lord, the most high God, the possessor of heaven and earth, that I will not take from a thread even to a shoe-latchet, and that I will not take anything that is thine, lest thou shouldest say, I have made Abram rich.' Vain would all the promises and all the threats of Cheops have been to men of this spirit. Such men might help him in his plans, suggested, as the history shows, by teachings of their own, but

it must be on their own conditions, and those conditions would most certainly include the utter rejection of idolatrous worship by the king in whose behalf they worked, as well as by all who shared in their labours. It seems probable that they convinced both Cheops and Chephren, that unless these kings gave up idolatry, the purpose, whatever it was, which the pyramid was erected to promote, would not be fulfilled. The mere fact that the Great Pyramid was built either directly at the suggestion of these visitors, or because they had persuaded Cheops of the truth of some important doctrine, shows that they must have gained great influence over his mind. Rather we may say that he must have been so convinced of their knowledge and power as to have accepted with unquestioning confidence all that they told him respecting the particular subject over which they seemed to possess so perfect a mastery.

But having formed the opinion, on grounds sufficiently assured, that the strangers who visited Egypt and superintended the building of the Great Pyramid were kinsmen of the patriarch Abraham, it is not very difficult to decide what was the subject respecting which they had such exact information. They or their parents had come from the land of the Chaldæans, and they were doubtless learned in all the wisdom of their Chaldæan kinsmen. They were masters, in fact, of the astronomy of their day, a science for which the Chaldæans had shown from the earliest ages the most remarkable aptitude. What the actual extent of their astronomical knowledge may have been it would

be difficult to say. But it is certain, from the exact knowledge which later Chaldæans possessed respecting long astronomical cycles, that astronomical observations must have been carried on continuously by that people for many hundreds of years. It is highly probable that the astronomical knowledge of the Chaldæans in the days of Terah and Abraham was much more accurate than that possessed by the Greeks even after the time of Hipparchus.[24] We see indeed, in the accurate astronomical adjustment of the Great Pyramid, that the architects must have been skilful astronomers and mathematicians; and I may note here, in passing, how strongly this circumstance confirms the opinion that the visitors were kinsmen of Terah and Abraham. All we know from Herodotus and Manetho, all the evidence from the circumstances connected with the religion of the pyramid-kings, and the astronomical evidence given by the pyramids themselves, tends to assure us that members of that particular branch of the Chaldæan family which went out from Ur of the Chaldees because they would not worship the gods of the Chaldæans, extended their wanderings to Egypt, and eventually superintended the erection of the Great Pyramid so far as

[24] It has been remarked that, though Hipparchus had the enormous advantage of being able to compare his own observations with those recorded by the Chaldæans, he estimated the length of the year less correctly than the Chaldæans. It has been thought by some that the Chaldæans were acquainted with the true system of the universe, but I do not know that there are sufficient grounds for this supposition. Diodorus Siculus and Apollonius Myndius mention, however, that they were able to predict the return of comets, and this implies that their observations had been continued for many centuries with great care and exactness.

astronomical and mathematical relations were concerned.

But not only have we already decided that the pyramids were not intended solely or chiefly to sub serve the purpose of astronomical observatories, but it is certain that Cheops would not have been personally much interested in any astronomical information which these visitors might be able to communicate. Unless he saw clearly that something was to be gained from the lore of his visitors, he would not have undertaken to erect any astronomical buildings at their suggestion, even if he had cared enough for their knowledge to pay any attention to them whatever. Most probably the reply Cheops would have made to any communications respecting mere astronomy, would have run much in the style of the reply made by the Turkish Cadi, Imaum Ali Zadè to a friend of Layard's who had apparently bored him about double stars and comets: 'Oh my soul! oh my lamb!' said Ali Zadè, 'seek not after the things which concern thee not. Thou camest unto us, and we welcomed thee: go in peace. Of a truth thou hast spoken many words; and there is no harm done, for the speaker is one and the listener is another. After the fashion of thy people thou hast wandered from one place to another until thou art happy and content in none. Listen, oh my son! There is no wisdom equal unto the belief in God! He created the world, and shall we liken ourselves unto Him in seeking to penetrate into the mysteries of His creation? Shall we say, Behold this star spinneth round that star, and this other star with a tail goeth and cometh in so many years! Let it go! He from whose hand it

came will guide and direct it. But thou wilt say unto me, Stand aside, oh man, for I am more learned than thou art, and have seen more things. If thou thinkest that thou art in this respect better than I am, thou art welcome. I praise God that I seek not that which I require not. Thou art learned in the things I care not for; and as for that which thou hast seen, I defile it. Will much knowledge create thee a double belly, or wilt thou seek paradise with thine eyes?' Such, omitting the references to the Creator, would probably have been the reply of Cheops to his visitors, had they only had astronomical facts to present him with. Or, in the plenitude of his kingly power, he might have more decisively rejected their teaching by removing their heads.

Конец ознакомительного фрагмента.