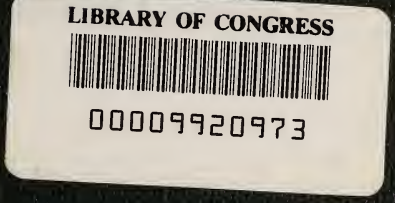

REMARKS

ON A

REVIEW OF SYMMES' THEORY,

WHICH APPEARED IN THE

AMERICAN QUARTERLY REVIEW,

BY A

"CITIZEN OF THE UNITED STATES."

WASHINGTON:

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TO THE READER.

The following numbers were written in reply to a review of *Capt. Symmes' Theory*, which appeared in the American Quarterly; and were first published in the National Intelligencer. In looking over them, the reader will find the first devoted to a physical view of the *Theory*, and, without entering into any detail, some general analogies of the solar system were urged in favor of the doctrine. It was intended to shew that it was a pleasing and rational inquiry; but not so clear and well defined, as, in any degree, to justify an expedition, predicated upon it. Accordingly, in the second number, it has been urged, that the Quarterly might possibly have been in error, in supposing the polar seas encumbered with perpetual ice; and that, independent of all speculation, the field for inquiry and scientific research was immense in the remote polar regions; and in the third and last number, it will be clearly seen, that every movement in relation to the expedition has been on those broad and liberal principles, which have always marked similar exertions by the citizens of other countries.

REMARKS, &c.

To the Editor of the American Quarterly Review:

Sir: In looking over the first number of your very able and interesting Review, I perceived some twenty or thirty pages devoted to an examination of the principles of Captain Symmes' Theory, as written by a "Citizen of the United States." In the most part, I shall leave it for the author to manage his own controversy with you, in time and manner, as it shall suit his own convenience: he may resist your deductions, or acquiesce in the correctness of your conclusions.

But, as doctrines, from the fact of being long received, acquire a greater degree of credit, and, as new opinions contrary to these, and in other respects, perhaps, extraordinary in themselves, meet, from these causes, not only slow and difficult belief, but even with a very partial examination, I trust it will not be deemed improper in me, briefly to write a *review* of your *review*. I feel myself called on to do so, not from any wish tenaciously to maintain an abstract theory, but because you have blended the exertions now making to get up an expedition, with what you call "visionary speculations." I intend to separate them—or rather to show that they have not been united—by, in the first place, treating of the Theory, and in the second place, of the expedition, and the principles upon which it is placed. For the sake of *originality*, (in common with the Edinburgh and London Quarterly) you commence by giving a pretty general review of all the past theories and speculations on the subject, upon which you are about to write. Of Burnet, forming the earth from oil, and other matter; of Woodward, and his doctrine of gravity after the flood; of Whiston, and his comet system; of the theories of Haller and Euler. You pay a passing compliment to Buffon, who regards the earth as a part of the sun, knocked off by some wandering comet; and thus, from the ease with which you handle and explode

old and long exploded systems, convince every reader, long before you arrive at the "New Theory," how admirably you are qualified to treat it.

You appear to consider all these theorists by far outdone by Capt. Symmes, though you admit and say, the doctrine of concentric spheres "has been one of the oldest in geology." How can it surpass them if it be the same?

Inquiries concerning the figure of the earth we inhabit, are among the noblest speculations of the human mind. They enlarge our views, and frequently bring remote parts of the earth into a knowledge and interchange with each other. Indeed, the learned world has seldom been the loser; and you must in candor admit, it has frequently been the gainer, by those short conflicts carried on between inventive genius and the adherents to old systems.

