

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

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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 the heavens, over a stationary dial plate, 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.

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ZETETIC REFRACTION.

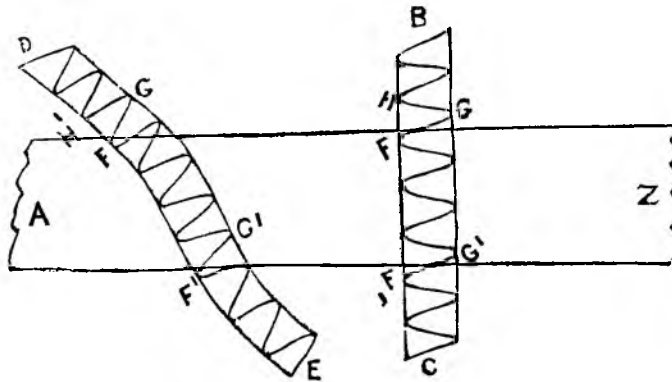
By James Naylor.

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, "balks 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

effect of this law upon the motion of light, we shall see our road to success. For instance, let us take a piece of glass where we know that a ray of light striking the surface obliquely, will be refracted in what is termed the direction of the vertical. Now this statement is far too empirical to be satisfactory. It merely expresses the relationship of refraction to the vertical, but tells us nothing as to WHY refraction takes place. The statement is indeed a parallel to that of the old philosophers, who explained the rising of water in a pump, as due to the circumstance that "nature abhorred a vacuum." And yet the cause of the refraction is self-evident, if we will but examine more closely, and is due to the fact, that light as a force, turns in the direction of the least resistance. We will illustrate this point, and take for our purpose, the undulatory hypothesis as the mode in which light is propagated.



Let A Z represent a plate of glass upon which two rays of light are impinging, one (B C) direct, and the other (D E) oblique. Now we know that the progress of light is hindered when passing from one medium into another, which is more compact or homogenous, as for instance, from air into glass. Indeed the plate A Z might be increased in thickness to such an extent as to prevent the passage of light altogether. Such being the case, it is evident that each successive undulation will be unequally hindered as it reaches the glass, thus causing portions of the light to move with unequal velocity, and create in the ray a tendency to move from its parts and along the line of least resistance. For instance, the undulation F G in the direct ray B C, is hindered more at the F side of the ray when F first enters the glass, than at the G side, which is still moving in air. The latter therefore moves more rapidly than the former, and in the meantime describes part of a circle, of which F may be considered the centre.

This gives to the ray for the time being a change of direction along the line of least resistance. As, however, the same process takes place with the next undulation G H, when the G enters the glass, only in the opposite direction, there is a regular compensation established which enables the direct ray of light B C, to pass through the glass without change of path, and only with a diminished rate of movement. But with the oblique ray D E, the case is totally different. There we shall find that every undulation is always hindered on the same side of the ray, and consequently gives to it a permanent bias from the paths it has been previously describing. To illustrate this, we note that the undulation F G in the oblique ray, would evidently be first hindered at the F side of the ray, the same as in the former case. But so would the next undulation G H, and every succeeding undulation also. As a consequence the oblique ray is constantly turning from its path along a curve, of which F, as in the previous case, may be considered the centre. In other words, while in the direct ray, the point of hindrance is alternately on the F & G side of the ray, in the oblique ray, the point of hindrance is always on the F side, causing a permanent change of direction towards what current teaching calls the "vertical," but which, to speak more accurately, is along the line of least resistance.

Having thus seen why a ray of light refracts on entering obliquely into a dense from a rarer medium, let us now proceed to note its behaviour under the opposite conditions, viz., on emerging from a dense medium, into one less compact or homogenous. We will at present leave in abeyance the behaviour of the ray, on passing obliquely through a medium of equal density. Let us turn again to the supposed plate of glass A Z, and note the undulation F G, in the direct ray B C. Now here we see the F end is moving in air, while the G end is still subject to the greater resistance of the glass. There will consequently be a tendency in the F end to turn along a curve of which G is the centre, or, to use current language, a movement is made in the direction of the horizontal. However, when G emerges from the glass into the air, the same as F, there is the same tendency, only in the opposite direction, and there is manifestly therefore, no departure from its original path by a direct ray, either on entering or leaving a relatively denser medium. But not so with the oblique ray D E. There, not only is the F end of undulation F G moving in air before the opposite end G, but also the corresponding end to F in the next, and every succeeding undulation, causing all of them to move along a curve, of which the end of the undulation in the glass may be considered as the constant centre.

We have hitherto assumed the undulatory theory as to the propagation of light, but it makes no difference to our argument if we sup-

pose the emission or corpuscular theory (or indeed any other) to be the correct one. In the theory of emission it simply means, that in an oblique, the atoms or corpuscles of which it is composed, are resisted more on one side than the other of the ray, and must therefore of necessity obey the law which compels all unequally balanced forces to move in a direction of a resultant of all other forces acting upon them.

Again our conclusion is not vitiated if we call to mind that the length of an undulation is very small. We are not concerned with the whole length of an undulation, but with the total number composing the ray. To simplify our statement, we have only taken one undulation, and the shorter this is, then the more there are in the total area of the ray. All the difference is, that some undulations will be more resisted than others, but the effect still remains the same.

It will be noted that the greater the obliquity of the ray, so much the greater will be the deflection from a given course. If the original path be near to the vertical, then there will be little or no refraction, but if it be near to the horizontal then the refraction will become very great, because the amount of force that is unbalanced is greatest. This accords perfectly with the facts, and corroborates our conclusion; that the refraction of light, when passing obliquely through different mediæ, is in obedience to the law of all forces, viz., moving along the line of least resistance.

Instead of the conventional teaching, viz., that light when entering obliquely a dense medium, refracts to the vertical, and when entering a rare one, it refracts to the horizontal, we may state our conclusions up to now, in words somewhat as follows: *Light, when obliquely entering media of different density, is unequally acted upon by them, and turns in the direction of the least resistance.*

Up to the present, we have simply pointed out a tangible and self-evident cause for the refraction of light, when obliquely entering different media, and have not disproved, but rather confirmed, existing teaching. In future papers we hope to show that the operation of this law of least resistance, in other directions, is not only destructive of some prominent astronomical opinions, but also a demolisher of certain havens of refuge, into which the revolving-globe believer too readily betakes himself.

To be continued.

ROUND OR FLAT IN 1895?

"Arrah, thin, Pat, do yez raily think the wor-r-ld is as round as that?"—pointing to a globe. "Av coorse I do!" "Thin phwat I can't get t'rough my skull is phwy the folks on the unther soide don't fall down into shpace." "Yez make me toired!" "Well, but phwy is it, I ax yez?" "Phwy, man aloive, heaven has given thim common sinse, an' they simply howld on!"

A COMING GENIUS ON THE GLOBE.

By H. H. Scroggins.

