

J. ATKINSON AND OTHERS.—Accept our hearty thanks for *At Home and Abroad*. We can well understand and fully endorse its language respecting the great loss of one of the honorary associates of the Y. W. C. I., Mrs. Irving, D.V.—We shall reproduce her verses "Give me to Drink," in our next issue; also in the near future we may publish some of her private letters to ourselves. We trust that *all* Zetetics will follow her noble example for the advancement of one of the most important truths extant, and join the U. Z. Society.

EDITORIAL NOTICES.

Please to ask for "The Earth—not a Globe—Review," at all Newsagents, Reading Rooms, and Railway Bookstalls. To be had direct from the Hon. Sec. post free, to any address in the postal union for 10d. per year, in advance.

All monies for the Society must be paid direct to the local Vice-Secretaries, or direct to the Hon. Secretary and Treasurer, Jno. Williams. Post Office Orders to be made payable at Sumner Street, S. E.

Owing to pressure in business matters we have been unable to notice the criticisms on "Bible Astronomy" in *Zion's Watch Tower*, or Mr. Hope's statements, but we hope to attend to them in our next issue.

"The Earth not a Globe," by "Parallax," uncut, 15/- Address to Hon. Sec.

Zetetic's desirous of obtaining books "out of print," (or in print either) should communicate with the Hon. Sec., who is identified with a system of enquiry for obtaining the same.

We trust that friends will forward us all the information they possibly can upon the subjects suited to this Journal.

In Memoriam.

It is with deep regret that we announce the decease of our esteemed and invaluable friend MRS. BESSIE IRVING, of Belfast, who fell asleep in Jesus, July 15th, 1895. Aged 50 Years.

She was a Zetetic of no mean calibre, and her beautiful model of the World, which can be seen at the Y.W.C.I., Belfast, is proof positive of her deep philosophical intelligence.

She was accomplished in Botany and other Sciences and learned in the Greek and Latin tongues with an acquaintance of French and German.

Her Scriptural Knowledge was very great.

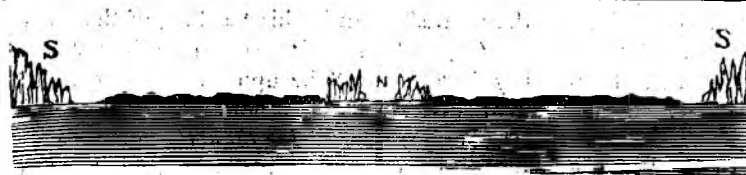
She was the First Hon. Sec. to the Prison Gate Mission in Belfast, and done a great deal to the Glory of God in that good cause.

Thank God we know that our loss is her gain, for to be:—

"Absent from the body" is to be "Present with the Lord."

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. 6 (NEW SERIES). JANUARY, 1896.

PRICE 2D.

"UNIVERSAL GRAVITATION, A PURE ASSUMPTION."

BY LEO CASTLE.

No. II.

Dedicated to the Editor of REYNOLDS'S NEWSPAPER.

The Earth—not a Globe—Review, in order to convince us that the world is flat quotes some comments we made in these columns on the subject. The editor begins a series of articles, in the first of which are some interesting extracts with the view of proving that there is no such thing as the law of gravitation. So far he has not reached the point any further than by showing that gravitation is merely a probability. Of course it is merely an assumption, which explains the largest number of results, and science can go no further.—*Reynolds's Newspaper*, October 6th, 1895.

We are pleased to see that our friend—the Editor of *Reynolds's Newspaper*—has taken a step backward, viz., from "the fact of gravitation," to the definite and undeniable groundwork of that theory, viz., "OF COURSE IT IS MERELY AN ASSUMPTION." Of course it is Sir, and *nothing else!* And being "merely an assumption," it cannot "explain the largest number of results," in fact it cannot explain any at all, for that which does not exist in fact, cannot explain results. Even the opponents of Christianity declare, "Agreement is only possible when the conclusions arrived at are the result of experience and observation, about whose VERIFICATION there is no doubt."—*Freethinker*, Oct. 16th, 1892. p. 659.

But the Editor of *Reynolds's Newspaper* speaks again:—
Mr. H. Sims writes to me a letter on the Flat or Round Globe controversy, in which he contends, and quite correctly, that if the Bible can be believed the

world is quite flat. Everyone now knows that the Old Testament does teach that the world is flat. Perhaps if Mr. Sims addresses, say, the Archbishop of Canterbury—in that dignitary's official, but not learned capacity—he will discover why no State-Church parson believes the Bible in this respect.—Oct. 19th, 1895.

Yes, the Bible does "teach that the world is flat" *approximately*; and consequently there is no need of "the law of gravitation" to "draw everything to the centre." But is this teaching of the Bible true—*absolutely true*? Yes, and the scientists themselves *tacitly* admit the fact when they declare that "the upper surface of a fluid at rest under the action of gravity alone is a horizontal plane, since otherwise, if a part of the surface were *higher than the rest*,"—don't you see it? This is a tacit acknowledgment that the world is NOT A GLOBE!! If the World were a Globe, then of necessity "a part of the surface" MUST be "*higher than the rest*," for as they themselves have owned, "*whichever way you go on a Globe you must go down*," therefore one part must be higher than the other, and that part is the observer's standpoint. But, be it remembered, that where there is a "*down*" there *must* also be an "*up*," therefore the above statement is a "*down*"—right proof that the World is not a Globe—but to continue—"those parts of the fluid which were under it would exert a greater pressure upon the surrounding parts than they received from them, so that motion would take place amongst the particles and continue until there were none at a higher level than the rest, that is, until THE UPPER SURFACE OF THE WHOLE MASS OF FLUID BECAME A HORIZONTAL PLANE." *The First Principles of Natural Philosophy* by Mr. W. T. Lynn, of the Royal Observatory, Greenwich, p. 51.

This testimony is absolutely true to Nature and experimental fact; therefore the assumptions of convexity and concavity are relegated to the lethe they came from by the savants of the Royal Observatory.

But let us continue our enquiry:—

IS THERE IN THE UNIVERSE ANY SUCH "FORCE" OR "LAW," AS THE "LAW OF GRAVITATION.?"

6th. "The history of science (so-called. ED.) shows that ALL the great laws of mind and matter have been *discovered*, NOT BY DEMONSTRATION but by IMAGINATION." SCIENCE SIFTINGS, Vol. i. No. 15. p. 235.

That this is absolutely true is proven by the undeniable and acknowledged fact that Kepler "discovered" his three "Laws of Planetary Motion" in that way. Listen to the testimony of your own schoolmen, ye, who believe in the "earth's sphericity," surely you will believe them won't you? even though you deny the evidence of your senses that they may be considered, "The wise guides, philosophers and friends, who do lay upon themselves the onerous

duty of deciding these momentous problems for us."—LORD SALISBURY. *Morning Leader*, June 23rd, 1894.

• Listen, I say, to Professor W. B. Carpenter, C.B., F.R.S., etc. 7th. It was not until twelve years after the publication of his first two laws, that Kepler was able to announce the discovery of the *third*. This, again, was the outcome of a long series of GUESSES, and what was remarkable as to the error of the idea which suggested the second law to his mind, was still more remarkable as to the third; for not only, in his search for the 'harmony' of which he felt assured, did he proceed on the erroneous notion of a whirling force emanating from the Sun, which decreases with increase of distance, but he took as his guide ANOTHER ASSUMPTION NO LESS ERRONEOUS, viz., that the masses of the Planets increase with their distances from the Sun. In order to make this last fit with the facts (?) he was driven to ASSUME a relation of their respective densities, which we now know to be UTTERLY UNTRUE; for, as he himself says, 'unless we ASSUME this proportion of the densities, the law of the periodic times will not answer. Thus, says his biographer, 'three out of the four suppositions made by Kepler to explain the beautiful law he had detected are now INDISPUTABLY KNOWN TO BE FALSE? what he considered to be the proof of it, being only A MODE OF FALSE REASONING by which 'any required result might be deduced from any given principles.'—*Modern Review*, Oct. 1880.