By collision of the flint and steel, the spark is elicited. I readily own, we should not lend a too credulous ear to every novelty that may arise in this age, "prolific in improvement and discovery;" and that systems long established, and founded on experiments, and sanctioned by the wise and learned, for ages, deserve our confidence, and should not be yielded, until new ones are demonstrated to be true. On the other hand, we have something, also, to apprehend. We cling with instinctive feeling to our early impressions. We doubt all systems and tenets but our own, and seem, not unfrequently, to forget, that the doctrines of which we are so very tenacious, when first given to the world, were pronounced by learned reviewers, to be the splendid visions of madmen, and in their usual facility at demonstration, were proven to be "*impossible.*" However proud we may feel of our boasted improvements and discoveries, I apprehend you will readily admit there is much to be learned; that there are still within the mighty bosom of the universe, many unexplained phenomena, that may shed light upon our systems of philosophy. There is nothing in human science and industry, fixed and certain, except those calculations, founded exclusively on numbers; and as long as the human mind, invincible in its pursuit after knowledge, is constantly acquiring new materials, and making new developments, old systems must be enlarged and improved, or give place to new ones. We have scarcely entered the *Vestibule* of Nature's great Temple—though, from your remarks, one would be led to suppose every

thing fixed, and, especially, that the figure of the earth was so strictly defined, that, even to propose a further inquiry, is to deserve the name of "visionary."

To this I must beg leave to enter my *caveat*. I trust I shall do it courteously, and, fearful as the odds are against me, attempt to reason with you. Not by sarcasm: for that is not reasoning--nor by witticism: for it is not the best method to arrive at truth, in the investigation of any subject.

That the earth is composed of five spheres, concentric with each other, and each sphere supplied with a "mid plain space," and that the water extends quite through the sphere, in some places, are points I shall not defend. I have never defended them. Your views of the Magellanic clouds are in strict accordance with my own. That they are nebulæ belonging to the Heavens, and revolve, will scarcely admit of a doubt. In addition to your authority, I have seen an intelligent officer, who saw them in their regular positions, at a time, when his vessel was anchored at New Zealand. If this be a fact, New Zealand cannot form one of them. But notwithstanding these concessions, I must still maintain, as a matter of pleasing speculation, if you please, that the earth we live on, may be a hollow sphere, and widely open at the poles.

And paradoxical as it may appear, that such a state of things is reconcileable with the admeasurements of the earth, with the voyages performed, and more especially when *really understood*, is not at variance with the great principles laid down by Newton, and received by the learned world. That the theory is sustained by some strong and powerful analogies of the other planets, I trust will be clearly seen, though you dispose of them, without the least trouble.

I would merely remark, *in transitu*, that you have not been remarkable for fairness, in your examination of the third chapter, where the author institutes an inquiry into the principles and properties of matter, of the centrifugal and centripetal forces. The insulated paragraph you quote gives no very correct view of the premises he assumed, and of course, you get greatly the better of him in argument.

Such statements could not be intended, on your part, and ought to be excused by the author, as it is the first *quarterly* you ever wrote. On this point, however, I feel no tenacity, though I do believe there can be some good reasons urged in favor of the doctrine, that, if the earth

was ever in so yielding and pliant a state, as to take its form from motion, the result would be a hollow sphere. So little is known of the principles inherent in matter, that such inquiries are attended, at every step, by insurmountable difficulties. Hence it is, that speculations about the original formation of the earth, have always been various, contradictory, and discordant to each other. To study them is to distrust them. In such reveries, we leave the field of true philosophy, and roam at large, in the regions of fancy and of vague conjecture. We have not data upon which to build; nothing with which to compare; we are off our moorings, lost in the unfathomable depths of infinity, without anchor to sustain, compass or landmark to guide our *course* and to enlighten our researches.

Man may, with great precision, measure the disk of the sun, calculate the force of gravity on the most distant orb, mark the bold planet in his course, and unfold the laws that govern him. In the field of experimental philosophy he may snatch the lightning from the clouds, and yet, as a child, he must acknowledge his ignorance of the original process by which the earth was formed, of the movings of that *mighty power*, who spake and it sprang into existence.

To account for every thing, is attempting too much, either by the *old* or *new* Theory. It is almost assuming the dangerous ground, that matter may, by its own energies, spring into systems—the very idea of which is not only unphilosophical, but irreverent and absurd; yet, I think I shall be able to show that, to some such speculation, you are indebted for the premises, in part, from which you demonstrate, that the earth is solid with an increased density at the centre.