The globe on wich the sientifik foolosifers sa we liv, iz lik a noringe thay sa, ownly not the same culler, an thare iz worter an mud in sum plazes owtsid ware thare ort to be rine; an erth, stonz, an all sortz ov uthur things inside ware thare ort to be juse and pips; the globe iz ski-rockitin awa throo spase thay sa, at abowt 19 miles evere sekond, or 4 times kwiker than a flash ov litening moovz, besides goin-it in 3 to 6 uthur derekshons *all at the same time*; u kan chooz ow meny moshons u lik for yor-selv, az it dont mak a bit ov difrunz to Theoretikel-Sienz, an the lernid-asstronomers wont kik up a fuss with u abowt it. It iz funne no wun ever sor or even felt it moove, iksept, wen thare iz an erthquake, for then thay *do feal it*; an ow thay mak traks sharp to get away u bet. Wel thay sa that this wonderfool globe woz furst ov all oney gas or sumthing, or a tine bit orf a sun or sumthing, thare iz ene amownt ov thez sunz thay sa, an ov corse thay no, praps! an then it began to stik together sumhow, an waz pelted with meters (not gas meters) to mak it bigger; an then in the corse ov bilyuns ov yers, it got lik thik-ot stif-peace-puddon; an at larst it kooled on the owtside, but not all throo, and so formd a crust; this crust we liv on ware it iz dri enuff an we kan afford to pay wot iz kawld rent, wich iz poketed bi wot iz kawld a lan-lord hoo thinks this globe waz wurkd-up for iz pertikler benefit, an hoo wood let on lease all the ayr an worter if he kuud grab them az well. All this time this globe iz eld together with sumthing thay kall Gravy-tashon (the stikin part ov this stuf mus be in the tashon, az thare aint much stik in gravy, an (leastways not in that we bois cum akrost) this gravy-tashon woz fownd owt bi a man hoo woz sum part ov iz life (at tennerate) a bit barme, or az sum sa loone, or mad, that iz: iz name woz Izak Nootun an thay arfterwards cawld im Sur-Izak Nootun wich woz polite if nuthing elz; sinz that time thay wurshup im lik; wun thing thay dident arst im, ow he noo all abowt it, so he dident trubbel much to iksplane, iksept to sa it woz ony wun mor ov iz suppozez, an sed he found it under an appel-tree, so that iz neer enuff for this wonderfool gravy tashon wich stiks all everything on to this globe an yet nun ov us or ennothing dont feal it stik at all, iksept we git wakz (cobberlers) on owr bootz, an it aint-fare to wak us bois becorz we dont no all abowt it; if we arst owr skoolmarsters orkwurd questons ow this or that iz, thay just shut us up with Gravy-tashon or 5 or 6 yarns thay kall proofs; thez proofs, mi big Unkel sez, *are all bosh*, an kan be blown to bits enne-day bi enne-wun hoo az got the tip from the rite sorse; however, let me see, this iz wanderin from the subjic sum, as thay

sa in Ameriker, as the globe thay sa, iz 25,000 miles rownd sumware, but thay dont no ow far it is rownd wot thay kall the south pole, wot-ever and warever that iz, *an it seems az if thay dont want to neether.* This globe iz 10,000,000,000,000 tuns in wate (thare aint no od ownces) or sumthing lik that, Mister Professor Proctor sez all about it in iz book, an az he woz the gratist asstronomer on erth, ov corse he new; this jus reminds me, that this blessed globe az got 2 axes (sum sa 3) not lik we chop wood with, but sumthing elz wot thay sa this globe wurls on, or round, or sumthing; an it is a puzler to us bois ow thez axes dont git of an ware owt, or stik lik owr bike axels wen we dont greese em; an ware you wood think it wood git hottist, it iz coldist an vice-versa (thatz Latin) az we hoo ar edjukated at skool sa. Mi cuzon wot az bin to Orstralyer (that iz a lump ov grownd stikin owt ov the oshuns-sawlt-worter all upside-down) sez he dident no he woz upside-down wen he woz thare, an dident no wen the upsidedownin tok plasz; but wun ov is mates swerd he woz wunce, an allso new the globe woz wurlin wyel he woz borelin "Dunno ware e ar!" but that woz ony arfter he ad ad the biggist part ov a bottel ov wot thay kall whisky wun nite; however now, this slite degreshon aint sience ene-ow-atall; an wen the cumpass wurkd all-rite all the way thare, and wen it wos thare, my cuzon sed he rekond this globe job woz a regliar fake an reel gammon all throo, speshally arfter he ad tride to mak iz plum-bob fall up, down in that Antipodeez, az well az kaarfulle wotchin iz uther mates sperit-levels wich all wurkd rite nuff withowt enne fakement; but ov corse thooz chaps aint sientifik lik our skoolmarsters and the asstronomers, so that settells it so far. An fance ow ekstrawdinary it iz, for all evrybody an evrything, an all the worter an oshuns an ships, an evrything, az well az all the sheep, big-otels, dust-yards, cherches an publik-cowsz, az well az bois, owt-o-wurks, Bishoþs, Socialists, land-prospekters an gold-miners, an in fakt evrything in them Antipodeez all to be allwoz upside-dywn, hangin just lik dubbel-stik-farsted-flies on a seeling hed-down, an all wurlin orful, an never gittin the blud all up in thare heds or gittin flung orf into—thare! it maks yer dizzy to think ov it, let ulone do it; an yet the land-menoperlizers are bizzy dewin evrybody thay kan, an the Govinment iz umbuggin an bamboozelin the peepel, an thay ar all movin abowt, an wen thay git a charnz, cheet wun anuther (legully mind) just lik thay do over ear, wich iz neerly on top ov the globe sumtimz, let alone them az iz stikin owt orf the sidz in Africa, China, &c., cutting each others throats, &c., an all a-wurling orful; wi it is reele asstonishin, aint it? an all owing to that stuff or wotever it iz—that gravy-tashon-fakement i meen; the-wot-goez-up-must-cum-down-fackt iz humbugged abowt yer no, just to sute this foolish gravy-globey-tashon-theory i rekond.

Well this blessed globe az got oops rownd it thay sa, not same az beer-tub-oops, but ony moor suppozez to wurk in lik with the globe-suppoze, wich woz the furst suppoze, understan? well, wun ov thez suppozed oops is wled the Ekquatur an a nuther iz kawled the Ekliptik, an thez suppozed oops—wots that? jiggerd if it aint ranein! O i sharnt sa no moor abowt this bloomin subjik now, i shal go an av sum fishin in the levull-kannel, az they bite better in wet wether, but i kuud go on sain lotz moor abowt this suppozed wunderfool globe if it woz better lhen fishin, an woz not such confounded-brain-foggin-rot and gammon.

SCIENCE'S QUARREL WITH THE BIBLE.

*Extracts from Lectures by Walter Rowton, Esq.**

It is all very well for our philosophers to dismiss the Bible as having nothing to do with the technicalities of Science, but they have no right to take that course upon a merely superficial acquaintance with the Book they dismiss. I say "superficial acquaintance," for hitherto our men of science have shewn only that. Which of them at any time has learnedly grappled with the Bible case? The frequent assertion, "There is no case to grapple with," simply proves my point; our men of theoretical science are not accomplished on that side of the subject, or they could not say so. Not one of them apparently has studied the Book with anything like method. Grotesque explanations of isolated texts to square them with their theories they obviously oppose—these are plentiful enough; but exhaustive treatises in refutation of Bible Science as a systematic whole—where are they? The subjects upon which the Bible is said to speak incorrectly are four: The First Great Cause—the Origin of Man—Geology—Astronomy. Upon these, it is confidently affirmed that the Bible records are but traditional beliefs. But these four resolve themselves into one; for if the Cosmogony of the Bible, or Origin of the Universe, be true, the great pivot principle upon which turn the Philosopher's First Cause, Darwinism, the "periods" of Geology, and the elaborate calculations of Astronomy, collapses like a burst soap-bubble.

