

A PRACTICAL MAN ON PROTOPLASM.

A Member of the "Mutual Admiration Society," and an enthusiastic admirer of Professor Huxley, called on a friend to invite him to come and hear the Professor on Protoplasm. He spoke so extravagantly about him that his friend finally became curious, and asked—"Who in the world is this Huxley, anyway?"

HUXLEYITE.—"You don't mean to say you have not heard about Professor Huxley, the great scientist?"

PRACTICAL MAN.—"Yes I do though; never heard his name before; what has he done?"

H.—"Why, man, Huxley made the important discovery about Protoplasm."

P. M.—"About what? Protoplasm? And what in the name of common sense is Protoplasm?"

H.—"Now look here, you don't mean to sit there and tell me you don't know what Protoplasm is?"

P. M.—"That's just it. Can you tell me what is Protoplasm?"

H.—"Well, Protoplasm is—yes—is—well—what we call 'the life principle.'"

P. M.—"O, I see! It's something to do with life insurance societies, and Huxley is a successful canvasser, eh?"

H.—"O, nonsense, it is the life principle in nature—the starting point of vital action."

P. M.—"O! he discovered that, did he?"

H.—"Yes, he discovered it some years ago in England."

P. M.—"And what good is it a going to do?"

H.—"Good? A great deal of good. It expands the circle of human knowledge, and is valuable in bearing out the theory of Evolution. It is a noble and most important contribution to science, and it has made Huxley one of the few immortal names that were not born to die."

P. M.—"So Huxley knows all about the life principle, does he?"

H.—"Yes, *all* about it."

P. M.—"And the starting point of vital action?"

H.—"Yes, *all* about it."

P. M.—"Well, see here now: can he take some of that Protoplasm and make a man, or a horse, or an elephant with it?"

H.—"O no, of course he couldn't do that."

P. M.—"Can he take it and make anything at all of it—even a gnat or a fly?"

H.—"O no, of course not."

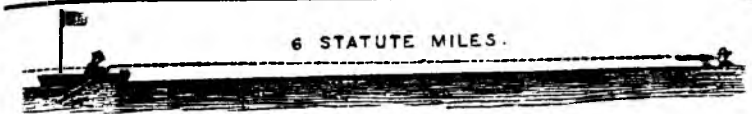
P. M.—"Well then, Huxley may just go to Jerico with his Protoplasm. I don't believe its worth two cents a pound, anyhow. It appears to me those scientific fellows put on a big lot of airs about very little things. Protoplasm, eh! Shouldn't wonder if Huxley came over here to get up a company to work it. I tell you what it is, my friend, its a swindle. Did you say the mine is in England?"

EXIT HUXLEYITE.

Yankee Judy.

THE EARTH-NOT A GLOBE-REVIEW.

*When the majestic form of Truth stands before the bar of justice,
that hideous monster, Error, hangs its head in silence.*



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THE PRETENSIONS AND PRETENCES OF MODERN ASTRONOMY.

By James Naylor.

(Concluded.)

Now it is impossible not to see as these pretences are pointed out, that Kepler's first law is a palpable absurdity, and one is irresistibly reminded of the definition of the crab, said to have been given by the French lexicographers "as a large red fish, which walked backwards!" This definition on being submitted to Cuvier was stated by him to be PERFECTLY CORRECT, except that the crab was not large, was not a fish, was not red and did not walk backward! So with Kepler's first law "that the planets revolve in elliptical orbits, the sun being situated in one of the foci." This also is "perfectly correct," except that the planets do not revolve, do not move in orbits, do not describe ellipses, and do not have the sun occupying their common foci. The lexicographer's definition of the crab was absurd, and Kepler's first law is equally so. Of course it can be replied to our position that the law holds good IF THE SUN IS SUPPOSED TO BE STATIONARY, and such a supposition it is alleged enables the planetary motions to be much more easily apprehended. But this argument practically gives itself away. It justifies our charge to the letter, viz., that the commonly taught doctrines of the planetary motions are but a gigantic pretence, put for a set of conditions with which they have no common agreement. A simple illustration will make the absurdity of the argument perfectly clear.

There are a number of persons going along the road, and while one in particular keeps straight forward, the rest proceed irregularly, being sometimes to the right, sometimes to the left, then to the front, and yet again to the rear of him. These movements well illustrate the astronomer's teachings as to the motions of the sun and the planets. Now

should we not deem a person as qualifying for a lunatic asylum, who observing the movements of these persons gravely informed us we could much better understand their character if we *supposed* the persons as not moving forward at all, but as marching around the particular individual whom we characterized as moving along straight in front of him. Yet this is precisely the kind of argument under review, for in it we are gravely told that continuous forward movement, in all but the case of the sun, most erratic in character, can be best understood by *supposing* no forward movement at all, but a fixed point occupied by the sun, and the planets moving regularly round it. Truly absurdity could scarcely go to greater length, and having pointed it out we may well leave the exposure of further pretences to a future paper.

Before concluding the present one, however, it will be necessary to dispose of one or two refuges into which the perplexed Newtonian astronomer may betake himself. First, let us amply justify our statement of the sun's alleged motion through space, for ordinarily this matter is not brought prominently forth in the usual works on astronomy. Our first extract shall be from Beeton's Dictionary of Science, p. 1556: "The elder Herschel having examined the subject, announced that like the stars, the sun and its attendant planets were also subject to translation in space. He announced that the solar system was moving towards a point in the heavens near the (α) star (in) Hercules. These views have been confirmed by the subsequent researches of Sir William Herschel, Struve, Arlegander and others, the very latest view of the subject gives the motion of the sun and its planets as being at the rate of 150,000,000 miles yearly." The foregoing extract clearly states the astronomical belief of the sun's motion through space in a right line accompanied by the planets. The following extract from Bali's Elements of Astronomy, p. 329, arts. 133, shows what effect such motion must have on the orbit of the earth:—"We thus see that the real motion of the earth in space is of a very *complicated* character, for though it describes an ellipse about the sun in the focus, yet the sun is itself in constant motion, and consequently the real motion of the earth is a *composite movement*, partly arising from its own proper motion around the sun, and partly arising from the fact that as a member of the solar system, the earth partakes of the motions of the solar system in space." This extract shows, that so far from the orbit of the earth being similar to the neatly drawn ellipses that we see in astronomical works, such orbit is admittedly both of a *composite* and a *complicated character*. The next extract from Young's General Astronomy, art. 804 and 806: p.p. 460, 461, still further elucidates the kind of movement, and we may also state here, that the figure referred to (p. 217) is nearly a fac simile as regards the path of the earth to the one we have produced. The

extract will also illustrate an astronomer's easy way of getting over a difficulty, viz., by calling opponents names, when reason and argument are really the things required. "The proper motion of the stars are due partly to their own real motion, and partly also to the motion of our sun, which is moving swiftly through space, taking with it the earth and the planets. The velocity of the sun's motion in space is about 16 miles per second, but this result must be considered as very uncertain

It is to be noted that this *swift* motion of the solar system, while of course it affects the real motion of the planets in space converting them into a sort of *corkscrew spiral* (like the figure p. 217), does not in the least affect the relative motion of sun and planets, as some paradoxers have supposed it must." We trust to thoroughly expose the professor's opinions in our next paper as to not affecting the relative motion of sun and planets, meanwhile the following opinions of Edward Carpenter (who certainly cannot be called a paradoxer) taken from his "*Civilization its Cause and Cure*," p.p. 53 to 55, will be an excellent foil to the Professor's statement that only paradoxers differ from him on this particular matter. "Or to take an instance from astronomy. We are accustomed to say that the path of the moon is an ellipse. But this is a very *loose statement*. On enquiry we find that owing to perturbations *supposed* to be produced by the sun, the path deviates considerably from an ellipse. In fact in strict calculations it is taken as being a certain ellipse *only for an instant*—the next moment it is supposed to be a portion of *another ellipse*. We might then call the path an irregular curve somewhat resembling an ellipse. This is a new view. But on further enquiry it appears that while the moon is going round the earth, the earth itself is speeding on through space about the sun in consequence of which *the actual path of the moon does not in the least resemble an ellipse*. Finally the sun itself is in motion with regard to the fixed stars, and THEY are in movement too. *What then is the path of the moon? No one knows*—we have not the faintest idea—the word itself ceases to have any assignable meaning. It is true that if we agree to ignore the perturbations produced by the sun—as in fact we DO ignore perturbations produced by the planets and other bodies—and if we agree to ignore the motion of the earth and the flight of the solar system through space, and even the movement of any centre round which that may be speeding, we may then SAY that the moon moves in ellipse. But this has obviously nothing to do with *actual facts*. *The moon does not move in an ellipse—not even relatively to the earth*"—and probably never has done, and never will do so. It may be a convenient view, or fiction to say that it would do so under such and such circumstances—but *it is only a fiction*. To attempt to isolate a small portion of the phenomena from the rest in a universe of which the UNITY is one

of science's most cherished convictions, is obviously self-stultifying and useless.