And these "three laws" are the basis of Newtonian "Universal Gravitation," O! most glorious origin!!

The most superficial scholar knows what is the received explanation of the movements of the Planets round the Sun, viz., that when the Planet is first hurled on its course from the hand of its Maker, the Maker of the Planets is the sun, its tendency is to go in a straight line; but this tendency is arrested by the attraction of gravitation, and the two forces acting in opposition to each other cause the orb which they control to move in a curve. It was supposed by Kepler that this curve did not form a perfect circle, but an ellipse, and that the Planet was accelerated in some parts of its orbit when it was nearest the Sun. The cause of this discrepancy was attributed by Newton to the antagonistic action of the centripetal and centrifugal forces: as the attraction of gravitation, or centripetal force, gradually overcomes the centrifugal, the Planet is drawn nearer the Sun, and its speed in its orbit accelerated.

But let us see what another eminent Professor of Astronomy has said about centrifugal force, and we shall find that the "laws," which Professor Guillemin in *The Heavens*, edited by Professor Lockyer, informs us that Newton "extended to all the bodies of our Solar system," are no more to do with Natural Phenomena, than the ravings of a madman.

8th. CENTRIFUGAL FORCE IS A FICTION; THERE IS REALLY NO SUCH THING AS CENTRIFUGAL FORCE." PROFESSOR AIRY, *Mathematical Tracts*. Note on p. 140, 4th ed.

No wonder that JULIUS SILVERSMITH, Esq., M.A., said:—

9th. "So far as mathematical astronomy is based upon mathematics alone, and draws ALL ITS CONCLUSIONS from ASSUMED data, such conclusions cannot be natural and true, but are simply artificial and delusive. Newton was pre-eminent in his ability to decipher objects and INVENT 'laws' that were *not in existence*, and his followers have relied upon their seeming accuracy, simply because they could be illustrated by lines and figures, by clockwork and machinery, by pictures and pasteboard. Such is *really* the case with his theories of attraction and gravitation."—Earth No. 5, p. 34.

10th. "In elementary Works on the motion of the Planets are given elaborate diagrams borrowed from Newton's PRINCIPIA, for the purpose of demonstrating the law of centripetal and centrifugal forces; and any student who masters these diagrams fancies that they conclusively prove the truth of the theory.

[We shall produce some of these diagrams to conclusively illustrate that the whole theory is absolutely false, and prove that it is so by a direct appeal to the known motions of the planets and comets].

Our student, however, acts under the same erroneous impression as that which governed the mind of Sir Isaac Newton, as in his time there did not exist sufficient scientific knowledge to expose *the fallacies of the data*. Newton asserted *theoretically* that which is *practically impossible*, viz., *firstly*, that there could be centrifugal force developed by one body revolving round another *when* the two bodies were *not* MECHANICALLY UNITED; and, *secondly*, that this centrifugal force was so exactly a counterpoise to gravitation, that an *increase of velocity* in the revolving body towards the gravitating direction was sufficient to prevent gravity (gravitation) becoming triumphant and *thus* drawing the revolving body *out of its orbit altogether!*

Centrifugal force can only be developed in a body revolving on its own centre or round another body to which *it is* MECHANICALLY ATTACHED . . . The problem with which Newton attempted to grapple was to discover the forces and laws which govern the movements of the heavenly bodies. He signally failed in solving the mystery. To get his rotatory movement he was obliged to resort to the clumsy *invention* of a centrifugal force, which under the circumstances stated is an impossibility. In spite of Newton's demonstration, it is quite certain that the FALLING of a stone to the earth is not a phenomenon similar to the motion of the Moon in its orbit: the phenomena bear not the slightest resemblance to each other, nor can they in any *true sense* be attributed to the *same cause* . . . The great 'discovery' of Newton, viz., 'universal gravitation,' thus appears destined to share the fate of the large majority of human *inventions*, and to take its place with other antiquated ideas in the museum of the extinct system of a progressive science (so-called).

The ridiculous Newtonian *idea* of the Sun being a fiery furnace; and the *notion* that the movement of the heavenly bodies is caused by universal gravitation modified by what is popularly known as centrifugal force, are part of the ignorance, almost monkish, of the age in which such teaching were accepted. The time has surely come when we ought to discard our cant respecting the wonderful reputation of Sir Isaac Newton, and be content to regard him simply as a mathematician and scientist, scarcely as a philosopher. His treatment of Flamstead and Leibnitz prove him to be morally a very sublunary mortal indeed; and I am inclined to think that if his little pet dog had destroyed a great deal more of his work, the animal would have done the world no disservice.

I should be sorry to violate Sydney Smith's injunction, and 'speak disrespectfully of the equator,' but I am compelled to speak very disrespectfully of gravitation, and of its principal expounder, Sir Isaac Newton. He is popularly, but erroneously, supposed to have been the discoverer of gravitation, but the fact is he was only its systematizer. His hypotheses or rather paradoxes are no longer alive; they may now be embalmed and buried in the consecrated ground of an Encyclopædia. The attempt to perpetuate them can only be a stumbling-block in the path of *true science*. I have already shewn—or striven to show—that his system teems with fallacies; and must be exploded. It is no sufficient reply to say that mathematicians of the highest eminence have accepted it and demonstrated its verity. Mathematicians can demonstrate anything IF YOU GRANT THEM THE DATA WHICH THEY REQUIRE, and from which they must start: in this case the question is, whether the Newtonian data are correct. Mathematicians enjoy no immunity from error any more than any other class of reasoners. Professor Thorold Rogers remarked of mathematicians, that 'they were generally *dunces*;' and of one very distinguished mathematician it was said that 'he had a very narrow escape of being an idiot.' But the fact is, mathematics has nothing to do with proving or disproving the Newtonian theories, which are merely AN ERRONEOUS METHOD OF EXPOUNDING CERTAIN PHENOMENA OF NATURE."

The New Principia, by NEWTON CROSSLAND.

(To be continued).

GLOBE SCALING.

By W. Carpenter.

To prove that a "model" globe is to a *double scale*, measure from London to Philadelphia on the first globe you see; the distance is 3,000 miles, the *space* may be 2, 3 or more *inches*, say 3 inches (perhaps a 1 foot globe), then the scale is 1,000 miles to the inch; let that answer for the "Northern Hemisphere"; now turn to the Southern, measure again from C. G. Hope to C. Horn; only a fraction more *space*, but how great the *distance!* Captains tell me it is 9,500 miles, this is the *least* distance; I have heard as high as 12,000 miles; call it 9,000; then the scale is 3,000 miles to the inch (the journey in question being a *certain* number of *degrees* out of the 360°, it *must* be *allowed* that the balance of the measure round must be the complement, and to the same scale), *ergo*. Northern Hemisphere 1,000 miles to the inch, Southern, 3,000 miles to the inch! Everything in the way as a model or a plan, made to a double scale, is a folly and a fraud. Try the plan of a house and see for yourselves.

A LIGHT ON THE SUN.