This, of course, is very startling, and we may well pause ere we recommit ourselves to the truth of the Bible Cosmogony. I say *re*-commit ourselves, for long ago, in deference to statements of the then scientific philosophers, that Cosmogony was virtually given up; and before reverting to it, not alone have we to dispose of Kepler's and Galileo's and Copernicus's stated facts, consolidated by the speculations of Newton, Herschel, Tyndall and Proctor, but also we have

*These Lectures (out of print) were published in 1876.—ED. E. R.

to take into account the formidable difficulties, owing to the ways in which we stand pledged, of making a recantation. We are committed to Astronomy at variance with the Scriptures: we have surrendered more than Bible dates at the bidding of the Geologists: the theories of Herbert Spencer and Darwin have myriads of adherents amongst the cleverest and most influential of the age's teachers and leaders: and a recoil from these latest and loftiest results of human reasoning and observation upon the old Bible Cosmogony, looks such a relapse from the zenith of civilization into almost aboriginal barbarism, that we may well hesitate ere consenting it should occur.

But here it is proper we should look for a little at the drift of those technical teachings which from time immemorial to this time have impugned the scientific accuracy of the Bible.

The most eminent living representative of the heathen philosophers, and at the same time the most honoured spokesman in the name of Science that England possesses, recently said—and his words, reproduced by all our newspapers, have been the well-learned Science lesson of millions since: "Abandoning all disguise, the confession I feel bound to make is, that I prolong the vision backward across the boundary of the experimental evidence, and discern in that matter, which we in our ignorance have hitherto covered with opprobrium, the promise and potency of every form and quality of life." And again: "All religious theories, schemes, and systems which embrace notions of comogony, or which otherwise reach into its domain, must, in so far as they do this, submit to the control of Science, and relinquish all thought of controlling it."

This, of course, embraces the Bible Cosmogony, it therefore, must submit to the control of such principles as these. By that which calls itself Science, we are authoritatively directed to give up believing in the personal Creator of the Scriptures: to own only a possible First Cause: to accept the heathen atomic theory: and to discern in "matter—the promise and potency of every form and quality of life;" which, if there be a God, inevitably includes the life of God Himself. That the heavens declare the glory of God; that the firmament showeth his handiwork; that God made man; that Creation, as biblically described took place, nay, that Creation as a special work occurred at all: all this we are summoned to surrender. And for what? For the dear sake of a materialism which, when we fail—for aught that has ever been taught us to the contrary—shall receive us into as good as everlasting nothingness! "Survival of the fittest"—a blessed hope truly! for, as their times come, "the fittest" die as unavoidably as others. Everlasting dust and ashes, that appears our promised end; and who but is speeding towards it? As in this

life there is vastly more pain than pleasure, if there be indeed no afterwards, no day of reckoning, why does not science recommend suicide? Depriving us of our Bible hope, and giving us none other—by all means everlasting dust and ashes; and the sooner the better. Science has no right to devise schemes for prolonging life; with her views, it is the refinement of cruelty.

"But it is not Science's business," I am reminded, "to do more than delay our arrival at mother earth; at the grave's mouth her duties cease. To provide for the Afterwards is Faith's work." Yes; and to enable Faith to do it well—she invalidates her Bible! "Oh, but she means not to invalidate the Bible's faith: she only invalidates its science." Nay, but these are inseparable: the Bible science is the Bible faith's platform: they stand or fall together. Does that require proof? it shall have proof, overwhelming proof in my next lecture.

Meantime, let me show you that modern science really does her utmost to invalidate the Bible *Faith*.

With reference to modern astronomy, *The Daily Telegraph*, July 6th, 1875, says:—"Nothing has so changed the *beliefs* of society as the discoveries of astronomy;" and after naming approvingly our larger conceptions and widened theologies, it adds the amazing revelation that "All the ancient theologies were constructed upon the *Ptolemæan* notion that the earth was the centre of the universe, and that the sun, moon, and stars were hung in the void to lighten it, and for signs and seasons." With Claudius Ptolemy therefore, born Anno Domini 70, originated this, the Genesis Cosmogony! Did not I rightly say, that in the cases of scientific men theological knowledge was not equal to technical? But what is the drift of this anachronism? Evidently to impute to one of ourselves the scientific teaching of the Scriptures, and so to destroy veneration for it.

The modern astronomy, beginning as a system with Galileo, together with "the moral sense in man," according to the *Telegraph*, "really furnish the foundations of a *natural religion*, to the vast and imperative demands of which the official teachers of dogma must *advance*." "All theories of Revelation and Divine Government," it continues, "have, since the discoveries more especially of Newton, had more or less to adapt themselves to the ideas of modern astronomy," by which, so to speak, "the breath of theology has been taken away." So you see the Bible is not considered an *actual* Revelation, but only a *theory* of Revelation, with a mortal breath, "which has been taken away." In effect dead, if its sentence is to be revoked, it must worship science. Its teaching is so inferior to "natural religion" based upon modern astronomy and moral intuitions, that instead of natural religion advancing to Revelation, it is *our theory*

of Revelation which must advance to natural religion.

"Not," adds the *Telegraph*, "until the professors of theology address themselves in earnest to the vastly larger demands which the minds of men now make for DOCTRINES *commensurate with scientific teaching*, will religion and morality come up abreast of astronomical truth." So far from the Bible being the one truth-test to explode all error, now it is modern astronomy which is the truth; and the only doctrines "commensurate" therewith, are those of a "natural religion," compounded of itself and "the moral sense in man." As for the Bible, its doctrines *not* being commensurate with scientific teaching; its religion *not* being natural; its respect for the moral sense in man *non-existent*; it never could have been the truth: obviously not, or it would be still. For many ages it has been a very good substitute; but now it is bygone, worn-out; it has been completely superseded by modern science.

Of course, if our Bible *is* this superseded "theory of Revelation," man's guaranteed eternal life is not worth the page it is printed on: for how can a God whose promises were put into His mouth by the theorists who invented Him either undertake or fulfil an undertaking? "THUS SAITH THE LORD!" Out upon ye, Moses, David, Isaiah, and the rest! Your God is your delusion! He never spoke a word, either to you or any one else!" That is the legitimate outcome through the Bible "a theory of Revelation." And if that is not an invalidation of our *Faith* by modern science, what else to call it, I know not. But modern science having neither proof that our Revelation is no more than a theory, nor colourable pretext for supposing so, why does she obtrude that statement? Why? because she has started in opposition: and like some shabby tradesman, she puffs her own article at her neighbour's expense. "If you want true science, the genuine article, deal with me. Next door not to be depended on. The concern is a sham—its proprietor a myth; and its pretended science, not science at all!" Guilty of this meanness, does modern science deserve support? Our Bible a theory! its revealed God a non-entity! I call upon science to prove the scurrilous libel, or withdraw it.