But you say it can be proved by mathematics that the ellipse would be the path under these conditions; to which I reply that the mathematical proof though no doubt cogent to the human mind (as at present constituted in most people) is open to the same objection that it does not deal with actual facts. It deals with a *mental supposition, i.e.*, that there are only two bodies acting on each other—a case which never has occurred and never can occur—and then assuming the law of gravitation (which is just the thing which has to be proved), it arrives at a mental formula the ellipse. But to argue from this process that the ellipse is really a thing in nature, and that the heavenly bodies do *move*, or even *tend* to move, in ellipses, is obviously a most unwarrantable leap in the dark. Finally you argue that the leap is warranted, because, by *assuming* that the moon and planets move in ellipses, you can actually foretell things that happen, as for instance the occurrence of eclipses, and in reply to that I can only say that Tycho Brahe foretold eclipses almost as well by assuming that the heavenly bodies moved in epicycles, and that modern astronomers actually do apply the epicycle theory in their mathematical formulæ. The epicycles were an assumption made for a certain purpose, and the ellipses are an assumption made for the same purpose. *In some respects the ellipse is a more convenient fiction than the epicycle, but it is no less a fiction.*

Few words are needed after such a crushing condemnation of current astronomical teaching as is given in the foregoing. It will only be necessary to point out that all the ordinary refuges of the astronomical devotee are disposed of. He cannot plead that the motion of the solar system in space is a myth and not taught by the astronomers. It is useless also to insist that the views we have put forth are mere *Zetetis misapprehensions*. The quotations from Edw. Carpenter effectually disposes of that. Neither can it be alleged that the diagram is a distorted perversion of the case, for in all its essential features, it is but a counterpart of Professor Young's! What other ways may be urged for minimizing our position we will not attempt to point out.

IMAGINARY ASTRONOMY.

By Alex. McInnes.

The Readers of the "Arabian Nights" and Baron Munchausen's "Voyage to the Moon," can, with ease and delight, turn to the romance of Modern Astronomy; the popular text book being that by Herschel.

After taking advantage of the universal ignorance of true perspective, so as to make "students" of astronomy believe that the surface of the sea is globular, and persuading simpletons that they cannot judge of motion by the senses, he asks us to

imagine those vast tracts of land called continents, adhering fast to oceans unfathomable yet as rigid as steel, so as to make something like a little school-room globe.

Next, we are to *imagine* ourselves little flies, or midgits, crawling on the globe, off which we cannot fall, though it whirls faster than lightning. But the children's toy needs an axis to whirl round, so that day and night may be accounted for, and so we are accordingly told that there is an *imaginary* one, that is, there is an axis, but it is inside our brains. Then the *imaginary axis* has two ends, called "North and South Poles," also *imaginary*. Now the word axis means axle, or axletree, and therefore, the *imaginary axis* must be itself a pole. Thus, Herschel's axis with two ends are three poles, and yet no poles at all, being only *imaginary*. Whoever heard of a wheel turning on an *imaginary axis*, even though the axis were *imagined* by the coachmen to be three poles? Again, the globe must be *imagined* to turn round with the greatest exactness in 24 hours, and so we must *imagine* it to *stand* on an *imaginary plane*, viz: no plane at all! Yes, the plane must be *imaginary*, because afterwards, when we are treated to an "explanation" of the solar system, we must *imagine* the globe no longer standing on a plane, but flashing round the sun much faster than a thunderbolt along the sky. Now, as it flashes and wheels, we are asked to *imagine* that the side turned away from the sun is as dark as night. But, how then can we forget that at another time we are to *imagine* the earth only a mote compared to the sun (a million times larger), which floods it with light, streaming many millions of miles beyond, so that there can be no dark side?

The imagination being thus excited to vigorous exercise, Herschel proceeds to "explain" the cause of the cause of the four seasons. We are, therefore, to *imagine* the globe as not standing quite upright on an *imaginary plane*, but lurching always over as much as $23\frac{1}{2}$ degrees, and we may also *imagine* the globe to have intelligence enough to keep its North Pole always at the said angle, as if a rigid fixture, by way of preserving the "parallelism of its axis." So we *imagine* the globe to *stand* on its *imaginary plane* in four different positions as it dashes along its *imaginary orbit* 1000 times faster than any railway engine, so that the sunlight may fall slantingly on one part of the globe and perpendicularly on another.

But since Herschel *imagines* the globe only a millionth of the sun in size, therefore, comparatively a mere mote, and 95 million miles off, reason would say that there can be no difference between perpendicular and sloped rays, yet we must remember that the astronomer requires us not to reason but to *imagine*.

Still, after all, the "North Pole" is not a fixture. The *imaginary pole*, while according to Herschel is "nothing more than the vanishing point of the Earth's axis" is *imagined* to describe an *imaginary circle* round another *imaginary pole* of an *imaginary circle* called the ecliptic in 25,868 years. Then we are to *imagine* still more. The pole, fixed at an angle of $23\frac{1}{2}$ degrees, and yet not fixed, is *imagined* to have a nodding motion, or "nutation," by which it describes a minute ellipsis (a kind of egg-shaped curve) among the stars in the course of 19 years. These two motions of the no-pole-at-all we are to *imagine*, in order that the precession of the equinoxes, &c., may be accounted for.

Further demands are made upon our *imagination*. The school-boy globe so small is again *imagined* to be of so many millions of millions tons weight that we are utterly dumb-founded, and it is *imagined* to be balanced and flashed about the sun by two *imaginary powers*, called centripetal and tangential. The centripetal as the name signifies, is *imagined* to pull the big globe away towards the sun and the other power to pull it away from the sun. Now, were Sir John to allow us here to reason, we would say that in consequence of the two *imaginary forces* pulling in different directions, the globe ought to stand still. Not at all! for we are requested to *imagine*

that the result of the pulling is that the big globe "moves" in not quite a circle, but nearly so, round the sun within about 365 days, and at the rate of 19 miles every tick of the clock. Wonderful as is the imagineless weight of the big globe, more wonderful still must be the centripetal and tangential powers to flash at once so many million miles, tons of rock round the sun, whilst keeping up the lightning speed for so many thousand years. How wonderful too the brains out of which such wondrous powers have come! Talk no more of the wonders of steam, or laugh at the ravings of lunatics.

Then what of the poor wretches being on the astronomer's globe of such fearful rapidity and horrible tossing?

Thus the astronomer can "a tale unfold, whose lightest word may burn up our soul, freeze our human blood, make our two eyes like stars start from their spheres," &c.

Our tormentor is, however, not yet done with us. We must *imagine* more poles and globes, also an equator with circles large and small, longitudes, latitudes, so that we may have a science of navigation, and so *imagine* ships and sailors safe at sea, though they are lost by thousands every year.

We have been required to *imagine* the "earth" ball whirling and rushing round the sun; but again, we are told that an *imaginary circle* in the heavens, called the ecliptic, represents the apparent course of the sun round the earth. The word "apparent" is to remind us that the *real motion* of the sun is not real, despite our eyesight; for, according to Herschel, our eyes are not for seeing, but *imagining*!