Letters to the Editor of the "Evening News," Portsmouth.

Sir,—We have just discerned a most gigantic and important error in modern astronomy, concerning the sun's estimated diameter and its path along the ecliptic. Mr. R. A. Proctor, in his picture of the seasons, gives a graphic plate of the sun's path through the twelve signs of the Zodiac for every month and day in the year. There are thirty degrees allowed for each sign; a degree is sixty geographical miles. The ecliptic runs through the centre of each sign, for which there is allowed sixteen degrees, with seven degrees each side clear. Now, 60 by 16 equals 960 geographical miles. The sun is estimated at 882,000 miles in diameter; then the query is: How can a body like the sun be contained in a line or groove that is only 960 miles wide, when that ball or body is 882,000 miles in diameter?

In all cases there is required half the diameter of the ball for width of groove. If a ball is six inches in diameter, the groove must be three inches in width, so that there would be required 7,250 degrees space for the sun to move through the ecliptic. Now, this disparagement alone, fully traced out, is sufficient to announce the overthrow of modern astronomy in its measurements and hypothesis. We challenge any astronomer to rectify the error, or reconcile the hypothesis. As all measurements are reckoned from the sun as a basis, the sun can only be about five thousand miles in diameter, or half the diameter of the earth. That would be found to be a far more correct estimate; and everything in astronomy should have been reckoned by thousands instead of millions; it would have been much easier for all students, and far more correct for all natural astronomy. The earth is no doubt ten thousand miles in diameter, as the Norwegian sailor stated at the late Geographical Congress that he found South Victoria a continent twice the size of Europe, and not a mere strip, as marked on the map. Certainly 16 degrees for the ecliptic would only allow the sun to be about 3,000 miles. We are willing to allow it is 5,000, but no more—all other bodies in proportion. Breadth can be measured much better than height,

Yours truly,

Portsmouth, 12th Sept., 1895.

EXAM.

Sir,—Your correspondent, "Exam." who tells us that he has just discerned a gigantic and important error in modern astronomy, appears to be labouring under the delusion that a degree is an invariable quantity, instead of being the 360th part of a circle,

whether great or small. What he appears to have got into his head is the measure of a degree of longitude at the equator. Now, the measure of a degree of an arc of a circle, whose radius is the mean distance of the sun from the earth, is 1,600,000 miles, about. Hence the width of the belt of the ecliptic is, in round numbers, 13,200,000 miles, instead of 960, as "Exam." has it.

It might interest some of your readers to know that a degree of a heliocentric circle passing through the star Vega (not a remote star), would be one billion five hundred thousand million miles approximately.

Yours respectfully,

L. C. P.

Sir,—Allow me to inform your correspondent "L. C. P." that "Exam." was quite aware of his definition of a degree of a circle, but the ecliptic happens to be a line drawn through the centre of the circular signs of the Zodiac. The late R. A. Proctor, in his Zodiacal maps of the seasons draws a straight line through each map. Another well-known astronomer says that "a degree is therefore only a relative and not an absolute quantity, except when applied to a great circle, such as the equator"—and such is the ecliptic—"in which case it is 60 geographical miles, or 69.1 geographical miles." Therefore it is the breadth of a line, belt or groove through which a concentrated body of light, heat, and attraction like the sun is constantly travelling, not the circular signs of the Zodiac. With regard to the distance of the star Vega, it reminds me of Bessel, who estimated the distance of the star 61 Cygni at 60 trillions of miles, but soon after came Struve's measurement, making it move nearly 40 trillion miles, so the second measurer cut off 20 trillions as though it was only so many dozens, without the least hesitation. Sir William Herschell was wise on that point; though he spent all his life in trying to measure star distances, he acknowledged it to be a failure. From analogy, reason and experience, we know that bodies for the supply of light and heat are always placed as near the surface to be enlightened as possible, not at an incalculable or immeasurable distance. What would be the use of placing the electric light for Portsmouth on Portsdown Hill? I question if the stars could ever be photographed if they were at such an immeasurable distance. The deductions of mathematics must be eventually displaced by the facts of nature, analogy and reason. The fittest *must* survive.

Yours truly,

Portsmouth, Sept. 17th, 1895.

EXAM.

Our friend, "Exam," before writing to the Portsmouth Paper, wrote to *Sir Robert Ball*, pointing out the important error and

asked for a solution or reconciliation of the same. This is the reply of the *Lowndean Professor of Astronomy and Geometry in the University of Cambridge*. "See the *Atlas of Astronomy* for your difficulty." R. Ball.

Evidently the Professor is more interested in the profit of his 15/- book than he is in vital questions affecting the teaching of that of which he is the representative and exponent.

Possibly he has a lively recollection of one, Professor Woodhouse, who, in or about the year 1840, occupied the same chair, and from it declared:—"When we consider that the advocates of the Earth's stationary and central position can account for and explain the celestial phenomena as accurately as we can, in addition to which they have the evidence of the senses, and Scripture and facts in their favour, *which we have not*, it is not without some show of reason that they maintain the superiority of their system. Whereas, we must be content, at present to *take for granted* the truth of the hypothesis of the Earth's motion, for one thing. We shall never, indeed, arrive at a time when we shall be able to pronounce it absolutely proved to be true. The nature of the subject excludes such a possibility."

"However perfect our theory may appear, in our estimation, and however simply and satisfactorily the Newtonian hypothesis may seem to us to account for all the celestial phenomena, yet we are here compelled to admit the astounding truth, that *if our premises be disputed and our facts challenged, the whole range of Astronomy does not contain the proof of its own accuracy!* Startling as this announcement may appear, it is nevertheless true; and astronomy would, indeed, be helpless were it not for the countenance given to it by the implied approval of those whose authority is considered a guarantee of its truth. Should this sole refuge fail us, all our arguments, all our observations, all our boasted accuracy would be useless, and the whole science of astronomy must fall to the ground."

It must be evident to all men who think for themselves, that the whole superstructure of modern theoretical astronomy is based, first of all, on the SUPPOSED stationary condition of a centrally placed sun, which *supposition* was derived from another *supposition*, viz., its *supposed* enormous bulk, this being deduced from a *supposed* parallax obtained by a pretended measurement of a purely conjectural base, from one side of its imaginary orbit to the other! Could professional device invent anything more glaringly fictitious? Alas! that men can teach such glaring absurdities can only be explained by the fact that there are in the world more gullible than wise people.

ED.

FACT v. FICTION.

(1.) I said a thing can only be in one place at a time. G.M. answers that latitude is found in connection with the *apparent* direction of an object. True, but beside the mark. For I suppose the *apparent* direction has something to do with the real direction; if not we should be lost entirely.

(2.) I am accused of supposing the eye at S. I didn't. I supposed the Sun there. This is the second time G.M. has made this mistake, and the second time I have corrected him.

(3.) G.M. challenges me to give the observed altitudes of the Sun at equinox for lats 10°, 20°, 30°, 40°, etc., and to show that the lines of direction meet at the same point. Why! that is the very thing I did in my leaflet, only on the flat earth. I showed that the lines could *not* meet except at an infinite distance. G.M.'s own figure shows the absurdity still better, for his lines *cross* each other like cobwebs. Very appropriate, too, for as the spider spins cobweb out of his own inside, so does the Zetetic spin his theories without any reference to the facts.