Modern science has long had its advocates even in our pulpits; but Christian ministers aware of its latest pretensions, and who hold with it notwithstanding, have a difficult task before them. Still Sunday by Sunday, drawing for their analogies upon modern science, they must now publicly reconcile what they themselves denounce as poisonous grapes with that producing stock they hitherto have maintained a true vine.

I wonder if Dr. Tyndall foresaw that the legitimate recoil from such teaching as he gave at Belfast would assuredly be the re-con-

sideration by genuine Christendom of the whole of its relations with what is called science, with a view to their abrupt and final termination? He might have done so; he might easily have surmised that sooner or later his denial of the Christian's God would certainly be followed by their denial of that science in whose name he was selected to speak; and not in part, but altogether: for science, consistent with herself—her past must be of a piece with her present.

The most of us, in our innocence, have all along been believing in the beautiful lady who calls herself science, as "the handmaid of religion;" so she at one time delighted in representing herself, and we ever took her at her word. Never dreaming of any unchristian motives underlying her fair professions, we hitherto have listened to her counsels and been gradually guided by them. When she explained that the Bible Astronomy, Geology, Geography, and so forth, were not true, nor intended to be true, though the bulk of us were not so educated as to be able to follow her through "the experimental evidence," yet, considering she spoke in the interest of that religion whose service she professed, we implicitly believed her, and, dupes as we were, gave them up. Having a wonderful opinion of her cleverness, and unbounded confidence in her rectitude, it never once entered our minds she had a disguise to abandon. But now—now she has succeeded as she thinks in committing us to theories we must follow to where she herself stands; now, "abandoning all disguise," she exclaims, like Elihu of old, "I am full of *matter*," (Job xxxii. 18); not Elihu's, however, but a very inferior matter. Elihu reads forward—his matter is God: she backward—her God is matter.

So far as Christians are concerned, Professor Tyndall, whether he intended it or not, has re-opened the whole scientific question: and should it be held a kind of Quixotism to tilt in these days against such stone-wall conclusions as those of Galileo and Newton, pray as Dr. Tyndall been guilty of a less Quixotism by his denial, in this the nineteenth century of Christianity, of the Bible's God?

The fashionable course, I am sure, is to doubt Scripture and believe science: to her our perpetual cry is for more; so far from questioning the truth of the incredible tales she tells; so far from treating her as she treats the Bible, we are agape for greater marvels; and we swallow them whole. But is this reasonable? Why should Scripture, without proper knowledge of it, be doubted? and why should science, with no knowledge of it, be believed? The doubting spirit is by no means a bad one; yet when our spirit doubts according to its prejudices—strains at a gnat and bolts camels by the dozen—then, its doubtings, like its similar beliefs, are both foolish and mischievous. Instead of believing Scripture and doubting science, or believing science and doubting Scripture. for the sake of fairness, let us begin

de novo, by doubting both, reserving belief till doubt is satisfied.

"But how is it possible," you may ask, to doubt science's proved facts? We would gladly accept the Bible cosmogony if we could, but how can we? The exact sciences shut us up to the conclusions that the Bible astronomy is wrong, that its geology is wrong, that the earth, so far from being the centre of the universe, is a mere speck in it; that the earth is not flat but round, that it is not moveless but moving. How is it possible to escape these impregnable facts?"

Our duty will be to inquire if these stated facts *are* impregnable. But, meantime, this also we must consider: if we continue one by one to desert the Bible positions, as we have been doing, if we associate with the holders of these views whensoever they elect to take another step, as they say, in "advance," the alarming likelihood is, that beginning with the received astronomy, we shall get gradually but surely on to Tyndallism, Spencerism, and Darwinism, and end by not apprehending a creating and controlling First Cause. Consent with the philosophers that the Bible speaks unreliably from its presumably Divine side upon scientific subjects, and what is in the way of its similarly speaking upon all others? Consent with the wisdom of this world, against which the Bible itself warns us, and your God may eventually become, like his whose words have been quoted, a may-be, rather than a must-be; a dim human possibility, rather than a divinely revealed fact.

"And wherefore not, if that be really the truth?" Quite so; but is it? The philosophers having raised that question, and given their doubts in the form of beliefs; now it devolves upon the other side to give facts and reasons for the contrary belief that is in them.

In the complicated quarrel before us, we indeed are deeply concerned, and had need be very careful lest direct personal interest in the issue should bias our judgment of its merits. We have looked at the no longer disguised leadings of what is called Science, as she herself having invited attention to them, it was fitting we should: let us now give to them their proper place and influence. All they should cause is this: they should stimulate to extra carefulness in the search we are making into the rights and wrongs of this contention. Those of us who are Christians must not remember we are so to the extent of allowing our Christianity to blind our judgment; neither must those who agree with science be men of already made-up minds.

If we should find that science, so called, has an unanswerable case, let us say so, and honestly cast in our lot with hers. But, on the other hand, if we should be of opinion that the Bible positions are good, let us back to our allegiance, and, if necessary, defend them like men.

Into the examination of these positions we cannot go now: the task is a very arduous one, and must be reserved for my next lecture.

To be continued.

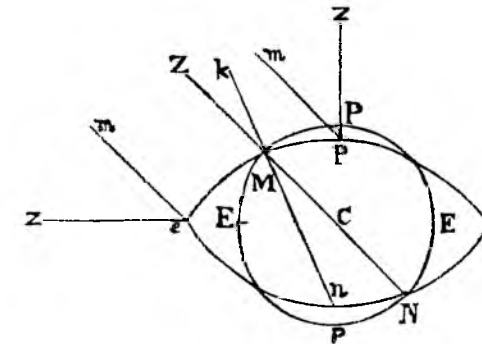
OUR OBSERVATORY.

"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.

Continued from our last.

This appears to me to be so self-evident, that I should hardly have thought it necessary to illustrate it by a figure, if experience had not convinced me of the difficulty of making even the wisest philosophers comprehend the force of a proposition when their minds are set against it; and that will always be the case, when they are called upon to retract as error what they have formerly held to be sound doctrine.



Let P E P E, in the annexed figure, represent the earth, as it was created, a perfect sphere; and p M e the same earth depressed at the poles and elevated at the equator in consequence of its centrifugal force. Now, upon the principle that all bodies gravitate towards the centre, it is clear that a star, which is in the zenith at M, would be just 45° from the zeniths both of the pole and of the equator.* The angle z p m is just equal to the angle z e m, and consequently there must be just as many degrees of latitude between p and M as there are between e and M; but the measured distance between M and p is a great deal less than it is between M and e. If the earth had been a sphere, the distance between M, in the latitude of 45° , and the pole would have been just equal to its distance from the equator; but in the present instance, the same number of degrees of latitude towards the pole are so much shortened (in consequence of the sinking of the poles) as the line M p is shorter than the line M P, while, towards the

* It can hardly be necessary to inform the philosophical reader, that, as the stars have no sensible parallax, the direction of the star, both at the pole and the equator, must be parallel to the line M.Z.

equator, they are so much lengthened as the line M e is longer than the line M E.