Then the *imaginary ecliptic* necessitates the *imagining* of a celestial axis with two celestial poles, also two equinoxes, two solstices, in short an *entirely imaginary globe* which is to be called celestial, or heavenly. Then surely there is a heaven after all? But stop, ye mesmerised dupes of Herschel! You are to remember that heaven is not heaven, but something else, that is, something *imaginary* or nothing, yet something, notwithstanding. Thus we *imagine* the "earth" globe encased within the celestial one, like a letter within an envelope. Next, we are to *imagine* on the outside globe circles of latitude and longitude, right ascension, and declination, so that we may *imagine* all the stars fixed securely in their places. But stop! we are to *imagine* the stars again as not fixed, but flashing through many millions of miles, faster than we can wink, and not even are they stars, according to Herschel, but suns, except as many as he pleases to name after the old heathen idols—Jupiter, Mars, Venus, Neptune, &c., which again are not stars, but big globes outflashing the thunderbolts. Nor will this dictator allow us to believe our eyes, that stars are so near, or all *in* the sky, but at various distances, varying by millions of miles; the figures given only bewildering *our imagination*. Through the book the mystification is increased by cunning diagrams, mathematical jargon, and Greek words almost unspellable. With all this exercise of the *imagination* we ought to be heartily tired out. But the tender mercies of the wicked are cruel, and, so Herschel would further have us *imagine* infinite space, infinite ether, and an infinite number of globes, almighty gravity and tangential force; and the bewitched fools are left in darkness to *imagine* that there is no infinite Almighty God.

"SOMETHING ON GRAVITATION."

By "Zetetes."

A correspondent, interested in Zetetic Truth, asks me for "Something on Gravitation." I propose, therefore, to give a few of my thoughts thereon in the *Earth Review*, as others besides my missionary friend may be interested in reading something on this subject.

But a difficulty meets one at the outset. How am I to write "something" about nothing? I cannot create, as some erroneously suppose the world was made, out of nothing. Paul says the things which are seen were not made out of "phenomena," or things which do appear; but he nowhere teaches that they came out of absolutely nothing, except invisibility. Now, "Gravitation" has been created, not only out of invisibility, but out of nothing, except the vain imaginations of astronomical minds. It was not "discovered," but *invented*; and I shall proceed to prove that there is no such thing as the "attraction of Gravitation" in God's universe, and that the phenomena supposed to countenance the theory are capable of other and more natural interpretations. Of course, I speak of "Gravitation" in the astronomical sense of a universal power in all bodies, celestial and terrestrial, to attract, or pull one another together, with forces directly in proportion to their masses, and inversely as the squares of their distances. So that terrestrial attraction and phenomena will be seen to be only a small part of this question of Universal Gravitation. The former we may explain by weight and currents; but the latter we utterly deny. Let us try, in the first place, to realize what is meant by, and implied in the astronomical theory of gravitation, and its

UNIVERSAL ATTRACTION.

According to this idea, every body in the universe, however large or small, has the power, by some means or other, to attract, or pull towards itself, every other body in the universe, however near or distant. Yea, not only is every body supposed to have this power, but the power is said to be in actual operation every moment of time for ever. So that, if I hold an apple in my hand, it is connected with, and pulling at all the apples in the world; all the pears and plums, all the trees, gardens, walls, houses, all the stones, rocks, rivers, and mountains; yea, and every separate drop of water in the ocean, and every grain of sand on the sea shore! *And these are all pulling at the apple.* Yet it remains passively on my hand, while I study gravitation, or decide whether I will eat the apple now, or leave it for further experimentation. This apple ought to dance about, or at least to show some symptoms of the awful internal struggles going on within it. Perhaps it has learned the art of appearing passive, an art which some astronomers seem to acquire, and to keep a quiet and serene countenance, while internally tortured with ten thousand doubts and pangs. Ten thousand! Yea, ten thousand times ten thousand gravitating cords or strings are pulling at it! For we must remember that sun, moon and stars, and supposed millions of millions of "other worlds than ours" are each and all interested in that apple; and they send out their innumerable long and filamentous fingers to clutch it out of my open hand. Yet it remains outwardly unmoved in

serene and blushing passivity. I shall have to eat it, threads and all, with whatever tentacles, or other attractive matter may be attached to it! What a peril! But there is such an attractive force, either in the apple, or in the natural taste God has given us for common fruit, as well as for common sense, that I take all risks and disappoint the sun and stars. I am glad that Newton was led to muse over an apple falling to the ground by its own weight, when the stalk was rotten. He would have mused more had it "fallen" upwards.

But we, dear reader, can also muse over apples. While so musing, I wonder why my apple makes no tremulous motion towards the moon, which is rising as I write, especially as she is now between the two "ponderous and superior" planets, Mars and Jupiter, which are approaching towards conjunction. Yet through the varying positions and relationships of the heavenly bodies, as they roll around the world and my apple, it remained on the shelf twenty-four hours perfectly stationary, as though no such tremendous forces were playing their mighty artillery upon it. They may try from their various vantage grounds, east or west, north or south, mid-heaven or sideways, yet the apple will not move. Yet a breath would have caused it to roll. There is no proof for Zetetics of universal attraction in this apple. But perhaps mine is different from Newton's. It will not bow to fair Luna as she pulls it sideways, assisted by the two powerful giants, one on each side, attending her like guards, much less will it attempt to rise towards the mighty sun as he pulls with all his meridian power and glory. Its weight is the same throughout the twenty-four hours. No! friends. I must see an apple "fall" upwards before I can believe in solar gravitation.

But a superficial thinker may object that the reason bodies only fall downwards to the earth is, because the earth being nearer than the sun, its force of attraction is the greater of the two. Is it? Let us take another instance, which proves, not only that there is no such thing as terrestrial gravitation, or attraction, but which shows that this supposed power may be defied.

GRAVITATION DEFIED.

In the science schools of to-day our pupils are taught the atomic theory, namely: that all bodies consist of innumerable minute particles, so small that they are invisible and cannot be further divided, or cut up, as their name, *atoms*, implies. These atoms, the gods of the scientist and evolutionist, may all be the same size, if we can attach size to such infinitely small things, or potentialities, but they have not all the same specific gravity or weight. Hydrogen, a kind of gas, is the lightest body known. Hydrogen may be obtained by a combination of sulphuric acid, zinc clippings, and water. As the gas bubbles up through the water we catch a little in a glass bottle, or a test-tube. We may fix our mind's

eye upon one molecule of hydrogen, and let all the others go free. We work this molecule safely inside a small glass tube. It is the lightest body known upon the earth, and it is easier to pull about light bodies than heavy ones. Now, the theory of gravitation is that all the atoms in the earth and in the world are attracting, or pulling at this molecule of hydrogen; and that, being nearest to the earth, the latter will have the most power over it. We will not pause to show further the absurdity of this theory, and the infinite number of bonds and filaments our little molecule must possess to be in pulling connection with all the atoms of the universe; but we will proceed to liberate it from the bottle, not from the bonds, and watch, with mental vision, its behaviour, on being so far set free. Now what course ought the molecule to take, if the theory of our astronomical friends be true? Clearly and rapidly *downwards* to the earth, pulled down unmercifully by ten thousand times ten million threads or gravitating cords. We turn the bottle neck downwards and draw the cork. The molecule of hydrogen ascends in the glass, and refuses to leave the bottle. Remember, every atom in the so-called "globe" is pulling with all its might at our little molecule of hydrogen; yet it refuses to leave the jar! Turn the glass right side up, and now our molecule, really liberated, mounts up above the highest clouds, in complete defiance of the combined pull of all the gravitating forces in the "globe." That molecule must be a Zetetic. It stands aloof from all the nonsensical "forces," or theories, of the astronomers, and mounts upwards and onwards in defiance of them. It defies, as we defy, all their metaphysical "reasonings" and jargon about gravitation. If bodies falling to the earth prove gravitation, what do bodies ascending from the earth prove? If the "globe" can pull at a distant body like the moon and make it "fall" through sixteen feet per second, why can it not pull at air, smoke, clouds, gases, &c., close at hand, and make them all lie down in layers upon its surface? The conclusion is evident: a force that cannot overcome a little helpless molecule of hydrogen, is no force at all. The apple was too much for it, and so is the molecule. Bodies rise or fall, according to their inherent density, or weight, and they remain at rest whenever and wherever they attain their equilibria. This is reasonable, because it is natural; yet at the same time it is utterly opposed to the fanciful speculations of the scientists, who darken counsel with words without knowledge. In the whole wide world there is no such thing as the astronomer's "attraction of gravitation." I challenge any of them to prove it. I will, in conclusion, proceed to show that their idea of

ATTRACTION IS A MYTH!