(4.) G.M. says observations of the sun do not enable us to determine the sun's position, but only *the observer's latitude*. (This latter admission is rather funny from a member of the sect which constantly answers inconvenient southern hemisphere facts with the assertion that "the movement of the heavenly bodies have nothing to do with the shape of the earth.") But G.M. does not tell us *why* ordinary trigonometry may not be applied to the sun, just as well as to a light on a mountain top.

(5.) G.M. challenges me to show that the observed lines of direction of the sun meet at one point if drawn from a globe, or (which is the same thing) to introduce parallax in his figure 4. I decline, for if I did not draw it to scale G.M. would say it didn't agree with the facts; and if I did draw it to scale I should need a piece of paper 1050 meters long!

(6.) G.M. asks if I am ignorant that the same apparent variation in the sun's altitude will result upon variation in observer's latitude or sun's declination. No, I am not and I took particular care to eliminate the sun's variation in declination by only arguing from the results of *simultaneous* observations at the equinox (or rather from what both sides have hitherto admitted would be the result of such simultaneous observations if made, for I must own I have not myself travelled up and down the meridian with a sextant.)

(1.) Mr. Harpur now introduces a fresh term—the *real direction*—which he does not define, nor indicate how it is to be distinguished from the *apparent direction*. I have never contended that "a thing can be in more than one place at a time." I concede all he can desire, viz., that the lines of sight meet at the sun's centre, as an objective fact. He has now to determine the actual position of the sun's centre, as a mere point, considered mathematically. But this actual position of the point cannot be determined by the art of mortal man.

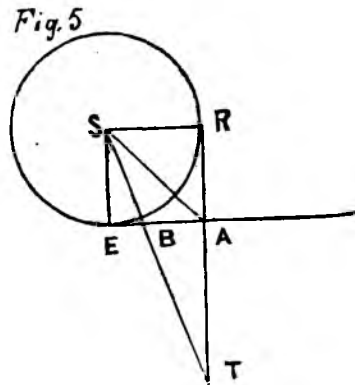
His "real direction" is a meaningless term, even though it be taken to represent the objective fact; for every line of direction derives its significance, subjectively, from its relativity to some other line with which it makes an angle.

In finding his latitude, the mariner deals with the *apparent* direction, this results upon the observed altitude; yet he is not lost upon the trackless ocean because he cannot determine the sun's actual position in "boundless space." Mr. Harpur's assertion is hasty, and is upset by practical navigation.

(2.) Mr. Harpur terms my humorous reference a mistake, which he affects to have twice corrected. Very well,—Now the trigonometrical ratios vary according to the value of an angle at the centre of a circle; he has chosen, quite arbitrarily, the sun as the centre of his "circle of reference," therefore, I say emphatically, that the angles of his table of cotangents are angles at the sun, and are not the angles of the sun's observed altitude above the horizon.

(3.) But as he still persists that his Fig. 2 represents fairly the sun's observed altitudes; and as he substitutes a very puerile attempt at ridicule for solid argument with reference to my Fig. 3, it may be well to exhibit the self-contradictory nature of his own paper.

So adapting the necessary portion of his Fig. 2, we will illustrate in Fig 5, by his own method, the logical results of his reasoning.



S, the sun as centre, E a point upon the equator; S E radius equals unity: E B A a portion of the plane earth's surface: let angle E S B equal 20° , then the distance E B subtending the angle equals 20° of latitude, the comparative value being got from the tables, $\tan. 20^\circ$ equals . 3639.

(Mr. Harpur copies "Cotan. 20° equals . 3639; this is an error; Cotan. 20° equals 2 . 7475 and is measured along the line R T at right angles to earth's surface, *i.e.* from the heavens above to the abyss beneath—quite a novel direction for terrestrial latitude. E B is the cotan. of the complementary angle B S R; but Mr. Harpur's reasoning is concerning the angle of 20° E S B of which E B is the tangent.)

With increase of latitude, the tangent E B increases to E A, simultaneously the contangent R T decreases to R A.

Obviously upon inspection, the line A S is a diagonal of the square E S R A upon the radius S E; hence each of its sides equals unity, and each of the acute angles at the points S and A made by the diagonal with the sides, is an angle of 45° . Therefore, to an observer at A, the sun's observed altitude (at equinox) is the angle E A S equals 45° , hence his latitude is the angle E S A equals 45° ; its numerical value being that of the tangent E A which equals unity, which equals the sun's vertical distance from earth, *i.e.* the orthodox 93,000,000 miles.

In his Fig. 1 Mr. Harpur instances Bordeaux as 45° latitude, by the method of the geographers, which he accepts as reasonable; but by his method of applying trigonometry he would have us accept the distance of Bordeaux from the equator as 93 millions of miles, instead of about 2000 miles. Surely such a disparity in results must lead even Mr. Harpur himself to see that he has utterly failed to establish any connexion between the sun's distance from earth and the value of the equatorial radius. Or again, the sun's elevation of 45° indicates the station as the point which *bisects* the radius of the equator, but by Mr. Harpur's trigonometry it is the *extremity* of the radius which is shown to be the point at which the sun's observed altitude of 45° is obtained, although he is aware that the extremity of the radius would give the sun's altitude as 0, at equinox. Yet again, the two lines of direction to the sun, which make the equal angles of 45° with the same straight line of the plane earth's surface, at the points of bisection and extremity of the radius of the equator—these two lines are parallel, therefore do not meet at the sun's centre as a *point which can be indicated* with the faintest approximation to precision. Therefore his Fig 2 does not represent the results of actual observation, upon either the spherical or plane earth theories.

As to the spider simile—well, it may be supposed that the three famous laws of Kepler which lie at the foundation of modern physical astronomy, also Newton's Law of Gravitation neither of

which can be fairly demonstrated to positively exist, were the productions of the authors' "insides;" with what admiration then, should we not regard the quality of that "inside" which can educe 93 millions of miles as the value of earth's radius! Clearly Mr. Harpur should rank as Grand Master in this "spinning" business.

(4.) The reference to the southern hemisphere contains no argument relative to my statement as quoted by Mr. Harpur. Could he but divine the simple cause which would be an effective reply to his question—he would then understand how two lines of sight might meet at the sun's centre, and yet that this cannot be reduced to construction as resulting upon actual observation. The simple reason of the inapplicability of ordinary trigonometry to objects in the heavens, as compared with a "light on a mountain top" may be given in one word, thus, trigonometry, in its solution of a triangle, takes no cognizance of perspective; whereas every observation of the heavens is affected by perspective. We may, by our obliging Editor's permission, dilate a little on this subject in a subsequent paper.

(5.) Mr. Harpur has mistaken his vocation in assuming the office of *Prophet*. Were he to present us with his gigantic diagram, I might probably quote his own method of refutation.—"He has merely drawn it so."

The parallelism of lines representing simultaneous observations of the sun from various points of latitude upon a globe is merely a matter of the simplest geometry. Let Mr. Harpur illustrate by diagram, but the proof of his contrary contention must lie in his reasoning, or demonstration.

(6.) For the sake of simplicity, Mr. Harpur was right to confine his attention in his paper to observations at the equinox. But discussion has opened out the question. Well now, here is one other test for him of the simplest character.

Noon at equinox — simultaneous observations — stations at
 the { equator — lat 30° — 45° — 60° — 90° } respectively the
 Sun's { —Zenith 60° — 45° — 30° — 0° }
 observed altitudes being

Mr. Harpur will be very clever if he can show reason why lines drawn at these varying angles with the same straight line supposed to represent a flat-earth, should meet at the same point in the heavens.

G.M.

THE WONDERFUL STONE.