The question, however, between us is of a very different kind. What is the form of the earth? Not how it was formed. If its figure has been determined, to Mathematical exactness, all further inquiry is worse than useless. This then, is properly the point first to be examined.

In approaching this inquiry, you state "that the fact of the earth's having a globular form, is strong evidence that it must once have been composed of fluid, or at least of plastic materials. From this position it becomes a problem in mechanics, that has been frequently solved by Mathematicians, and all prove from it the earth is solid."

Again, you say, "the figure of the earth has been determined, not only on the *hypothesis* of its being homo-

geneous, but on the more probable *supposition* of the increase in the density of the strata, as we descend below the surface. In every case the *earth must be a solid spheroid.*"

If from the *hypothesis*, or more probable *supposition*, these things must be so, then there is no room for further inquiry. The *hypothesis* and *supposition* decide the point in controversy. Yet, I unhesitatingly believe, you dare not venture your reputation as a philosopher to the world, in argument, in favor of the *supposition*, or the *hypothesis* of the earth's *homogenity*, since every fact, as far as the eye of observation has extended, with any degree of accuracy, proves to the contrary. That it was once in a fluid state, may, for aught I know, be a rational hypothesis; but surely you were not in earnest when you supposed it "entered as an element in the calculation." I say nothing about the probabilities of such conjectures, but must believe that *demonstrations* from such premises will be regarded by Mathematicians as the "baseless fabric of a vision."

Archimedes said, give him a place to rest his *lever*, and he could move the earth. So, give you premises, and you can demonstrate any thing: not only that the earth is solid, but, with Homer, that it rested on pillars, guarded by Atlas, or, with the worshippers of Bramah, that it rested on the back of some huge elephants. There is nothing so easy as demonstration!

Seemingly aware of the objections which, in truth, may be urged against your *premises*, you proceed with other inquiries, deemed less objectionable, viz. the collateral support of these positions, from the different measurements on the surface of the earth.

Let us examine them. Newton ascertained, by investigating the principles and properties of matter, that the earth is flattened at the poles.

The French philosophers, the principal of whom was Cassini and his colleague Burnoulli of Switzerland, doubted his conclusions, and still maintained that the polar diameter of the earth was the greater. By the order of the King of France, these conflicting opinions were decided by actual measurement.

In the year 1735, Condamine, Godin and Bougnier, all able mathematicians, proceeded to the South, and measured the length of a degree, in Quito, near the Equator. A degree having already been measured at 45° North latitude, Maupertius, Clairauldt, and Morier proceeded to take similar measurements near the Arctic

Circle. As a general result, the labors of these gentlemen confirmed the views of Newton; though I do not think you will maintain that they were attended with the degree of regularity that might have been expected; nay, that would really be required by the "*hypothesis* of the earth's being homogeneous, or from the more probable *supposition* of the increased density of the strata, as we descend beneath the surface." Neither will you maintain that the past, as well as recent, attempts to ascertain the real figure of the earth, by actual measurement, have been attended with the success that might be expected from such *Theories*; especially when we take into consideration, the exquisite construction of the instruments, made for the purpose, the intelligence evinced in the use of them, and the scrupulous accuracy, with which these observations have been computed.

The eight admeasurements taken in England, during the survey of that Kingdom, under the direction of Col. Mudge, has produced a result different, nay, opposite to all former trials, and directly in the *teeth* of your favorite *hypothesis*. In these measurements, made with the most costly instruments, and under the direction of the most able mathematicians, the degree was found to decrease as the observer approached the North. You know the ablest mathematicians admit, the measurements have not followed a regular and constant progression, that no meridian can be a regular ellipsis; and that we have every reason to believe the earth itself is not a solid of revolution, yea, in the words of La Place, "that the two hemispheres are not of the same *size*." This singular result, says Malte Brun, in his physical writings, "seems to prove, decidedly, that the spheroidical figure of the earth is subject to irregularities, which can only be determined by multiplied measurements." Sufficiently for all practical purposes the earth is globular. But, before we say too much about *demonstrations*, and evince too much tenacity about our knowledge of it, small as it is, we ought to measure, at least, a degree on twelve meridians North and South of the Equator, and twelve places on each meridian, making in all 288 places of observation, whereas, in point of fact, not fifty places have yet been measured, some of them very imperfectly, and others disagreeing in the general result. There is, perhaps, much truth in the condensed remarks of Keith, who concludes a very interesting article on the globes, in the