The attraction of gravitation a myth? Yes! a fabulous story, with no foundation in fact, though having an APPARENT support in some

terrestrial phenomena. Many people imagine that gravitation is a word representing some discovered fact or force in Nature; but let them proceed to show us what fact or force, and they will discover their mistake. Gravitation was an *invention*, not a discovery; and a supposition necessitated by another hypothesis, viz.: the globular theory. One was invented to support the other. Without gravitation the globular theory falls; and without the globular theory what would become of gravitation? It would become less and lighter than our little molecule of hydrogen, and fly away into unknown and uncivilized regions.

"Parallax" proved the globular theory false, by the FACT that the surface of water is horizontal; and "Zetetes," the investigator after Truth, practically proves, that the theory of gravitation is utterly false, by a little molecule of hydrogen gas! No one can even tell us what gravitation is, or how it acts. Now, although we may not know what electricity is, or magnetism; we do know how they act. As I showed in No. 2 *Earth Review*, Newton did not know how gravitation acts, or whether it really be attraction, or repulsion; that is, he did not know whether there is such a thing as attraction or not. Where Newton failed to *guess*, what other mathematician dare try? If the inventor did not know, who amongst his pupils can tell? But they should first prove that gravitation does act before they attempt to explain how it acts. The magnet is no proof of gravitation. Its power is selective and limited. It *seems* to attract steel and soft iron, but it will *not* draw stones and wood! Gravitation is supposed to attract *all bodies*, even the stars. They are all supposed to be pulling hard at one another, yet they never get any nearer together. It is strange! But does the magnet really attract steel? The iron or steel goes towards the magnet, but is its motion caused by the attraction or the repulsion of some force? It may be carried by a magnetic current, not drawn by the magnet itself. Newton confessed that the idea of bodies acting "upon one another at a distance," and "without the mediation of anything else by and through which their action and force may be conveyed from one to the other," is "so great an absurdity, that," says he, "I believe no man, who has in philosophical matters a competent faculty of thinking, can ever fall into it." Yet many do fall into this error. They are not Zetetics. I stand on a bridge and I watch a log of wood coming down the stream towards the bridge. Is the bridge attracting the log from a distance? Yes, as much as ever the magnet attracts the soft iron! If there were a weir by the bridge, the log would remain by it, as the iron remains attached to the magnet. If not, and if the arch under the bridge be sufficiently wide, the log would pass under and follow the stream. Then the bridge would seem to be repelling the log, like one "pole" of the magnet will repel the magnetic needle. Yet by such flimsey arguments and pre-

texts is the theory of attraction supported. No man in the world can define gravitation, nor tell how it acts: it is a tissue of philosophical speculations and falsehoods, unworthy of honest men and thinkers. Perhaps the most ingenious theory of gravitation ever proposed is that of Le Sage. He "imagines," says Mr. J. E. Gore,

"An infinite number of ultra mundane corpuscles of excessive minuteness, speeding through space in all directions, and with enormous velocities. Two bodies in this ocean of flying corpuscles screen each other from the molecular bombardment, and would consequently move together with a force varying inversely as the square of the distance."

Upon which Professor Tait remarks:—

"It is necessary also to *suppose* that the particles and masses of matter have a cage-like form, so that enormously more corpuscles pass through them than impinge upon them; else the gravitation action between two bodies would not be as the product of their masses."

Well might Sir John Herschel say:—

"The hypothesis of Le Sage, which assumes that every point of space is penetrated at every instant of time by material particles *sui generis*, moving in right lines in every possible direction, and impinging upon the material atoms of bodies, as a mode of accounting for gravitation, is too grotesque to need serious consideration!"

"Too grotesque to need serious consideration!" One of the *best* theories of gravitation "grotesque!" And a clever astronomer says so, not an humble zetetic! An humble zetetic agrees with him though. What then must the poorer theories be? Readers, take your choice between common sense and reason, and theories "too grotesque to need serious consideration."

THEORY v. PRACTICE.

C. H. REPLIES TO G. M.

G. M.'s argument seems to be that lines drawn from the flat earth to the sun's centre need not meet at one point. This looks absurd at first sight, for they must all meet at the sun; the sun cannot have several different positions at the same time. If it is at A' (Fig. 3) and consequently 30° high to an observer at A, it cannot be at the same time at C', 22½° high to an observer at C. A thing can only be in one place at one time, and this place must be where the various lines meet which represent the directions in which it is seen. In fact G. M.'s "utterly condemning fallacy" seems to me to be rather more obviously true than the axioms of Euclid!

But G. M. tries to support his seemingly absurd assertion by saying that the lines drawn from the *supposed* globular earth to the sun's centre do not meet at one point either, seeing they are all *practically* parallel. But (1) if orthodox astronomy did contain an absurdity, that would be no reason why Zetetic astronomy should contain the same. (2) I admit they are *practically* parallel, for they meet so far away that the angle at their meeting is less than 17'' all but imperceptible to the naked eye.

C. HARPUR.

G. M. REPLIES TO C. H.

OR

THE PROJECTION OF LATITUDE UPON A PLANE EARTH.

By the above reply to my criticism of Mr. Harpur's paper, it seems necessary to remind him of the data by which the latitude is found—which he quotes as authoritative—and which he himself accepts as reasonable. I merely put them succinctly in the statement that "latitude is a deduction from the observed altitude of an object in the heavens whose declination is known;" and further, "that the observed altitude varies according to the latitude; and in the case of an object when vertical to the equator, that the observed altitude and the latitude are complementary."

Now all that is involved in these statements is incontrovertible. Consequently the methods of finding the latitude are quite independent of any knowledge of the sun's ACTUAL position—the requirement being the OBSERVED altitude, *i.e.*, the observed angular elevation, and this of course gives merely the sun's APPARENT position.

My claim is that my figure 3 represents a fair reduction to construction of actual observation, upon the plane earth theory. Mr. Harpur says the same of his figure 2. Yet he does not even pretend to give the ACTUALLY OBSERVED altitude in any of his triangles—but simply presents us with a diagram of what he SUPPOSES would represent the earth's surface—in latitude—if viewed by an observer stationed at the sun's centre; *i.e.*, to observe the angular elevation of the sun above the horizon of some point upon earth's surface, he would observe earth's surface from the sun—which of course is simply to remove the discussion from the region of ACTUAL OBSERVATION into that of PURE IMAGINATION which cannot be shown to have ANY CONNEXION WITH ASCERTAINED FACT. Let us waste no words in mere bald assertion; but try our two methods by RESULTS. We have in Nature clear indication of certain distances in latitude, with which every theorist must necessarily comply. First, that point, the Northern Centre, having in its zenith the "pole of the heavens" the point around which the whole starry firmament APPEARS to revolve: Secondly, the Torrid Zone, the belt which receives the direct rays of the sun; its boundaries being the tropics, the lines at which the sun *turns* upon its return journey: Thirdly, the bisection of the Torrid Zone by an IMAGINARY LINE—the equator. It is accepted that latitude at the equator is zero: that the Northern Centre shall be 90° north; ascertain the numerical value of this distance, and we have a NATURAL MEASURING ROD. Take it at the easy round number of 4,000 miles, no one contends that the distance exceeds this, but rather that it is a little less; now apply Mr. Harpur's method, and as we have already shown, 45° of latitude, or 2,000 miles,

become expanded into 93,000,000 of miles. But by my simple method as shown in connexion with figure 3, the distances in latitude as found by angular measure, are projected upon the plane in simple arithmetical proportion of 90° arc to the radius of 4,000 miles.