The present day *educated* generation, appear by the current (so-called Scientific) literature, to find great and absorbing satisfaction in reading Fairy tales; it may, therefore, be well that the following should find a place in this Review, thus giving our readers an opportunity of judging whether the *educated* part of the community are justified in their selection, and also as a means of handing down to the future, a specimen of nineteenth century romance.

Several years ago Sir William Thomson (now styled Lord Kelvin), professor of "Natural Philosophy" and an acknowledged leader of Scientific thought, narrated to a society of "Physicists" the Story of a Wonderful Stone; this story, though then looked on as merely a joke or gammon by his fellow "Scientists" has at different times been ladled out with very learned solemnity by various time-serving and wonder-mongering magazines and newspapers to their gaping and wonderstruck readers, as the story of the most wonderful *scientific* discovery in this most highly educated and scientific age.

Stripping this wonderful story of its long-winded words in which the learned professor arrayed it, let us tell it in plain English.

Once on a time (this is usually how fairy-tales commence), Sir William announced, he had discovered a Stone that was neither more nor less than "The Foundation Stone of the whole Creation;" and that it was the *very stone*, he proved by his professor's gown, his professional dignity and salary, by his university titles, also by his being an eminent "physicist," and, therefore, he had the right to dictate by words of learned length and thundering sound, and by other such arguments, all of which are considered unanswerable much less refutable by this nineteenth century generation. The professor *guessed*, as only an eminent scientist or doctissimus professor can or has the exclusive right to do, that a stone once fell from somewhere skywards how long ago he could not, and, therefore, need not say; but it was *likely*, and indeed he was positive, because it suited his *theory* to say so, that it fell somehow, somewhere, many many millions of years ago (the exact number of millions has been guessed at!) This stone fell, not in the Atlantic Ocean or the river Thames, as there were not such things at the period guessed at; nor did it fall on anybody's head, as there was, he supposed, nobody or nothing in the shape of man, monkey or beast, insect or

cabbage, to be damaged by the fall. Luckily, however, the stone fell somewhere,—hard or soft, he could not really say, nor even guess at, but it fell, and that was sufficient, especially as it fell in the very place that fitted the professor's scientific gospel of Evolution, to which we come later on. How big the stone was he couldn't say, because he or anybody else did not see it. and it would be very unscientific (not to say presumptuous) to question such professional dignity by asking such a thing. Whether the curiosity was of the grindstone, whinstone or cherry-stone order, he did not say: but it was bound to be big enough and able enough to hold a seed of grass or other plant, or in fact, anything that would grow according to Evolution. The professor, however, guessed the stone was certainly a bit of some exploded planet, but to dare ask how he knew, or what planet it was, also the time, cause, manner, etc., of the explosion, etc., would be most unscientific, seeing there were no witnesses of the said explosion; in fact, *the whole affair was a first-class thorough-going supposition*; but mark, not the supposition of such ignorant fellows as Jules Verne, Tom, Dick or Harry; so that, as sure as William is Sir William or (now correctly speaking) Lord Kelvin, this supposition must be dubbed scientific and, therefore, ought to be called an hypothesis. So much for the original fairy-tale.

The mysterious stone indeed was all the more wonderfully mysterious, in that, though guessed by his Lordship to be meteoric, therefore bound to be highly heated and consequently ill adapted for carrying seed, nevertheless, he supposed it did a job which no meteoric stone could do; the professor calling it meteoric for want of some or a better name. Next what makes this stone all the more wonderful is the wonderful seed, which did what no seed has ever been known to do, for it produced (after many millions of years to do the wonderful job) more than one hundred thousand kinds of plants with all their seeds, which are known and unknown to botanists, which seeds have scattered themselves very conveniently for Evolution's sake over all continents and islands, and under rivers, lakes, seas and oceans. Another wonderful thing is, how the wonderful seed managed to grow at all on this wonderful-highly-heated-meteoric stone; but, so many suppositions, deserve this one also, as the supposition, known by the name of Evolution, could not do without it at all; and though "the laws of nature" are said to be "fixed and unalterable," yet it appears they may be altered and generally unfixed at Sir William's pleasure for the sake of his wonderful conjuring stone. God and Moses (whom the eminent

professor never once condescended to notice throughout his tale) have said, that in the beginning was created by God's command, all the plants producing seed after their kind, hence, as the plant, so is the seed; and as the seed, so the plant; such being the fixed order for the past six thousand years, no *fact* to the contrary; yet, since the eminent professor is voted an *eminent physicist*, it follows, that this *scientific* age votes Moses unscientific, or in plain English a *liar*; then what. O my Lord Kelvin, of Jesus Christ, who endorsed, confirmed and spoke so well of the writings of Moses?

However, we may still have more wonders said to be sticking to this wonderful stone, one unnameable seed (by whom or how stuck, let Sir William say) changed, by a wonderful change of "nature's eternal and unchangeable laws" into a wonderful fish, so wonderful, that the like has never been seen since, for it became the *papa* or *mamma* (Sir William does not know or care which) of all the whales, minnows, sharks and other fish that ever swam in salt or fresh water. What next does Sir William suppose about the ten thousand kinds of birds, the one hundred thousand kinds of insects, the one thousand kinds of reptiles, the twelve hundred kinds of lizards, the seventeen hundred kinds of mammals, and Mankind too? So that the enlightened nineteenth century may be led to believe, there is no God to have created all! Sir William must evolve, or as the word means. "roll out," what?—Supposition after supposition, until his dupes are in many cases, evolved, befogged, presumptuous—atheists. Must Sir William believe, that he is whirling and spinning round at brain-reeling-rates on a tremendous turnip-shaped globe of earth and water in somewhere called space, and that the immense oceans with their profound depths, besides all animate and inanimate things, are held on to this whirling-rushing-monstrosity by an assumed power called gravitation, which assumed power is not sufficiently powerful to keep the seed of a thistle, or a butterfly from flying up, nor a grasshopper jumping up, whenever so disposed, thus ignoring this assumed gravitation's tremendous pulling power. And must the titled professor, with others of his way of supposing, believe he and they are the progeny of a gibbering-chattering ape, rather than human beings, made after the image of God? Was Thomas Carlyle very far wrong when he expressed the opinion "that the present generation are mostly fools?"

(Collated by Iconoclast, from the writings of Alexander McInnes, of Glasgow University.)

ZETETIC REFRACTION.

No. III.

By James Naylor.

When once it is seen that a ray of light—whether coming obliquely from the upper regions of the atmosphere to the lower or from lower to the upper—always bends towards the horizontal, many plausible Newtonian explanations evidently become impossible; at the same time also some important Zetetic difficulties cease to exist. Let us give a few illustrations to show what we mean. Take lighthouses for instance, where it is well known that the lights, as a rule, are visible for a much greater distance than the theory of rotundity would allow. Now the ordinary explanation here tendered is that refraction apparently raises the elevated light so as to make it visible for a greater distance than would otherwise be possible, but this explanation is evidently inaccurate, for, as we have seen the effect of refraction from an elevated object is to apparently depress that object and not to raise it. This apparent depression, therefore, shortens the extreme position of visibility and does not lengthen it as the theory of rotundity requires; similar reasoning applies to elevated objects, such as mountains and to the distances at which ships can be seen at sea. For instance, the Alleghany Mountains in the U.S.A. have been observed from the Peak of Teneriffe in the Canary Islands. Ships have also been seen at sea when 200 miles from the observer at the Port of Aden. Now to explain these facts the Newtonians can only urge refraction which, by the way, quite apart from our argument, seems scarcely sufficient in these cases, seeing that, in the former, it would make the Alleghanies appear more than 700 miles above their true position and, in the latter, about 26,000 feet. But we have seen that refraction does not tend to seemingly raise relatively elevated objects, but rather to depress them, and the ordinary explanation, therefore, becomes inadequate, and only makes confusion more confounded.