The Newtonian philosophers, in direct opposition to the principles which at all other times they acknowledge, have conceived the singular notion that the zenith of every place is directly perpendicular to the earth's surface, but they might, with equal propriety, have supposed that the zenith, on the side of a hill, was also perpendicular to its surface. A plummet suspended by a line will always show the direction of the zenith, and, if this must necessarily be perpendicular to the surface, why is it not so at the side of a hill? Upon their own principle of universal gravitation, the zenith of every place is directly opposite the point where the power of the earth's attraction is strongest, and if that point be not in the centre, it is at least in that direction where the greatest quantity of matter is to be found. Now, as there is more matter in the direction M C N than there is in the direction M n, which is perpendicular to the surface, it evidently follows that the zenith M must be at Z, and not at k; and consequently, if the admeasurements of these philosophers can be depended upon, the earth's figure must be directly the reverse of what has heretofore been supposed.

I shall here take the liberty of making a few observations upon the principle, by which these philosophers have endeavoured to ascertain the *exact* length of a degree of latitude in different parts of the world. For my own part, I readily allow that it may be sufficient to enable us to give a near guess at the number of miles comprised within the earth's circumference; but when so nice a calculation is required as the difference in the length of any two degrees of latitude, I do not think that the least dependence can be placed upon so uncertain a principle. It is acknowledged in a paper lately sent forth by the Astronomical Society, that our tables of refraction are not to be depended upon in very low altitudes; and how a correct trigonometrical survey can be performed, without making allowance for refraction, is beyond my comprehension. The spirit level can be of no service, unless we know what to allow for refraction, and we are informed by the highest philosophical authority, that our tables of refraction are not to be depended upon! Those philosophers, that were sent out to measure the degrees of latitude, either did make allowance for refraction, or they did not. If they did not, their calculations, in both places, must have been erroneous; if they did, as they could only have guessed at the proper quantity, they may not have allowed enough; and, in both cases, as the refraction is always greater in high latitudes than at the equator, a mistake must necessarily have produced a greater error in a high than in a low latitude. If they

were right, they could only have been right by chance, and chance is not to be admitted into a mathematical demonstration.

My own opinion is, that the earth is a sphere, because, as that figure appears to me to be most convenient, it is most likely that it was so formed at the creation; and the supposed differences in the length of the degrees of latitude may fairly be attributed to a mistake in the above-mentioned calculations, owing to the want of a correct table of refractions. I give this, however, merely as an opinion, for I have no means of proving it; and, as the discovery of truth is the sole object I have in view, I shall not attempt to conceal, that, *if the fact may be depended upon*, the spheroidal appearance of Jupiter, furnishes a powerful argument in opposition to this opinion.

If it can be satisfactorily made out that the spheroidal appearance of Jupiter is real, and not the defect of some optical deception, analogy will certainly be in favour of the Newtonian theory; but I contend that all the other premises of these philosophers either prove nothing of the kind, or directly prove the contrary. By their own principles, a change in the earth's figure, from a sphere to a spheroid depressed at the poles, instead of increasing, ought to diminish the differences, in the vibrations of a pendulum, that must necessarily be produced by the centrifugal force; and the length of the degrees of latitude, instead of increasing as these philosophers have reported, would have decreased all the way from the equator to the poles.

As I have never had an opportunity of measuring the proportions in Jupiter's figure, I shall not presume to give an opinion on the subject, but I know, by my own experience, that, without intending any deceit, we are all very apt to fancy facts which have no existence, whenever these facts are necessary to prop up our hypothesis. Let the figure of Jupiter however be what it may, it does not necessarily follow that the solid parts of the earth must therefore have been created in a fluid state; and if not, the centrifugal force could have had nothing to do with the effect.* If it had been necessary that the

* In the biographical sketch of the late Sir William Herschel, which has lately appeared in the "Edinburgh Philosophical Journal," it is stated that that eminent philosopher ascertained that the proportion which the polar axis of Mars bore to its equatorial diameter was as 15 to 16. Now the velocity of the centrifugal force in Mars is not more than half what it is in the earth, and yet we are told that the difference in the proportions of our polar and equatorial diameter is only as 289 to 290! Every one surely will allow, that effects are always proportioned to the power that produces them, and, in that case, I shall be glad to be informed in what way a minor power can produce a greater effect? One of two things then is evidently certain, either this supposed spheroidal appearance of Mars is deceptive, and, in that case, we have a right to infer the same in Jupiter's appearance, or their centrifugal forces have nothing to do with the formation of their figures. Again, if we may trust to appearances, Saturn is more flattened at the poles than Jupiter, and yet its centrifugal force is not near so great: but what is still more extraordinary, the late Sir William Herschel discovered that there is a great dissimilarity in the figures of these two planets, which certainly proves, either that these appearances are altogether deceptive, or else that their centrifugal forces have nothing to do with their production, for it is morally impossible that the same cause could produce dissimilar effects.

earth should have taken the form of an oblate spheroid, the all-powerful Being, who created matter out of nothing, had only to have willed, and it would have taken that or any other form he pleased. The Newtonian philosophers however are determined that the earth shall be indebted for its form to natural means alone, and thus, in order to get rid of a seeming difficulty, they run into a real absurdity. If the solid parts of the earth had ever been in a fluid state, the heaviest substances would naturally have sunk nearest the centre, and yet we always find that lead, gold, and all the heaviest metals, are resting upon substances that are lighter than themselves. Here no doubt I shall be referred to the systems of the geologists, and told of violent irruptions that have torn the earth up even from its centre. But in spite of all that has been said by the geologists upon this subject, the appearance of the different strata, even as they represent them in their treatises, indicate none of these commotions with which they are so fond of astonishing their readers. Where are the chasms reaching down even to the centre, which must have been the necessary consequences of these commotions? Why do the strata, for the most part, always incline in one direction, as if they had been gently lifted up by design, and not torn up by violence? These effects, if necessary, might possibly have been produced by earthquakes; but the same violent commotion that would have been requisite to lift the metals out of their beds, and toss them over those substances, which, in the order of things, must have been so much higher than themselves, would have broke these strata and scattered them in all sorts of directions, and it certainly is not in the nature of things that the chasms in all parts of the world, have been closed up.

The question concerning the true figure of the earth is of very great importance, especially to the Newtonian philosophers; for not only is it interesting in itself, but another of their hypotheses, by which they account for the precession of the equinoxes, solely depends upon this supposed change in the earth's figure. The Newtonian philosophers account for the precession of the equinoxes, by supposing that the accumulation of matter about the equator, which is occasioned by the earth's rotatory motion, is somehow or other, (for none of their hypotheses is intelligible), acted upon by the sun's and moon's attraction, by which means the equator is brought "sooner under them" than would otherwise have been the case.

"It has already been observed," says Ferguson, "that, by the earth's motion on its axis, there is more matter accumulated all around the equatorial parts than anywhere else on the earth. The sun and moon, by attracting this redundancy of matter, bring the equator sooner under them,* in every return towards it, than if there was no such accumulation."

* Dr. Brewster, in his Supplement to this work, has attempted to explain in what way this is brought about, but I confess that I am unable to comprehend him.