The attempted application of trigonometry to the projection of latitude, observing from the sun's centre, is contradicted by both reason and results!

Again, let Mr. Harpur proceed upon his accepted data, and deal with actual observations—confine himself to the above natural indications of latitude, and then make clear the fallacy he supposes to be lurking under figure 3, his will be the honour, ours the profit of his instruction.

Upon the theory of a globular earth it is equally true that lines from earth's surface do not meet at a point in the heavens! This shall be shown clearly enough when you, Mr. Editor, are able to admit a paper upon "Finding the Latitude." Till then let what was said upon this point under figure 3 suffice.

Just a word upon the subject of parallax; it will be easy to show in a separate paper that in spite of all that is accepted upon this subject, *no such angular value CAN REALLY BE FOUND IN ASTRONOMY!* The fallacy of the astronomer is precisely analagous to that of Mr. Harpur, *they recede from the region of ACTUAL OBSERVATION into that of ABSTRACT SPECULATION.* No orthodox writer upon parallax ever introduces the horizon of the station of observation upon his diagrams! For him to do so would be fatal to any attempt to find the required triangle!

For the sake of illustration, a triangle is ASSUMED, and of course all that follows is simply of the nature it exercises in abstract mathematics. If, upon the introduction of the horizontal line, they could find any angular value, that would be a direct proof of some error connected with the observation, because of the incontrovertible fact, that latitude and altitude vary directly.

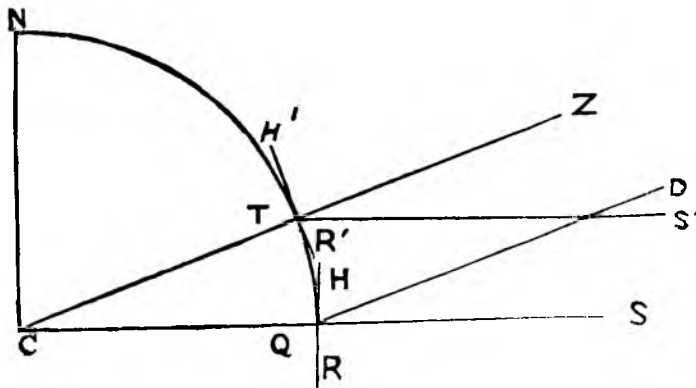
But look at *results* here also. The distance of the sun from earth is stated in numbers which vary from 1,525,000 to 135,304,805 miles, a DIFFERENCE which exceeds the accepted value of nearly 95,000,000 miles. Rather a wide margin this for an "EXACT SCIENCE!" The reason for such a margin is plain—THE COMPUTATIONS ARE BASED UPON HYPOTHETICAL DATA. It is considered that the most reliable method is that by the "transit of Venus." This stated in simplest language is based upon the comparison of two triangles, each having its apex at the planet, the base of the one being the line joining the two stations of observation upon earth, the other having its base upon the sun's disc. The weak points in this method are first, there is the same difficulty in finding the distance of the planet from earth, as in the case of any other

object in the heavens—viz., the parallelism of all such lines of direction : Secondly, the parallelism of lines from earth to sun cannot be affected by the intervention of the planet.

But Mr. Harpur denies such parallelism, saying that lines from earth “*must meet at the sun’s centre.*”

Let us see :—

Figure 4.
PARALLELISM.



The equator when produced to the heavens is called the equinoctial. The latitude of a place is its distance from the equator : the declination of sun, star or planet is its distance from the equinoctial : in either case the angle is made by the line which, cutting the plane of the equator at the datum point of earth’s centre, joins the centre with the place, or with the object in the heavens.

Let the arc (Fig. 4) N Q be a quadrant of a plane—intersection through the poles of a globular earth. N, the north pole, C the centre ; N C the semi-axis ; Q a point upon the equator ; C Q a radius on the plane of the equator ; produce C Q to the distant heavens, S, then C Q S is the plane of the equinoctial.

At Q draw the tangent H Q R the horizon of Q. Let T be a point upon earth’s surface ; join T C, then the angle T C Q is the latitude of T. Draw the tangent H’ T R’ the horizon of T : produce C T to Z the zenith of T ; S is in the zenith of Q.

From zenith to horizon equals a right angle, therefore the angles S Q R, S Q H, Z T R’, Z T H’ are all right angles.

Let S be the sun at equinox, vertical to Q, its observed altitude 90° . By the method of finding the latitude, let T be 20° N ; then for that station, the sun’s observed meridian altitude at equinox would be 70° ,

i.e., by construction the angle S’ T R’, and the sun’s zenith distance would equal 20° , the angle Z T S’.

In the simple case of the sun at equinox, latitude and observed meridian altitude are complementary. From the right angle Z T R’ deduct the angle of observed altitude S’ T R’ equals 70° , then the remaining angle Z T S’ equals 20° ; but the latitude T C Q equals 20° , therefore angles Z T S’, T C Q are equal. But because the straight line Z T C meets the two straight lines T S’ and C Q, making the angles Z T S’ and T C Q equal, therefore the lines T S’ and C Q are parallel. Now Q S being the plane of C Q produced, then T. S’ and Q S are parallel. But Q S and T S’ are lines of direction to the sun from the stations Q and T ; therefore the lines of direction from two points of latitude to the sun at equinox are parallel.

Again, let the sun have 20° N declination, the angle Z C Q ; then at Q the sun’s observed altitude would equal 70° , angle H Q D, and the sun’s zenith distance 20° , angle S Q D ; but the sun’s declination, angle Z C Q equals 20° . Because the straight line S Q C meeting the two straight lines Q D and C T Z and making the angles of zenith distance S Q D and declination Q C Z equal, therefore the lines Q D and C T Z are parallel. But the lines T Z and Q D are lines of direction to the sun from the stations Q and T ; therefore the parallelism of lines of direction from two points of latitude to the sun *in declination* is maintained.

By similar reasoning it may be shown that the parallelism is maintained between the lines of direction *from all points of latitude* to an object having *any given declination*. (Hence upon the figment of a spherical earth the angle—parallax—CANNOT be found !)

OUR OBSERVATORY.

“ERROR IS ALWAYS INCOHERENT.”

On the Figure of the Earth and its supposed connexion with the Vibrations of a Pendulum. By CAPT. WALTER FORMAN, R.N.

It is the nature of fluids to press equally on all sides, and whenever there is a difference in the gravity of any two portions of a fluid, there must necessarily be a fall on one part and a rise on the other, until the weight of the diminished quantity of heavier particles be exactly balanced by the weight of the increased quantity of lighter particles.

Upon this principle, if the earth had been wholly fluid, its “centrifugal force” would undoubtedly have produced a depression of the poles, and a small extension of the equatorial diameter ; but it is not

suspected by philosophers that the ocean, in any part, extends to a greater depth than fifteen, or at the utmost, twenty miles; and, as it is easy to prove, by actual experiment, that solids are not subject to this law, so we have no warrant, either in Scripture or reason, to suppose that the solid parts of the earth were ever in a fluid state.

Philosophers nevertheless have long entertained an opinion, that, in consequence of its centrifugal force, the earth has changed its figure from a sphere to an oblate spheroid, depressed at the poles; and my design in writing this essay is to show that the premises upon which they have founded this opinion, will not warrant any such conclusion.

It can hardly be necessary to go about to prove that solids are not affected by pressure in the same manner as fluids, because, if they were, a clod of earth would not stand upon a heap, but would sink down by the pressure of its own weight, in the same manner as water does; and if the earth had been originally formed in a fluid state, it could not, without changing its nature, have become solid in the course of a few days. Those therefore who hold this opinion, if they mean to be consistent, are bound to maintain that the Deity was under the necessity of creating the earth in a fluid state, in order to give it an oblate spheroidal form; and then by a subsequent miracle, which is not recorded in the works of the creation, of changing the nature of a great part of it in order to make it fit for the purpose for which it was designed; as if the all-powerful Being who created matter, could not have given it what form He pleased, without having recourse to such circuitous means. I am aware that some of our geological writers, in order to reconcile Scripture with their theories, have dexterously contrived to lengthen the days of creation by making the earth move slower upon its axis; but though this sophistry may serve for a while to prop up the system of the geologists, it will not serve the purpose here, because the earth's centrifugal force must have diminished in exact proportion with the diminution of the velocity of its motion on its axis; and as, in consequence, the loss of gravity in the equatorial parts would have been all but nugatory, the difference of the pressure in the different parts of the earth would have been too trifling to have produced any sensible effect.