With celestial objects it is just the same, the Pole Star to wit, has been seen many degrees south of the Equator, at which point according to theory it would cease to be visible. The Sun, Moon and Stars also all appear earlier and set later than the times that theory assigns to them; and again, in all these cases, refraction is made to seemingly render friendly help. But alas, in this case the Newtonian may well say, "save me from my friends" for we see that the effect of refraction is just to reverse the positions and to make the celestial objects appear later and set earlier than they would, but for its operation. So also in the case of the Pole Star,

the effect is to shorten the extreme point of visibility and not to lengthen it as appears to be the case.

Take also the matter of Horizontal Eclipses where the Sun and the Moon appear above the horizon together, and yet the latter is seen to be eclipsed; here we have refraction again brought in to explain the difficulty. But we now see that the explanation must be perfectly useless and that refraction really adds to the difficulty instead of removing it. Indeed, we may say that as the phenomenon stands without any explanation, the Newtonian is figuratively chastised with whips, while, to drag in refraction, he is chastised with scorpions. In short, these illustrations clearly show that all along the line Zetetic refraction puts an end to the seemingly plausible Newtonians explanation of phenomena that left unexplained are irreconcilable with and condemnatory of, modern astronomical theory.

We will now see how it fares with some difficulties of Zeteticism and first as to why celestial objects do not always appear above a plane earth instead of rising and setting as we know they do. This is a very common difficulty and one which *Parallax* on pages 124 to 127 of his book does not wholly remove. Now, here Zetetic refraction comes to render yeoman service for it shows that besides the explanation of the decrease in the visual angle which *Parallax* gives, there is also an apparent decrease of elevation from refraction. In short, that while the visual angle creates the impression of decreased elevation, refraction completes that impression, by apparently still further depressing the object under review. Unless then it can be shown, that the effect of these combined causes is insufficient to explain the rising and setting of celestial objects over a plane earth, the difficulty we have cited has no solid foundation and may be summarily dismissed.

Another difficulty closely allied to the preceding is the fact that angles made by the Sun when viewed from different standpoints on the same meridian, do not correspond with what geometrically should be the case; and here it may be freely conceded, that these angles far more nearly correspond with the common theory than with Zeteticism, though not so completely as some Newtonians would have us believe. But when Zetetic refraction is applied the difficulty vanishes, for from it we see that the apparent angles can never be geometrical ones, but only accidental or empirical, and of such a sort as cannot be determined by some *a priori* rule, but must be deduced from actual observation. With refraction playing pranks amidst the real angles and substituting others of its own

creation, whose relation to the real ones cannot be ascertained, it is evident that accuracy from angular measurement is scarcely to be expected, and indeed is not conceivably possible. It was the neglect of this consideration that made C. HARPUR'S argument in a recent number of the *Review* to appear so formidable on paper and so absurd away from it. Indeed, so long as refraction exists, the same fate must fall upon all attempts to disprove a plane earth, by showing that some celestial phenomena in which refraction must perforce be the all controlling, but unknown quantity is inconsistent with the plane earth position. The same consideration also forbids any positive statements as to the distance of the heavenly bodies above a plane, for, as these distances can only be determined by the measurement of angles, and as the observed angles can in no sense correspond with the real ones, all positive statements are evidently rendered futile and the best results can only be considered as approximate.

But, besides destroying Newtonian explanations and removing Zetetic difficulties, refraction furnishes important corroborative testimony to the fact that the Earth is a plane. For instance it is well known that when the atmosphere is clear and free from humidity or any cause likely to retard the progress of light that then we have objects seen at much greater distances than is normally the case. At those times the amount of refraction of necessity is less, and upon a plane earth, objects would, therefore, naturally be seen longer than usual. But not so with rotundity, for with it when the atmosphere was clear and refraction scarcely present, objects would disappear at the stated distances, prescribed by theory. In other words, in clear weather and with refraction operating as we have described, objects upon a plane earth would be visible longer than usual, just as we find to be the case. But with a globular earth the reverse would follow, for in clear weather objects would be seen shorter than usual, a position which is demonstrably contrary to fact and logically absurd. Thus the right view of refraction furnishes cumulative evidence for a plane earth, by accurately accounting for phenomena whose peculiarities can only be reconciled with such a fact.

The devastation caused by Zetetic refraction among Newtonian havens of refuge from difficulties, will naturally cause the stoutest opposition to be offered to the former. We will, therefore, in our next and concluding article compel the acceptance of our position, or else place the Newtonians upon the horns of a formidable dilemma.

(To be continued).

THE SUN-DIAL.

BY "ZETETES."

"He hath founded the earth upon her bases, that it should *not be removed for ever.*"—Psa. civ, 5 (Margin).

WE have been taught from childhood to believe that the world we live in is a large ball or globe, revolving on its axis, and moving through space at a terrific rate; and what is perhaps more to be regretted, we have never been taught to investigate these things for ourselves, but to receive as infallible all that is taught us by learned men in the name of science. But since much that is called "science" is directly contrary to God's Word, and is leading men to doubt, to question, and to deny that Word, it is quite time that Christians should make a stand, and begin to question the other side. If the world be a revolving globe, as astronomers and infidels say it is, we ought to have some demonstrable proof of it. But where is this proof? And, on the other hand, if the earth be a stationary and outstretched plane, as the Bible teaches it is, there is surely some simple way of proving this. Astronomy shrouds the question in figures and mystery, and pretends that it is above the conception of ordinary minds; but the Bible again and again refers to the works of the Creator as being understandable and sought out of all them that have pleasure therein. Psa. cxi. 2, 4.

Let us take one instance. The Bible teaches that day and night are *caused* by the motion of the *Sun* over a stationary Earth; whereas Astronomy affirms that it is the earth which moves, and not the Sun, as the *cause* of day and night. Gen. i, 16; Josh. x, 12, 13; Psa. xix, 4-6, and civ, 5; Matt. v, 45; Luke iv, 5. Now one of these two positions must be wrong: they cannot both be right! Which is it, "Science" or the Bible? Genesis or the Principia? The Prophets or the Astronomers? Our own senses tell us it is the *Sun* which moves, and not the earth; but the Astronomers say that we must not believe our senses in this matter, as they only deceive us! But can we not find, some other impartial witness? Yes! The sun-dial shall testify; or rather the sun itself, as it shines above us in the heaven. Isa. xxxviii, 8.

Now if, as we contend, the Sun moves around the North Centre, above a plane and stationary Earth, it is evident that the gnomon (stile, pin, or column) of the sun-dial will cast a shadow which also moves in some part of a circle, or ellipse. At the north centre the shadow will describe a semi-circle in twelve hours, as the sun circled about it; but in our latitude it would describe a semi-

ellipse, or elongated *curve*. On the other hand, if the earth turn on its axis before a relatively stationary Sun, directly above or near the equator, the end of the shadow on the sun-dial would describe a *straight line*, on or parallel to the equator. This, can be tested by a simple experiment or two.