Now I have already shown that, with the exception of one analogous case, all the premises upon which the Newtonian philosophers have grounded their hypothesis, directly prove the contrary position; but admitting, for the sake of argument, that there may be an accumulation of matter about the equatorial parts, that fact will not at all assist them in accounting for the precession of the equinoxes. Let any one turn to the foregoing figure, and suppose the sun or moon to be placed in any direction he may think proper, and he will immediately perceive that, in the same proportion that any portion of matter in the earth is brought nearer either of these bodies, a similar portion will be carried further off. The loss of attraction on one side will just equal the increase on the other: the sum of both will be precisely the same, the centre of gravity in the earth will be in the same place, and how, in the name of common sense, can such a change produce any change in the power of the sun or moon's attraction? The only effect that could be produced by a change in the earth's figure, would be a diminution of the angle which the equator makes with the ecliptic, but that would not produce any change either in the places or the times of the equinoxes; which any one may convince himself of, if he will take the pains to represent it on paper by a figure; and consequently the Newtonian philosophers have endeavoured to account for this phenomenon by a cause, the existence of which is very doubtful, and which is altogether inadequate, even if it do exist.

The Newtonian philosophers, I have no doubt, will, as usual, effect to treat these observations with contempt; and I acknowledge that, though this is not the most honourable way, it is certainly the cheapest mode of putting down an adversary. It saves the expense of intellect, and, so long as the public prejudice shall be on their side, it will serve their purpose a great deal better than bad arguments.

WALTER FORMAN.

Bath, May 6th.

PLANE FACTS.

The German Emperor performed the ceremony of opening the gates of the Baltic and North Sea Canal in the spring of 1891. The canal starts at Holtenau, on the north side of Kiel Bay, and joins the Elbe 15 miles above its mouth. It is 61 miles long, 200 feet wide at the surface and 85 feet at bottom, the depth being 28 feet. NO LOCKS ARE REQUIRED, AS THE SURFACE OF THE TWO SEAS IS LEVEL.—*The Age*, Aug. 5th, 1893. This proves the World to be a Plane.

A QUESTION FOR ASTRONOMERS.

Does looking at the "maid in the moon" through a telescope, constitute an impertinent observation?

NOTHING PRODUCES NOTHING!

By Lady Blount.

There is nothing in Scripture showing that there are other worlds, but the contrary, for God made the Sun, Moon, and Stars to serve this Earth, "and God made TWO great lights; the greater light to rule the day, and the lesser light to rule the night. He made the stars also." And God set them in the firmament of the heaven to give light *upon the earth*, "and to rule the day, and the night, and to divide the light from the darkness: and God saw that it was good. And the evening and the morning were the fourth day." Now note—"In the beginning God created the heaven and the earth." (Gen. i. 1). After this Moses gives account of what God created on the first, second, and third days of creation; but not until the fourth day were the Sun, Moon, and Stars created: and the Maker's purpose in creating them is given, (*viz.*), to divide the day from the night:—for signs, for seasons, for days and years: and to give light *upon the earth*.—Therefore, I would ask the unprejudiced and candid reader to answer to him, or herself the following question:—

If perfectly unacquainted with the teaching of modern astronomy, would such far fetched and preposterous notions ever enter the mind that the earth is a whirling globe, consisting of less than one-third land, and over two-thirds of water—tearing away through space at a thousand miles per minute (which contrary to all reason and experiences, water being level and not convex—and contrary to the Bible which tells me that the earth is *outstretched* like a plane—having foundations—and that it should "not be moved for ever,")? See Isa. xlii., 5; Jer. xxxi., 37; and Psa. civ., 5. In the days of my youth my father used to tell me much about the heavenly bodies, as he took great interest in them and sometimes lectured on astronomy. He taught me that our earth was a "planet" moving and rotating round the sun with its attendant the moon, at the rate of about 1,100 miles a minute, which orbit it completed once in the course of 365 days. The sun being one million three hundred and eighty thousand times larger than the earth, and that *it was calculated* that we are *about* ninety-five millions of miles distant therefrom (different astronomers differing from time to time, and disagreeing one from another in the matter of just a *few* million of miles!) But I cannot forget that with all due respect to my dear father, (whom I loved very dearly), I never felt to believe it at all. And the words lingered in my mind *it is calculated*; and the thought came (if not in so many words), how is it possible to start a numerical calculation upon 0, or without a root and real fact and number, and I wondered as a child

will wonder where they got their starting point. The unit I knew was requisite before tens, hundreds and thousands could be reached—let alone millions and billions—and not being able to put my thoughts into words, I got tired of wondering, and gave it up. But now I have come to middle age, my attention is again drawn to the same subject, and I find that these calculatists have *no true basis* for finding the root number for their prodigious calculations, *for neither the Bible nor Nature supplies them any one fact as a basis for their speculating*. Nor is there *one* word in the Scriptures upholding the Globular theory—its alone support being "Science," which an inspired writer says is "falsely so-called." The root word of science—*scio*—means I know. But God's word says that they (the professors of science) do *not* know (Rom. i. 22, 25), which is further proved by their teaching being contrary to His written word—from which word we may learn (Gen. i. 7—9) that the Creator made a firmament which he called Heaven; and divided the waters thereby. "And God said, let the waters under the heaven be gathered together unto one place, and let dry land appear:" therefore the firmament, heavenly bodies, and dry land or earth, are most certainly placed between the divided "waters."

Isaiah xi. 22 (R.V.) gives the shape of the earth as a circle—the description of the heavens as a stretched out curtain—a tent. Job xxvi. 10 (R.V.) describes the outer circle of the world, as being beyond reach of the sun's light and in the 136th Psalm 7—9, we read "To Him that made great lights—the sun to rule the day—the moon and stars to rule the night—thus showing that they were created to serve this earth alone in comparison with which they probably are very small—but this—together with their distance from the earth—who can accurately decide?—No one could, either by rule or calculation, or in any way—unless God reveals it. (See Jer. xxxi, 37.) So I am led to fall back again upon my early conclusions that nothing can be produced out of nothing, and to regard orthodox astronomy as erroneous, being the outcome of human invention, and the mythical production of those (after the fashion of the spirit possessed by the builders of the Tower of Babel) desirous of going beyond their seach—who only were the authors, and promoters in starting these theories, in setting them forth as mere problems, and suggestions. But years are supposed to have rolled them into accepted and solid "facts" which all truth seekers and Christians would do well to reject; and accept nothing that differs from the Bible account of Creation—to the glory and honour of Jehovah our God.

Quite lately, I have received letters from two correspondents, in which they ask me what the shape of the earth has to do with salvation? To the first enquirer, who had been himself dwelling

upon the subject in preaching, I answered—I know of nothing of greater importance than bringing to light error which upsets the truth of the Bible (as does the popular and orthodox teaching in astronomy), but if you do not think it advisable to bring it forward, why do you do so? To my second enquirer who had introduced the earth as a globe in an article which he had written for publication, I quoted my letter in answer to my first correspondent, adding, that it was quite natural that Christian globe theorists should be desirous of avoiding this subject when they come in contact with Christian opponents, the former having not one word of scripture to uphold them; their argument must fall through.

FANCIES AND FACTS.

C.H. "I said nothing about observing the earth from the sun. G.M.'s "simple method" involves the idea that the sun is in several places at once! Is this "actual observation" "avoidance of suppositions," etc.? Zetetics habitually quote two-century-old estimates of the distance of the sun. They might as well compare a rough sketch with a photo and then say, "photography is evidently uncertain." G.M. draws his figure so as to exclude parallax, and then says there is no parallax there! The sun's parallax is so small that it is generally omitted in ordinary arguments about latitude. G.M. omits it, and then argues as if his omission altered the facts!"