The difference which has been said to be observed in the vibrations of a pendulum in different parts of the world is, I believe, the origin and groundwork of this hypothesis. It is said that a pendulum vibrates slower at the equator than it does in the temperate latitudes,* and

* A difference in the centrifugal force must undoubtedly be a cause of part of this effect; but I cannot help thinking that a difference in the density of the atmosphere is an equally effectual cause; and I am persuaded that if any one who has the opportunity could count the vibrations of a pendulum in a lighthouse, where the air is highly rarified, he would find that it would vibrate nearly as slow as it does at the equator.

the Newtonian philosophers account for this by supposing that the equatorial parts are removed farther from the centre, where gravity must necessarily be diminished, while the gravity of the poles, by being brought so much nearer the centre, must be proportionably increased. Surely any thinking man who heard this argument, would naturally infer that these philosophers believed that the power of attraction resided in some substance which was fixed in the earth's centre; but no such idea was ever entertained by them. According to them, all matter mutually attracts, and with equal power; and yet they maintain that the mere circumstances of being removed further from the earth's centre, *by an accumulation of matter*, will diminish the gravity of the equatorial parts, although the power of attraction in the centre is not stronger than it is in those substances with which they are immediately in contact.

In what way do these philosophers account for all substances in a sphere gravitating towards its centre? Not because the power of attraction is fixed in the centre, for this they will not allow; but because there is a greater quantity of matter, and consequently a greater power of attraction in that direction than in any other; and upon this principle, an accumulation of matter in the equatorial parts, and a diminution of matter in the polar axis, ought to increase the gravity of the equator and diminish the gravity of the poles. The very groundwork of their hypothesis is, that, in consequence of the centrifugal force taking off a portion of the gravity of the equatorial parts, there must necessarily be a sinking of the poles and an elevation of the equator in order to restore the equilibrium; and surely, when the equilibrium is restored, the gravity of all parts of the earth ought to be the same, so that, unless it can be shown that the difference in the vibrations of a pendulum is produced by a difference in the state of the atmosphere, this very difference is *a demonstrative proof that the earth has not changed its figure*; and consequently is a direct confutation of this hypothesis.

If we may credit the newspaper reports, Capt. Sabine is at this moment (May 1823) employed in measuring the vibrations of a pendulum in different parts of the world, in order to furnish philosophers with *the necessary data to enable them to ascertain the true figure of the earth*; and I should be glad to learn, from any of these philosophers, in what way they propose to distinguish between the effect, on the vibration of a pendulum produced by a difference in the centrifugal force, and that which they *suppose* is occasioned by a change in the earth's figure? The only way by which we can possibly ascertain the quantum of the centrifugal force, as compared with the power of the earth's attraction is by observing the difference in the vibrations of a pendulum in different parts of the world; and when two causes are

mixed together, both of which are supposed to produce precisely similar effects, though in different degree, I cannot imagine how it can be possible to distinguish between the effects produced by each. The question concerning the earth's figure was formerly considered of such importance, that it was thought advisable by the French Government to send two companies of philosophers to measure the length of two degrees of latitude, one at the equator, and the other under the arctic circle, and it appears by the reports of these philosophers that a degree of latitude near the pole is longer than a degree of latitude at the equator.

From these data the Newtonian philosophers have drawn conclusions which they consider as incontestably proving that their hypothesis is true; but unfortunately, in coming to these conclusions, they have completely lost sight of what ought to be esteemed one of the main props of their philosophy, namely, a central attraction; for if they will but allow that all bodies gravitate towards that point in which direction there is the greatest quantity of matter, they will immediately perceive the necessity of supposing, with St. Pierre, that the earth must be an oblong spheroid lengthened at the poles, and not an oblate spheroid that is flattened at the poles.

If the earth had been a sphere, it is clear that the length of a degree of latitude would have been the same all over the world, because, in that case, equal angles, drawn from the centre, would always mark equal distances on the circumference; and if the earth had subsequently become depressed at the poles and elevated at the equator, the distance of any one point from the nearest pole would have been considerably lessened, whilst its distance from the equator would have been proportionably increased; so that, if the earth had been an oblate spheroid depressed at the poles, the length of a degree of latitude at the poles would have been less than it is at the equator, and not greater, as appears now to be the case.

*At least upon the principle adopted by the Newtonians. that the elevation of the equator is equal to the depression of the poles.

To be concluded in our next.

EDITORIAL NOTICES.

The following is added to our list of publications, and can be had from the Secretary.

The "Herald of Glad Tidings," 1d.

At the request of several friends we desire to say that Photographs of the Secretary can be had, 1/1; Cabinet size, 1/7, post free.

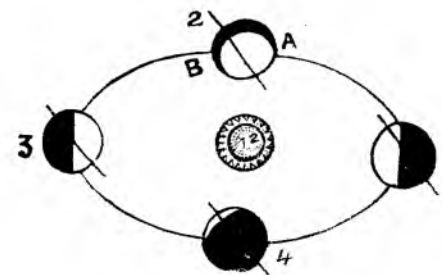
N.B.—The Secretary will be glad to receive Subscriptions *now due*.

A POSER FOR NEWTONIANS.

Works on Newtonian astronomy tell us that the planets, including our earth, revolve round the sun and also rotate on their axes from west to east, or from right to left.

The earth then, according to this theory, turns on its axis from west to east and revolves round the sun in the same direction.

Let the following diagram illustrate this:—



Nos. 1, 2, 3, 4, the earth travelling in its orbit around S the sun. The earth is said to turn on its axis from right to left or from west to east: that is, from A to B, (No. 2).

It also revolves round the sun from right to left: that is, from 2 to 3. Since the sun is seen to rise in the east and set in the west, it travels, as viewed in this country, from *left to right*.

As the earth is supposed to rotate like a top in the direction from A to B, an inhabitant on the other side of the "globe" could not see the sun until the earth turned round and brought him to A. He would then, from his position at A, see the sun *rising on his right*, that is, *in the west*; for, as we look at the sun, the west is on our right.

How is this, then? We know the sun rises in the *east*, that is, *on our left*; but according to the Newtonian theory, as illustrated by their own diagram, the sun *rises in the west and sets in the east*.

Surely this is a poser for Newtonians. Who among them can explain this contradictory theory?

BETA.

A PROFESSOR'S VIEW OF HIS OWN TEACHING.

"The student of science will do well to bear in mind the words of a very eminent lecturer of physiology." The statements I have made to you gentlemen I have every reason to believe to be wholly untrue, but you must learn them, because if you do not, you will not be able to pass your examinations." *The Engineer*, Oct., 12th, 1894. Query. Is the father of lies, the father of the *so-called* sciences?

The Contents of our Letter Box.