Place a small upright column (a narrow bottle, or a piece of wood) in, or near, the centre of a stationary table in a darkened room; then carry a lighted candle close around and a little above the table, so as to cast a shadow on the table. It will be seen that the end of the shadow cast by the column will describe a *curve* more or less circular. Next take a paste-board globe and fasten on to it a piece of wood, as a gnomon, perpendicular to its surface, and somewhere north of, or near to, the equator. Then, holding your candle quite still somewhere opposite, or nearly opposite, to the equator, turn your globe on its axis perpendicularly, and you will find that the end of the shadow of the gnomon will describe a *straight line*. If the gnomon be placed on the equator, while the sun or light is also opposite to the equator it is evident that the shadow *must* fall on the equator somewhere the whole of the twelve hours, and so it would describe a straight line; and if the gnomon be placed north of the equator, while the sun is on, or opposite to, the equator, it is also evident that, as the sun apparently traverses the line of the equator during the day, the end of the shadow of the gnomon would also describe a straight line north of, but parallel to the equator! Thus, all our shadows ought to move in straight lines on horizontal planes if the common theory were true.

But again, take an upright rod, or pole, and fix it perpendicularly in your garden, somewhere so as to catch the rays of the sun all day, and then watch the shadow of the rod for about twelve hours or more. Every quarter of an hour place a small stone, or better still, fix a small stake at the extremity of the shadow; and then at the end of the day you will have the line described by the shadow. You will find it to be a *curve*! In London, about the beginning of May, the curve formed in twelve hours is the half of an ellipse, the greater diameter of which is about three times longer than the shorter diameter. Test it in different places, or in the same place at different times; and you will have the data for proving the Sun's own peculiar motion above a stationary Earth! The same data also go to prove the distance of the Sun from the Earth, and that the Sun is never more than three or four thousand miles off! This may be shown by *plane* triangulation; just as we measure the height of a tree, or a church steeple, etc. Thus the shadows of the Sun faithfully and silently testify that the Bible is right, and that "science" has, in this matter at least, been "falsely so-called." I. Tim. iv, 20.

Truly the heavens declare the glory of God, if we only know how to read them aright. The shadows, like the handwriting and words of the angel, are indeed written upon the wall; but cannot the wise men of Babylon, the astronomers, the stargazers, and the soothsayers, make known the interpretation thereof unto the king? By the shadow of a column in a square, by the shadows of the lamps in the streets, by the shadows of the trees in the fields, and in a hundred other ways, does the Sun (and the moon), like a faithful witness in heaven, silently and daily give evidence of the truth of God, and the lie of the Serpent. Psa. lxxxix, 37. It testifies to its own proper motion, and to the immovability of the earth. Psa. xix, 6; I Sam, ii, 8. Nature and the Word of God have one voice; and they both speak the Truth. They both alike testify that the "lights" of Heaven *above* circle around an "outstretched" and stationary Earth *beneath*; and that this Earth (or "dry land") again rests, like a great float, upon the waters of the great deep, or "abyss," *below* the Earth. The fact that the surface of these waters is *level* also proves it. All the ancients believed it, the prophets, and wise men of old; the Apostles, and early Christian writers; our own forefathers; in short it has been the belief of all the best men in the world for over five thousand years! See Gen. i, 2, 10; and xlix, 25; Ex. xx, 4; Psa. xxiv, 2; and civ, 6; Luke viii, 31 (Rev. Ver.); and Rev. xx, 3.

"If it shall turn out that Joshua was superior to Laplace, that Moses knew more about geology than Humbolt, that Job as a scientist was the superior of Kepler, that Isaiah knew more than Copernicus . . . then I will admit that infidelity must become speechless for ever." Ingersoll's Tilt with Talmage.

THE CONTENTS OF OUR LETTER BOX.

Dear Leo Castle,—Thank you for your encouragement. It is helpful at all times when we encounter so much opposition. My meeting was a success, but we did not have as much opposition as I could wish for. I enclose 7/6 as a thank-offering for your kindness to us. This small amount represents the goodwill, the kindly sympathy, and the humble efforts of some of the working men in South Shields, who attend our open-air meetings.

It is with heartfelt thanks that we acknowledge receipt of above "thank-offering" from the open-air Church, Market Place, S. Shields. Such contributions are exceedingly encouraging as it is practical evidence that their hearts are in the work, and not merely their lips.—[ED.]

Dear Sir,—The "Earth Review" is better than ever this quarter. The article on "Universal Gravitation" is a bomb in the globular camp that they

cannot extinguish! When shall we have our "Review" monthly? It is most urgently needed, I will do my very best to make it better known. The astounding admissions made by a man of such "scientific" eminence as Professor W. B. Carpenter, respecting the fundamental basis of Newtonian astronomy which he and others have carefully educated the Public into believing to be a verified and demonstrated law of nature, is crushing evidence against the globular theory. This must certainly contribute to a wholesome reaction, and cause a little more respect for Biblical astronomy and cosmography which is at all points irreconcilably opposed to modern astronomy—and is like a dash of cold water in the face of that "public opinion" which they have carefully manufactured. "The mills of God grind slowly—but they GRIND!"

R. BRADLEY.

Dear Sir,—The proceedings of our rotundity friends, from time to time, reminds me very forcibly of an old saying which I have heard repeated many times, viz.—"Let them have plenty of rope, and they will hang themselves." The proceedings to which I allude are the levelling operations of which we frequently hear. In looking over the Parliamentary reports of a discussion in 1867, on the Suez Canal question; I find that after a long discussion they concluded that there was not a difference of 30 ft. but only 2 ft. 6 in. between the level of the two seas. But the Astronomer Royal said that he was tolerably familiar with the work in French which was drawn up by the joint commission of Engineers of which the late Mr. Stevenson was one, and his impression was, that after correcting the enormous errors in previous surveys, he found no perceptible difference in the mean level of the two seas! He would be glad to be certified whether there was, in fact, a difference of 2 ft. 6 in. between the

mean levels. In reply Sir W. Denison said, he was assured by the French engineers on the works, that the MEAN LEVEL OF THE TWO SEAS WAS THE SAME. [Mediterranean and Red Sea]. In the *Echo* of June 6th 1887, I read, "In the report on the Panama Canal submitted to the Academy of Sciences by Mr. Bouguet de la Grye, who is, says the *Times* Paris Correspondent, "the highest authority in such questions," he states that it would be quite useless to construct locks. HE REMARKS THAT NO DIFFERENCE OF LEVEL CAN EXIST BETWEEN THE ATLANTIC AND THE PACIFIC.

Then in the quotation by you from *The Age*, of Aug. 5th, 1893, respecting the Baltic and North Sea Canal, we are informed that THE SURFACE OF THE TWO SEAS ARE LEVEL. Next we have a report of recent levelling operations carried on in Russia. See *Daily Chronicle*, Feb. 12th, 1895, in which we read, "The deadly flatness of the great plain of Russia is remarkably shown by the levelling operations now completed." Accurate observations were made at 1,090 stations, yet the highest point noted was 1,086 ft. A more important, though less expected, result was THE ESTABLISHMENT OF THE IDENTITY OF LEVEL BETWEEN THE BALTIC, BLACK, AND AZOFF SEAS. Well, if the Mediterranean, the Red Sea, the Atlantic, the Pacific, the Baltic, North Sea, Black Sea, and the Sea of Azoff are level; we may soon have to ask where we are to find rotundity. We may have to wait for an answer as notwithstanding these surprising discoveries of level surfaces, no doubt ships will still follow the natural order of things, and on these level surfaces disappear as heretofore, viz., "Hull first."