following words: "Notwithstanding all the admeasurements that have hitherto been made, it has never been ascertained, in a satisfactory manner, that the Earth is strictly a spheroid: indeed, from observations made in different parts of the earth, it appears that its figure is by no means, that of a spheroid; nor that of any other known regular mathematical figure; and the only *certain* conclusion that can be drawn, from the works of the several gentlemen employed to measure the earth, is, that the earth is something more flat, at the poles, than at the equator." With you the case is very different; every thing is fixed and determined, as conclusively as *demonstration* can make it, and wo betide the luckless fellow, who shall propose a further inquiry. Your familiar and ready recollection, on all matters of this kind, will at once bring to your mind, that what I have here stated, is confirmed in Newton's Principia, Book 3d, page 240, c. Phil. Trans. No. 386. Maupertius' Measures of the Earth, with a compend of all these authorities, in Rees' Encyclopædia, article Degree.

But granting you all you ask, from the experiments on the pendulum, and what do they prove? Examine the various and extensive labors of *Sabine*, and you will find, only, as a general result, that the pendulum must be shortened, in going from the North towards the equator, according to the increased centrifugal force, and the consequent diminution of gravity. In a word, they prove the force of gravity on the surface of the earth, but do not at all determine, nor begin to determine, that that attraction is the result of four thousand miles of matter, or, that it may not be the effect of a sphere of one thousand miles in thickness.

Say the length of a pendulum suited to beat seconds at the equator was 39 inches 27 hundredths, at latitude 20°, it must be increased to 39 in. 44″, at the latitude of this City 39 in. 97″, at 70° 39 in. 177″, and at 90° 39 in. 197″, each of these considered as a medium length. With all your accuracy at *demonstration*, I should like to see you attempt to show that these might not have been the results of the *pendulum*, vibrating seconds on the surface of a *hollow globe?*

Other reasons, "thick as black berries," crowd on you against the *possibility* of the earth being hollow: "sententiæ numerantur non ponderantur." You state, "*the greater density of the earth, towards the centre, is proved in a most direct manner, by the experiments of Dr. Maskylene and of Mr. Cavendish.*" I admit, most readily,

the experiments of the Astronomer Royal, with the plumet, at the base of the mountain Schehdlian, in Scotland, were ingenious and learned; but, certainly, liable to some objections. Did the Astronomer know the specific gravity of the materials composing the mountain? Did he know the exact deviation of the *plumb line*, or the quantity of matter between it and the centre of gravity? How could he make the proper allowances for the influence of other matter on the plumet, besides the mountain? And, without these points, so essential to be known, were first ascertained to mathematical precision, will you say the *result* must be regarded with determined accuracy? I own, this is the nearest approximation that has been made; but to talk about *demonstrations*, is a sad perversion of the term.'

However, as I intend to treat you courteously, as becomes one of my age, to a "grave and reverend senior," I will admit, for the sake of argument, all you require from this experiment, that, proportionally, the attraction of the earth is nearly double that of the mountain, as 5 to 9; and then, what follows? You say, the earth must increase in density to the centre. I suppose the experiment proves, if it proves any thing, the quantity of matter the earth contains, but not how that matter is *arranged.* Here we are at issue, and the reader may decide between us.

If you object to all this, I will then maintain, that the quantity of matter given to the earth by calculation, may be found in a *sphere* of one thousand miles in thickness, and then not be so dense as the planet Mercury, by one fifth. That such arrangement of the material would be in strict accordance with your experiments, and with the general and regulating effects of gravity, I apprehend would have been admitted by *Newton* himself, though you may doubt it.