CAPETOWN. Dear Sir,—I am very pleased to hear from you and thank you for papers sent. I may say that I have always questioned some of the teachings of astronomers but had not the means at hand to support any objection I wished to make. Now, however, the case is altered and I can see very clearly that a "plane" earth and that alone is compatible with Bible teaching. I am especially thankful that the means of proof are now within the reach of every man who knows the multiplication table and uses his eyesight—that precious, though abused, God-given sense. What puzzles me more than everything else is that common sense people have been so deluded as to believe in the fearful monstrosity that the earth is a whirling ball! I went to a lecture here a few weeks ago, by a gentleman from the Royal Observatory (near here). His advertised address was on "Glimpses of the Solar System," illustrated by limelight views. He said he had had a good deal to do with astronomy, having been employed at Greenwich when a boy in connection with the Royal Observatory there. Well, this "authoritative" lecture amused me most of all for the "blind credulity" it manifested the audience to be possessed of. I simply smiled and sometimes laughed at what I plainly saw were mere suppositions. The lecturer fairly knocked the legs off his own theories by saying, "we may ASSUME." "we may SUPPOSE," &c. He said, "the accepted theory of astronomy is true, at least, WE ASSUME IT TO BE TRUE!" I just laughed outright at such "science." Well, the learned man went on, being considerably helped by the pictures. He said there were places on the moon which appeared to be the same as old craters on the tops of volcanoes, and showed a few of them. "How wonderful!" an old lady behind me kept repeating. The next picture shown was a volcano with lots of smoke issuing from its summit. The man of figures paused just long enough to give his audience time to hold their breath at see-

ing a picture of an actual volcano on the moon—and then said that the volcano of the picture was not on the moon—it was Vesuvius! Well, well, the chagrin and disappointment caused by that statement plainly made it evident that—so far as I could see—everybody but myself believed the volcano to be on the moon's surface! This serves to show the gullibility of human nature. The man of figures quietly smiled (at his dupes. I should think so! But at a flat earth man, these men of figures never smile. ED. E. R.)

During the lecture he referred to the "flat earth" people, and said that until they could do what astronomers had done (*we* some spots on the sun) they would have to be silent! Wonderful! exclaimed the lady behind me.

After the lecture I wrote to the learned man and said, I was sorry he made reference to the "flat earth" people without giving them a chance of replying, and that if he would take the affirmative in the proposition "that the earth is a revolving globe," I would gladly take the negative on the same platform as his lecture was delivered. In his reply, he said (*inter alia*), "I have neither the ambition nor the leisure to join in such a discussion as you suggest, especially as from previous experience I well know its uselessness." Such a debate would have fairly roused Capetown, but, of course, a good situation is not to be so easily thrown away. If I had been allowed to ask a few questions at the lecture, I think one or two would have taken as long to answer as it would take a "science lecturer" to walk to his 93,000,000-of-miles-away-sun.

Being an amateur navigator I am much interested in the truth of the earth's planarity and would much like to get a chart on the natural principle if there are any to be had. I am at present living right east of Table Mountain, and therefore cannot determine where the Southern Cross sets; but should I go to live in the

city I shall have great pleasure in observing it and reporting to you.

Now I must close, wishing you God speed in the propagation of truth.

Sincerely yours,
T. W.

Sir,—The idea of the universe presented by "Parallax" has long seemed to me to be deficient in many respects; there is lacking about it a definiteness of conception necessary to forcible elucidation, and on the whole, he did not formulate a system of astronomy, but of geography and cosmography of the earth. I accept the basis of the earth's flatness and his general view concerning the motion of the sun and moon; but concerning the motions of the southern stars, his views are failing sadly to account for them. These austral phenomena have led me to *reconstruct the system in accordance with facts*, and in accounting for the phenomena of the south I believe I have been successful—the eclectic system incorporates the facts of phenomena south of the equator and *relies upon the "circumpolar motion" of the southern stars, in connection with the earth's flatness, as a demonstrated premise.*

The scriptural "firmament" enshpering the world or universe, assists in solving the question. You know some of our Zetetic friends advocate a solid shell arched overhead. If above as a canopy, it is beneath as a concavity, as the hollow of his hand, holding and sustaining the waters of the great deep. Parallax intimates that water is eternal in horizontal directions, with fire underneath and an infinity of space above. He gives no definite conclusion as to what the waters rest upon—a ponderable fluid, susceptible to evaporation in the presence of heat; neither does he offer any reason why the air left uninclosed may not be quickly attenuated into space. Questions have arisen as to whether the views of Parallax are sufficient to account for a system of the world having *mutual adaptation one part*

with another. In connection with this, if the sun is a ponderable body, by what is it supported and by what power does it make its circuit in 24 hours, and what causes it when on the southern tropic, the circumference of which is nearly twice the circumference of the northern tropic, to revolve in just the same time as when on the northern tropics. How can it travel *twice* the distance in December that it does in June in the same time? Then the question of the sun's fuel arises. If the visible sun is an independent body what supplies it with fuel? Must we not, by law of logic, conclude that the sun receives forces and fuel in proportion as it *emits* light and heat?

These thoughts, in connection with a study of alchemism, have led me to the conclusion that shape and form are necessary to existence, and that the universe has centre and circumference, and **INSIDE** of which circumference are generated alchemic, magnetic and electric forces, and in the universe there is no diminution, but, on the contrary, a conservation of cosmical forces. By law of generation, the forces, substantial as they are, would be made lighter than the concretions by which they are generated, and by equilibrium would rise perpendicularly as far as limited space would permit. This limit is the top of the firmamental reflector, from whence they are reflected to a focus at half the radius of the hollow sphere. Meeting at this focal point combustion occurs. This transmutation would engender for a given radius about the focal point a region of hydro-aboron, or first-gas, and through it reflect or transmit forces of heat and light. Where there is reflection of brightness there must of necessity be a *corresponding reflex* of that reflection, and hence a dark hemisphere of the central sun. The *law* that causes the reflection of light and its reflex would also cause it to revolve or rotate slowly. This principle is thoroughly exhibited in the vacuum instrument called the radiometer. The light and heat of the central sun is *refocalized* upon the earth's air within 2,000 miles of the earth's surface; from

this refocalization (the visible sun), light and heat are radiated downwards and outwards. The earth absorbs this substantial vitality and transforms it by use into other qualities of the same forces, which are levitated again, transmitted, and returned to the earth as before. Thus, in the constant circulation of the forces of this great universe of life, there is no waste and no loss of cosmical forces. The connection of the visible sun with the central explains its constant daily revolution in exactly the same time over circumferences having different diameters.

But you ask me for proofs concerning the central sun. I answer it is found in the phenomena of the south. The circle around the central sun in my diagram of the universe, represents the limit of ether or hydro-aboron. At the circumference of this sphere all around is situated the *Primary Stellar System*, from which the stars as we see them are *projected upon the air* like a great dissolving view. Polaris is situated at the *bottom* of the sphere, directly over its secondary that we see. Sigma Octantis is situated at the *top* of the sphere, and the sphere rotates once in 24 hours, while the inner sun rotates and throws its projection around in 23 hours, 56 minutes and 4 seconds. The "poles" of the aboron sphere are the Primary Polaris and Sigma Octantis. Hence, the phenomena of the stars north and south are explained by resolving the matter into the following:—

Looking north we see Polaris; it is central—all eyes looking north and seeing the same star above the CENTRE of the earth, proves that the star is central. The stars about it have a "circumpolar" motion, continuing to the equator. The earth being a plane, the *south is a circumference*. The stars near the centre of the "circumpolar motion" are seen at *all times* of the night, in the southern regions, in every direction looking south. The same stars are recognizable by constellations, and the *circumpolar view obtained from every southern point*. If from New Zealand, one would be looking in an op-

posite direction from the southern point of Africa; if from South America, opposite from western Australia. What is *proven* by this *multitude of views of the same things, looking south from every southern point of longitude*? I can zetetically solve it. If, by looking north we see Polaris, and it is proven *central* by being in the zenith of the earth's centre, *so looking south from every southern point of longitude we see the same constellations*. *proves the view circumferential*, which could only result from REFLECTION FROM A CENTRAL POINT, and that central point is the top of the primary stellar system. This would bring the stars into *harmonious revolution*, with projections upon the elements beneath, the outer projections from the top of the aboron sphere being reflections against the circumferential firmament and from thence reflected downward upon the southern ærial regions. I am able to demonstrate this by a series of mirrors—a *zetetic proof*. And this affords an explanation of austral phenomena in accordance with the requirements of Parallax, "to observe and record the motions of the well known southern constellation, not in relation to a *supposed south polar star, but to the meridian and latitude of each position*." And thus, in accordance with your view, *motions of light* are not identical with the *bodies emitting the light*. But here, allow me to note, that those stars in the south that have apparent "circumpolar motion," passing a given meridian *twice in twenty-four hours*, in their *superior and inferior culminations*, could not at the same time be making their great circumferential orbit of 36,000 to 50,000 miles. So I believe I, too, have made a *discovery*, relating to the behaviour and motion of light, as it comes down from above and passes through the atmosphere, a medium of ever-increasing density.