Yours truly,

R. ALFREY.

Sir,—In the latest text book on "The Movements and Shape of the Earth," by J. Norman Lockyer, F.R.S., &c., &c. *ad lib.*, I find chap. III. headed "The Earth is a sphere," and this without the slightest attempt of proof in the two preceding chapters,—this method is known as begging the question, in the most beggarly manner too—however, the Professor proceeds to quietly trot out the "Vanishing Ship Trick," which is dubbed a *familiar fact* in proof of sphericity, and then cites the disappearance of the constellations The Pole Star and The Great Bear, on sailing south; lastly, the "Analogy Juggle" is performed, viz., as the sun, moon, and all the known planets are round (spherical) therefore the earth must be also; this surely may be called "A scientific-physiographical-climb-down," for where and oh where are the other so-called proofs of the schools? echo answers, gone where the above mentioned three must eventually go!—to the lumber heap.

Further on in the same *enlightening primer*, the *supposed* movements of this *supposed* sphere are *assumed* to be proved by sundry humming-top arrangements called "Gyroscopes," pretty illustrations of which are given, and then follows Mons. Foucault's smashed-up "pendulum business," just to attempt to put some sort of face of reality on the fraud, and still more entangle the dupes who are compelled to cram themselves with such husks, to procure Government and Clerical appointments, whereby to secure an existence; meanwhile the professors who ladle out such stuff and nonsense, complacently pocket the fees, and adorn each other with long sounding titles, such as, F.R.A.S., F.M.S., and A.S.S.

Yours respectfully,

H. H. SIMS.

Dear Sir,—Herewith by this post I send back MSS. and cuttings for the use of which I am extremely obliged.

The information on the dipping needle is very good and will be useful, I find people often ask questions about things they do not understand anything about.

The article on Gravitation in last issue is the very thing required, and proves that they have exploded their own globe!

In levelling, I work from ordnance marks or canal levels to get the height above SEA LEVEL.

I nearly always use canal levels, knowing that within six inches the levels are always the same I work sometimes from what is known as the Wolverhampton Level, this is said to be 473·19 ft. above the SEA LEVEL; sometimes I work from the Birmingham LEVEL, this is said to be 453·04 ft. above the SEA LEVEL. Sometimes I work from the Walsall LEVEL, this is said to be 407·89 ft. above the SEA LEVEL. The puzzle to me used to be, that though each extends several miles *each level was and is treated THROUGHOUT its whole length as THE SAME LEVEL FROM END TO END; not the least allowance being made for curvature*, although if the earth be a globe, 112 feet ought to be allowed.

In the following levels I give distances in miles ignoring fractional parts. Each level is connected by locks to the others, but there is no lock from end to end on the levels. I do not take any notice of bends, but take straight lines from point to point. Let us take the highest level first:—The Wolverhampton Level, viz—

	473·19 ft. from the end of the
first	Cannock extension to Smethwick
line	is 13 miles. $13 \times 13 = 169 \times 8 = 648 = 112$ feet,
second	Cannock to Whiton, 9 miles
	fall = 54 feet.
third	Whiton to Smethwick, 9 miles
	fall = 54 feet

Let us now take the Middle Level, viz.—The Birmingham Level 453·04 feet.

first	Birmingham to Tipton, 7 miles
	fall = 32·8 feet.
second	Tipton to Selly Oak, 8 miles
	fall = 42·8 feet.

Let us now take the Lowest Level, Walsall.

This is 407·89 feet above the Sea LEVEL.

first	Walsall to Great Bridge, 5 miles
	fall = 16·8 feet
second	Clarke's Lane to Perry Bar Stop,
	6 miles fall = 24·0 feet.

No matter what part of the level is used in each, the same figure is used as given above for each separate level, whether the ends or the middle, no allowance for the "curvature" said to exist is ever thought of let alone made. The study of "Earth not a Globe" by "Parallax" sets the matter in its proper light, In a conversation with

one of the Civil Engineers in this district, after some amount of argument on each side as to the reason why no allowance for curvature was allowed, he said, he did not believe anybody would know the shape of the earth in this life.

Yours faithfully,
T. WESTWOOD.

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.

C. HARPUR.—Thanks for your letter, which we cannot insert.

H. VETTERLING, and others writing on the *same* subject.—When absolutely practical measurements South of the Equator are made, we are sure that they will be in confirmation of *the fact* that the "Earth" is a vast irregular Plane. It is an utter impossibility for one fact to contradict or set aside another fact. Zetetics South of the Equator are seeking the desired information. We accept Truth from anyone. May we suggest that your question; in fact ALL questions relating to the subject, "In what direction did Mr. C. E. Borchgrevink see the Southern Midnight Sun," be sent direct to that gentleman, and his answer sent direct to us for publication. His answer should be confirmed by the signature of the whole of the crew, for the cabin-boy's statement on such a matter is equally as good as any Professor's. Thanks for papers sent.

J. BRADLEY.—Hearty thanks for your promised help. The quotation, "We shall take for granted from the outset the Copernican system of the World," etc., will be found in *Herschel's Astronomy*, p. 4, 5.

G. H. COWPER.—Thanks for your kind letter and cutting. We have no reasons to believe that the statements made by Mr. Borchgrevink are either true or false, anyway they do not affect the fact that the surface shape of water everywhere is LEVEL.

EDITORIAL NOTICES.

Please to ask for "The Earth—not a Globe—Review." at all Newsagents, Reading Rooms, and Railway Bookstalls. To be had direct from the Hon Sec., post free, to any address in the postal union for 10d. per year, in advance.

All monies for the Society must be paid direct to the local Vice-Secretaries, or direct to the Hon. Secretary and Treasurer, Jno, Williams. Post Office Orders to be made payable at Sumner Street, S.E.

—THE— EARTH-NOT A GLOBE-REVIEW.



A Sectional View of the World as a Plane.

VOL. I. No. 1 (MONTHLY SERIES). APRIL, 1896.

PRICE 1D.

"UNIVERSAL GRAVITATION, A PURE ASSUMPTION."

BY LEO CASTLE.

NO. III.

Dedicated to THE EDITOR of *Reynolds's Newspaper*.

The silent admission of the impregnable position of Zeteticism leads us to believe that the Editor of *Reynolds's Newspaper* has read the following or similar extracts:—

"We have any quantity of hypotheses thrust upon us as discoveries, which are merely false knowledge that later science will have to *unlearn*! As a matter of fact the fashionable notions which are paraded as Science stand only because their advocates shut their eyes to realities, make assertions with little or no fact to start from, ignore the facts which do not suit them, refuse to meet objections, and ignore any really scientific (that is provable) explanations which do not agree with the specialistic facts."—SIGMA, *English Mechanic*, Oct. 5th, 1894.

"The repetition of a blunder is impertinent and ridiculous. To liberate oneself from an error is difficult, sometimes indeed impossible for even the strongest and most gifted minds. But to take up the error of another, and persist in it with stiff-necked obstinacy, is a proof of poor qualities. The obstinacy of a man of originality when he errs may make us angry, but the stupidity of the copyist irritates and renders us miserable. And if, in our strife with (Sir Isaac) Newton, we have sometimes passed the bounds of moderation, the whole blame is to be laid upon the school of which Newton was the head, whose incompetence is proportional to its arrogance, whose laziness is proportional to its self-sufficiency, and whose virulence and love of persecution hold each other in perfect equilibrium." "Through the whole of Newton's experiments (?) there runs a display of pedantic accuracy, but how the matter really stands, with Newton's gift of observation, and with his experimental aptitudes, every man possessing eyes and senses may make himself aware. It may be boldly asked, where can the man be found, possessing the extraordinary gifts of