That there is an increased density in the strata, as we descend beneath the surface, you appear to regard in the light of an *axiom.* Hence, it would be useless for me to attempt argument. I will, however, present one or two ideas for your consideration, should you again give the subject a passing *thought.*

If matter attracts matter, in proportion to quantity, and inversely, as the square of the intermediate distance, then the *particles* at the centre of the globe must be equally attracted in all directions, which is the same as the total absence of all attractions. How then can there be any pressure or increased density in that direction?

Again, every Mathematician is acquainted with the rules by which the increased density of the earth is calculated, at any given depth. By the application of *these rules*, it will probably be found, that the weight on every square inch, at the depth of only two miles, will be 20,532 pounds, on every square foot it will be 2,956,508 pounds, and on every square yard, the astonishing weight of 26,608,572 pounds.

I might go on and make calculations, what would be the increased pressure on every square rood or acre, but it would exceed the powers of the imagination to conceive. It is by some such calculation the earth is made out to be four times as hard as hammered iron at the centre.

It is hard to reason on matters of this kind, from our *total* ignorance of the *principles* and *properties* of matter. The eye of philosophy has never penetrated far beneath the surface of the earth. On this subject, Goldsmith has very justly remarked, "that the little *bee*, which darts its sting into a huge *elephant*, does more, in proportion, towards investigating the structure of those animals, than man has yet done, towards investigating the internal structure of the globe he inhabits."

If, indeed, we are to regard the granite, rock, and other heavy substances, found upon and near the surface of the earth, as the mere alluvial soil, when compared with the more solid parts lying beneath and extending to the centre—how can you account for the single phenomenon of earthquakes? There are many well attested instances, where whole islands and sections of countries have disappeared, and others emerged from the bottom of the ocean. Countries have been shaken like the undulations of the ocean, and other parts of the same continent not disturbed. How can you move one part of a body solid as the earth at the surface, and growing more dense towards the centre, without, at least agitating all its parts? How can explosions beneath the surface, communicate with each other, as has been the case from South America to the Azores, and that, too, with nearly the same velocity that sounds fly through the air, unless there be caverns of immense extent, beneath the surface? Yet, according to your doctrines, no such caverns could exist, the *ponderous* weight of the materials, "from a fluid state," gravitating towards the centre, would destroy them, if, in the first instance, they had existed.

Of gravity, nothing is known, except in its regulating effects; that it is a principle inherent in matter, at least

in all matter that has hitherto been the subject of human investigation.

You cannot demonstrate the attractive influence of one particle of matter on another; how, then, can it be shown, that there must be four thousand miles of matter from the surface to the centre, in order to keep bodies from flying off at a tangent, by the centrifugal force? There is no magic in a centre particle. Matter attracts as a mass, and if we allow the centre of the sphere to have the same attraction, which by *hypothesis* is given to the centre of the earth, I cannot perceive why the regulating effects of gravity would not remain precisely the same.

I am quite amused at your *notions* of gravity on the *interior*. You suppose men might leap twelve hundred feet high, and fly from place to place, by the use of a lady's fan—that they would only adhere to the inner surface by the centrifugal force. In nothing have you so completely failed. I will not allow myself to use a harsh expression, but, really, in this, your deductions are as unphilosophical as your attempt at *wit* is clumsy and pointless. In a regular symmetrical sphere, your position is tenable. But you do know, or ought to have known, that the very instant you admit polar openings, the case is altered, the nice balance is destroyed, and bodies must adhere in the concave, by the same law of gravity, that they do on the exterior. You might just as well attempt to leap to the moon "by the use of a lady's fan," because there is an attraction between that planet and the earth, as to *jump* from one side of the sphere to the other, formed on the principles of the "*New Theory*."

You may lay aside all uneasiness about the diminution of gravity. There is, upon a globe, neither high nor low, up nor down. Antipodes on a sphere, like those on a globe, would stand on the earth as we do. The sky would be over their heads, and their view would be limited by the apparent horizon. You might just as well start *East* from Philadelphia, and travel with a view of arriving at the edge of the Earth, and of looking down over it, as to expect any fantastic appearances on the *verge* of a polar opening.