We cannot see beyond the limit of the air or atmosphere (not atmosphere). I can demonstrate this to any one who will descend with me into a body of clear water. Objects and light within the water can be discerned plainly, but nothing can be seen

above the water. This has been the experience of divers into the sea; reeds, ship masts, &c., protruding through the water and above the surface could be seen only to the surface but no farther. Light, as light, is confined to the air, and the visible sun, moon and stars are all within the air, and none higher than 2,000 miles. By zetetic proof we evolve the following: We cannot see out of a given medium into a lighter one, as from water into air; hence, we cannot see beyond the air's surface. We see the visible sun; by plane triangulation it is proven to be 2,000 miles from the earth's surface; it is within the air, or at the top of the upper stratum; hence air extends upward 2,000 miles.

Other distinctives of the eclectic system I could present, such as the moon's phases, and the full moon being seen in northern and southern latitudes at the same time; the solar system, the planets, &c., but time forbids until a future time. In the meantime I shall be glad to have from you an exchange of views concerning austral phenomena. If there are points in this letter you would like to publish in connection with my name or system, you may do so.

ULYSSES G. MORROW.

BIRMINGHAM. I like the new series of the Review No. very much, especially the cover, and all who have seen the latter agree with me that it is a great improvement.

J. N.

LONDON. Dear Mr. Editor,—Having carefully read through the new number of the *Earth Review*, the conclusion arrived at is, that it will require a great deal of beating. The cover at first struck me as rather a risky departure, (I'm rather a stickler for original book covers) but after having had the matter pointed out and weighing it carefully, I'm inclined to think with others, that many will be more inclined to scan, and perhaps digest, the contents now, than they were when the work was presented in its more scientific looking jacket, as appearance at first sight very often has the effect of scaring timid inquirers who jump to the conclusion that the contents will partake of the dry-as-dust order of literature. If *thinkers* can be induced to just glance, by the aid of the rosy cover, that glance may lead to a fixed look at the matter inside, and so be led to further investigate the subject which this *strange body of individuals* calling themselves Zetetics or Planeists wish to bring clearly before them, thus giving solid and lasting information on their part, and thereby strengthening the bundle of rods which will at some future time beat the chaff of modern theoretical science to powder. Wishing you success,

I remain yours faithfully,

D'ARCHY ADAMS.

The Zetetic's Open Column.

The questions in this column are open for Zetetics to reply to.

Questions unanswered, No. 2.

QUESTION (3). "Anaxagoras said, that, lower than the moon, and between it and the earth, there move yet other dark bodies which may occasion eclipses of the moon." May they not be the cause of an eclipse of the sun? What practical proof has ever been given, that the moon coming between the earth and sun is the cause of an eclipse of the sun? T. H. HOWES.

QUESTION (4). WHY is it, that the horizon is exactly level with the eye whether from the deck of a ship, an elevated position on land, or from the car of a balloon? JAMES GRAY.

Answers to Correspondents.

All letters to the Editor should be briefly and LEGIBLY written on one side of the paper only. They *must* be accompanied by the name and address of the writer, as a guarantee of good faith. Where replies are requested by post, the postage must be enclosed. The Editor does not hold himself responsible for the opinions expressed by correspondents. All letters *must* be prepaid and addressed to

LEO CASTLE,
c/o Mr. J. WILLIAMS,
32, Bankside, LONDON, S.E.

W. M. RUNCIMAN asks, "What do you think of Mr. Gillespie's Theory?" It reminds us of the young rascal who *stole* another boy's box of bricks to build a house with. Mr. Gillespie has taken the rotating globe, the fixed sun, and other essential globe-spinning accompaniments to elaborate a system of his own, and calls it "The True System of the Universe;" but what about the system from which he has taken the essentials to build his system with? Of that system he says:—"It is one of the most glaring and degraded falsehoods ever laid before mankind," (p. 6). "A heathen system . . . as false as the blackest lie ever brought into existence," (p. 66). Now if the present system of Modern Astronomy is "one of the most *arrant, degraded, and debased lies* that the devil himself could ever have invented," (p. 66), what is Mr. Gillespie's system which is based upon the primary hypothesis of that system? "Do we think that this system is the *ONLY* theory which agrees with both Bible and Stern Science?" No. It does not agree with either, but contradicts both. Stern science has its basis in *practical facts*. Mr. G.'s system as we have seen, is based in the Pythagorean "idiot system," and therefore has neither part nor lot in the Science of Scripture. For instance, the Bible teaches that the sun returned ten degrees in the sun-dial of Ahaz. Now if this is true, Mr. G.'s theory is *utterly false*. Mr. G.'s theory is, "the sun is *stationary* in space." God says, "the sun returned," therefore the sun is *NOT stationary* in space," but rules the day by its God appointed movements in "stationary in space," the earth. If Mr. G.'s theory "agrees with Stern Science and the Bible," that passage ought to read somewhat as follows:—"The sea-earth-globe returned ten degrees backward before the fixed sun as shown by the earth-dial of Ahaz." Joshua commanding the sun (not the globe) to stand still, should be sufficient proof to Mr. G., that his theory is *ABSOLUTELY FALSE*. No wonder that he does not claim to be "a clear expounder." Professor Huxley says, "the cosmogony of the semi-barbarous Hebrew is the incubus of the philosopher, and the opprobrium of the orthodox." That at least is manly as defining his actual position, but for any man to assert the truth of the Scriptures and yet to contradict them by a system of so-called Science, is neither manly nor Christian, but absolute folly. We respect Mr. G. and endorse many of his statements respecting the system of modern theoretical astronomy, but the system which he has elaborated we are against, because it is absolutely false to every fact in Nature, and every statement in Scripture respecting Nature. This is proven by the fact that he contradicts himself! On page 7 he says, the sun is *fixed* in space, but on page 16 you will find him showing "the orbit line of the sun!" An "orbit line" is "the path described by a heavenly body," that body must *move* to describe its orbit, and therefore cannot be "*fixed* in space." In the face of this contradiction and his bare assertions, what is the value of the "opinions of the Press, and Extracts from letters of Eminent Men and others?" Why, they are not worth the paper they are written upon! P.S.—Our columns are open to Prof. Huxley if he cares to prove his assertions, and we will show him who it is that will be "forced to retire from the lists, bleeding and crushed, if not annihilated."—Vide *Echo*, Oct., 29th, 1894.

THE
EARTH-NOT A GLOBE-REVIEW.

*When the majestic form of Truth stands before the bar of justice,
that hideous monster, Error, hangs its head in silence.*



A Sectional View of the World as a Plane.

No. 3 (NEW SERIES).

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PRICE 2D.

ZETETIC REFRACTION.

By James Naylor.

The bearing of refraction upon both celestial and terrestrial phenomena, is too well known to need emphasizing. It matters not whether we wish to approximate the size or the distance of some heavenly body, or fairly to localize some distant object on earth, refraction, as the late Professor Ding said, "baulks us at every turn;" yet this circumstance should not hinder us from an attempt to solve existing difficulties, but should rather spur us on to renewed energy. It may be that the difficulties are only of our own creating, or arise from some imperfect or insufficient generalization. If so, then of course we cannot hope for success. Let us then, casting aside all pre-conceived notions, endeavour to Zetetically meet with a solution, that shall be in all respects satisfactory, and also harmonize with the whole of the ascertained facts.

That light is a force is practically self-evident, for setting aside the many evidences that could be set forth in proof, the experience of every person who has suddenly come from a darkened into a brilliantly lighted room is sufficient testimony.

We start then with light as a force, and whatever may be our theories as to its method of propagation, whether corpuscular or undulatory, we may be sure that light as a force will conform to the known laws which accompany the transmission of forces. Now of these laws, there is none so certain as that all forces turn in the direction of the least resistance. Upon this fundamental premiss the whole laws of Dynamic securely rest, and we feel assured that in watching the