G.M. In Mr. Harpur's fig. 2 (Sept. 1894, p. 7), his lines of direction from the various points of latitude meet at the point S—the sun. My fig. 3 (p. 8, same No.) is in direct contradiction. In reply he treats us to his *ipse dixit*, that "a thing can only be in one place at a time, and this place must be where the various lines meet which represent the directions in which it is seen."

He will ignore the truth universally accepted that latitude is found in connexion with the *apparent* direction of an observed object—and which he himself postulates in his own paper (quoted in last paragraph p. 8, Sept. 1894.)

We will ignore the truth that the apparent direction of the observed object varies according to the latitude of the station of observation. His attempted application of Trigonometry necessitates the *supposition* of the eye at the point S. Now I challenge him to give us the observed altitude of the sun at equinox for the points of latitude 10° 20° 30° 40°, &c., and by the unavoidable sequential construction to show that the lines of direction meet at the same point, whether upon the plane or spherical theories. He has laid bare no fallacy in either the construction of my figures, or my reasoning.

My "simple method" involves the unavoidable conclusion that the *apparent position* of the sun, even for any number of simultaneous observations, varies according to the observer's latitude. I have stated plainly that such observations do not enable us to determine the sun's position, but merely to deduce the observer's latitude. No astronomer or navigator would dispute this—the very foundation of their finding their way over "earth's" surface. Again let it be said, if at equinox the sun be vertical to the equator, and simultaneously upon the horizon of the pole—directions which are at right angles—now let Mr. Harpur distinguish himself in showing by construction, in accordance with his own accepted postulate, that the sun's centre as a point, occupies the same position resulting upon these two observations; and better still let him add another ob-

server at latitude 45°. That is for the plane, now let him take the sphere, a line vertical to the equator, also a line on the plane of the horizon of the pole—the two directions on which the sun is seen at equinox—are both at right angles to earth's axis, and therefore are parallel—can he show that parallel lines make an angle by meeting at a point?

My various lines of direction are not suppositions, but are in accord with *actual observation*. Any intelligent person who can observe the meridian sun, and will do so, can prove this by observing at the equinox and the solstices. As the sun's declination increases or decreases, so does the observed altitude vary. But declination and latitude correspond; and it will be seen that, supposing the sun's vertical distance from the earth to be constant, yet the observed altitude will not show this vertical distance to be maintained.

Therefore the same apparent variation in the sun's position will result, upon variation in observer's latitude, or variation in the sun's declination. How shall one forbear asking if it be ignorance of these INCONTESTIBLE TRUTHS which prompts Mr. Harpur's BASELESS CONTENTIONS?

"Two century old estimates of the sun's distance." Well done Mr. Harpur! Bravo!! He has the truth at last—*estimate* is a fitting word—seeing that the data are most purely hypothetical. Now he must become a Zetetic, which merely involves accepting what one *really finds* (and that is very little, except our own ignorance.) But *principles* may be eternal, that which was true geometrically or mathematically 2,000 years ago (or 2,000,000,000 years ago, Ed.) is equally true to-day. 'Tis but the HYPOTHESIS which will have to give place.

My geometrical figures are used like all such figures are, NOT AS THE PROOF, but merely TO ILLUSTRATE the reasoning. As perfection in instruments is approximated, parallax becomes less; it is fair therefore to conclude that attained perfection would annihilate parallax, which would accord perfectly with the geometry of the question. I challenge Mr. Harpur to introduce parallax in connexion with my figure 4.

EDITORIAL NOTICES.

Please to ask for "The Earth—not a Globe—Review," at all newsagents, reading rooms, and railway book stalls. 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.

We propose that those who are desirous of having a good Map of the World as a Plane, should remit a subscription or donation for the purchase of a block to produce one, the cost of which will be about £15. All subscriptions will be acknowledged in the *Earth Review*, and subscribers, if desirous, will receive copies to the value of their subscription.

SUBSCRIPTION LIST. £ s. d.

Edward D'Arcy Adams, Esq.,	2	0	0
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Editor <i>Earth Review</i>	0	10	0

Subscriptions now due should be forwarded to the Hon. Secretary.

Lectures have been delivered by Mr. A. Perry, at Ashton-u-Lyne, on "The Surface of Water," the Press reports that "some of his revelations caused surprise." Mr. J. Naylor, of Birmingham, on "Two Views of the Universe Explained and Contrasted." "Several were convinced of the truth that the earth is a plane, and all were greatly impressed."

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.—Your strictures upon G. M.'s reply is answered. But—
What do you want to knock the man about for?
What's Capt. Foreman done he should'nt do?
He's got angles, curves and straight strokes,
Letters, globes and fine pokes,
Is'nt he every bit as good as you?

Will you tell us why your brother theorist (Capt. Foreman) draws his lines M.P.Z.M.M.E. *parallel*? Observe: each line is directed to a star in the direction C M Z.; and his dia. is true to the globular theory. Why do these lines meet at the *same point*, eh? Your brother theorist anticipated you, see his opening remarks in this issue. Do you think that a man's common sense would lead him to expect that when *the cause* is removed, *the effect* will not *cease*? If not, why compare the action of hydrogen in a vacuum, to its action not in a vacuum? Do you remember that you told the readers of the *Birmingham Weekly Mercury* last September, that "heaviness *causes* a body set free near the earth to move towards the earth?" Then why does hydrogen gas, which has "heaviness," not "move towards the earth" as you assert? You will do well to study to be consistent and logical. See our reply to Scroggins.

VACHTSMAN.—Hearty thanks for your "proofs." They shall appear as space permits. Continue to investigate, and send us all the *practical* evidence you can. The columns of our Membership Book is not yet full, so there is plenty of room for your name.

C. R. E.—Thanks for you letter and suggestions. See our open column. I hope to see your name on our Membership Book. Your third question has been answered, see Review, October, 1893, Scientific Falsehoods.

S. C. GOULD.—Hearty thanks for your Classical Magazine. Its aim and tone should secure a wide circulation for it. Thanks also for mentioning our Review.

THE EDITOR—*The Torch*.—Thanks for your offer to place our literature on your bookstall where you lecture. We have sent you on a supply, and wish you success in your fight against error.

A. PERRY.—No, the teaching of *Knowledge* is not "according to the Word of God." Observe their language and you will see at once that they are in total ignorance about anything of God's Universe. It is the universe (globe) of their own fanciful forming that they are occupied with, hence the writer of the article referred to, speaks of "the past conditions of OUR OWN WORLD!"

H. V.—Thanks for the *Flaming Sword*. We are glad to see that the Editor owns that "Parallax and his advocates *have given* abundant proof of the fact that the earth is NOT *convex*." He evidently does not possess a logical mind, or he would not in the very next breath contradict himself by asserting that we "do *not* present one statement in proof of its being an extended plane, or flat surface!" Why, every proof recorded by "Parallax is a *practical demonstration* that the earth is a vast irregular plane, and it is those *proofs* that *prove* that Dr. Teed's "perspective foreshortening" is nothing but assumed data, on which to build an house of conjuring cards. If the experiments of Parallax are *not* proofs that the earth is a plane, they are no proofs at all, and therefore do not "conclusively demonstrate the fallacy of the convex theory of the earth," as Dr. Teed says they do. We observe that he says on p. 40, "however skilfully the lion's skin may be adjusted, the ass's ears will sooner or later obtrude."

J. HICKLING.—Your letter is, "*telum imbellis sine ictu!*" If the expression "bewitched fools," demonstrates our cause to be "rotten to the core," what does the following expressions from your own school demonstrate your own cause to be? The society of screaming idiots—great fat savants—flat earth prevaricators—longitudinal lunatics—wild-mannered meredional maniacs—Balaam's war-horses—rhinoceros hided, high pressure human bombs—parallactic maniacs, &c., &c. If Mr. McInnes is "an inflated bombast," what is Prof. Alfred Russell Wallace, F.R.G.S., who in a letter to Mr. Brough, dated January 6th, 1872, called Zetetics "incapable fools?" Take heed to the good old proverb found in Matt. vii., 5.

LADY BLOUNT, J. L. K., A. P., and others.—Thanks for your encouraging and esteemed remarks. We shall try and keep the E. R. up to the tone of No. 2 (N.S.)

II. H. SCROGGINS.—Yes, an ounce of fact is worth 10,000 tons of theory. To your questions we beg to say:—(1) Mr. Morrow's theory (at least so far as the enspherical part goes), was taught by the oldest Greek school of philosophy—the Ionian, of which Thales was the founder. (2) He does not advance any proof that we "live inside of a globe." You will observe that he says, "If (an expression implying doubt) above as a canopy, it IS (a positive expression) beneath as a concavity." True "Parallax" "does not give any definite conclusion as to what the waters rest upon." But we ask with you, WHO CAN? Of course we mean Zetetically, not speculatively. (3) Yes, the expression "central sun" implies that "other suns" exist, and "visible sun," the existence of an invisible sun." (4) Yes, the statement that "the visible sun, moon, and stars are within the air," is anti-scriptural, for God declares that He "set them *in the firmament of the heaven* to give light upon the earth." Truly as you say, "who *can* know more than they can see in this matter, and what God tells them in the Scriptures of Truth?" (5) No, it cannot be demonstrated by "descending into a body of clear water," that we "cannot see beyond the limit of the air, or atmosphere." To Zetetically demonstrate any fact of Nature, the conditions must, in every sense, be THE SAME. Light *can* be seen under water, but the depth at which it can be seen, depends upon the condition the water is in. I know from personal experience and experiment, that light can be seen from under clear water, at a distance of 50 yards. What have fishes got eyes for? Eyes are useless without light. Hence we conclude that light is *not* confined to the air. Thanks for your satire which will appear in this issue. We trust to hear from you again.

J. T. B. DINES.—Thanks for your letters, shall appear in our next *if* space permit.

A. MCINNES.—Thanks for yours to hand. Shall appear in our next. Too late for this issue.

The Zetetic's Open Column.

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

Questions unanswered, Nos. 2 and 3.

ANSWER (4). Because by the operation of the natural law of perspective, associated with the peculiar construction of the eye, objects *below* the line of sight *ascend* to the level of the eye line, while objects *above* appear to *descend* to the eye line. At the junction of the lines an acute angle is formed, beyond which objects cannot be further discerned without a greater optical power, or an increase of altitude which gives a proportionate increase of angle. See E. R., No. 4, p. 1 to 4.

J. ATKINSON.

ANSWER (4). When a person goes up a mountain, or up in a balloon, the line of sight *really rises*, but the horizon, or boundary line, *only seems to rise* higher and higher, and as the height increases, the horizon becomes more distant.

Our line of sight is always half way up our circle of vision, and in proportion to the height of the line of sight, so is the distance greater to the horizon. When ships and other objects are beyond the observer's horizon, the lower parts are hidden, therefore to see them, it requires a higher line of sight, obtained by ascending to a greater elevation from where we also obtain a more distant horizon. In perspective, receding lines appear to converge to the point of sight, which is level with the eye of the observer.

THOMAS WHITTLE.

QUESTION (5). How is it that when there is a lunar eclipse the shadow is always round?

QUESTION (6). How is day and night formed if the world is not a globe?

C. R. E.

PRACTICAL FACTS v. MODERN ASTRONOMY.

Evidently we have not got at the bottom of the matter yet! In August, 1890, the C Manoeuvre Fleet signalled with search lights to colliers seventy miles away. This was some 500 miles south of the Azores, and on a fairly clear night; and the information comes from Mr. F. T. Jane, the artist who was on board at the time. *Pearson's Weekly*, December 29, 1894.

A LURCHING QUESTION.

Does the leaving of the Globe in the lurch of $23\frac{1}{2}^{\circ}$, cause it to be in a difficult position. If not, what hinders it from lurching over to 90° ?

HIS FATHER HELPED.

Whilst walking down a street the other day, I overheard the following conversation between two urchins:

"I tell yer Bill, yer dunno nothin' about it," said the first; the world goes round and round on its axle just like the wheels of a cart, and it's worked by the blokes in the prisons where they have to tread big wheels to make it go round."

"Garn! Who yer getting at?" cried the second.

"I tell yer it's truth," replied the first, in a virtuously indignant tone at having his testimony disbelieved. "I reckon I ought to know when my father's been there."

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. 4 (NEW SERIES).

JULY, 1895.

PRICE 2D.

THE EARTH AN IRREGULAR PLANE.

By WILLIAM THOMAS WISEMAN, F.R.G.S., etc.

The surface of all water, when not agitated by natural causes, such as winds, tides, earthquakes, etc., is perfectly level. The sense of sight *proves* this to every unprejudiced and reasonable mind. Can any so-called scientist, who teaches that the Earth is a whirling globe, take a heap of liquid water, whirl it round, and so make rotundity? He cannot. Therefore it is utterly impossible to prove that an Ocean is a whirling rotund section of a globular earth, rushing through "space" at the lying-given-rate of false philosophers.

When a youth, I stood upon the Dover shore of the English Channel, and was told to watch a departing ship. "See! There she goes; down, down, down! The hull has disappeared! She is out of sight! Now, my boy, you have had an ocular demonstration that the world is round (meaning globular in shape) AND SEEING IS BELIEVING." I walked up to an "old salt" who had a telescope, and said: "Can you see that big ship through your glass that's gone down the Channel, and is now out of sight?" "Yes, my son. Look!" The big ship immediately came into view again, as I peered through the old sailor's glass! "Why! my — told me the Earth was round, because that ship I can now see had turned down over the horizon!" "Aha! aha! sonny, I know they all says it! Now, I have been all over the world, but I never believed it. But, then, I have no learning, only my senses to rely upon, and I says SEEING IS BELIEVING."

I now, after many years, endorse the old sailor's experience, that the world is not a globe, and I have never found the man who could prove by any practical demonstration that he, or I, are living on a whirling ball of Earth and water! How is it that the atmosphere goes round with it? By what law does the *dense* Earth and the *rare* air rush around together? Declare, ye scientists, IF YOU KNOW! The Scriptures of God's inspired Prophets contradicts the unreasonable, illogical, unscientific delusion, and false philosophy, that *the fixed Earth* is a hollow fireball with *several* motions!

There is an old adage, by which you can fix them,

"There is not one lie true, no, not if you pick them."