Nature operates on a larger scale, if she operates on this principle at all; and so easy and gradual would be the convexity, that, to an observer, it would appear like an immense plain, or any other part of the earth—the eye of the philosopher alone would be able to discover a new state of things.

From the Earth you "ascend to the Heavens." Allow me, at an *humble distance*, to follow you there, and see what light can be thrown on the doctrine of *spheres*, from celestial analogy. This will assist us without an exploring party. We are, by the use of *glasses*, better acquainted with some of the other planets, than with all the parts of our own. What spot within the bounds of Herschel's orbit, that has not been examined, nay, attentively examined by man, except a large portion of his own little spot of earth. Hence we hope, from the annals of these celestial voyagers, to find some accounts of other worlds that will, by the force of fair analogy, lead us to a better knowledge of our *own*; the poles of which have never been explored.

From these researches, do we not find, that all the planetary bodies partake, more or less, of a spherical figure, agreeably to the circumstances under which they are placed, in relation to the known laws of nature, in motion and forces? They all revolve on their own axis, by a diurnal rotation, and by an annual revolution around the Sun, as the centre of the system; all present reflecting disks, and no doubt habitable surfaces. Hence, is it unphilosophical to suppose the strictest analogy subsists throughout, and, that any theory which will explain one phenomenon, ought to explain all phenomena that are alike situated, in respect to these laws? The planet *Saturn* belongs to the same system of the Earth, revolves around the same common centre, and is governed by the same general and universal laws—so that the same physical causes on one planet, ought to produce like results on the other. If this be the case, is not the old theory obviously defective, when applied to Saturn's rings; and must not any theory, which precludes the *possibility* of a hollow planet, or even concentric spheres, preclude, in like manner, the possibility of the concentric spheres or rings around the planet Saturn? Let ill natured dogmatism be laid aside, and let us fairly and honestly, with a single eye to truth, examine the analogies *this* and other planets may unfold, and see whether it is probable the principle of spheres exists in the solar system.

The rings of Saturn are, at least, two in number; some Astronomers have supposed more. They no where adhere to each other, or to the body of the planet. They lie in the plane of the planet's equator, revolve in about the same time of the planet, and undergo phases, which prove them to be opaque bodies, and, like other orbs of

the Universe, shining by reflected light, received from the Sun ; indeed they reflect a more briliant light than the planet, and cast a strong shadow on his disk.

What conclusion do you draw respecting this *planet?* Do you consider these rings, the one twenty, and the other seven thousand miles broad, to be mere anomalies of nature? Are there any laws of matter on Saturn different from those exerted on Jupiter or the Earth? And does not this planet, notwithstanding your *demonstrations, strong as the thunderbolt that splinters the gnarled oak*, clearly establish the fact, that concentric spheres do exist, at least, in one instance, in the solar system? If, by occular demonstration, we know they do exist in one instance, is it an unreasonable inquiry to examine whether they do not exist in all, in a greater or less degree? Is not nature generally uniform in all her operations? Do not similar causes, acting under like circumstances, ever produce like effects? Physical nature seldom departs from her regular line of operation ; if she does, can there not generally be assigned some good cause for the change?

Let us, then, examine the phenomena of Saturn's rings abstractly, and see if science can afford a solution, why this planet should be different from all other orbs in the Universe.

What is the use of these appendages to the planet they circumvolve, though the time of their revolution, by the laws of Kepler, is the same that would be required of satellites? Are they to shed a faint light on the planet? How can the inhabitants be benefited by the light they reflect? Those on whom the direct rays of the Sun fall, are the only ones who could receive the direct rays from the rings, and, of course, this light would not be needed.

Again : Are not the rays reflected from the rings, intercepted from falling on that part of the planet which has just emerged from fifteen years' darkness ; or, they are intercepted from falling on these parts that are about to enter into the depth of the Saturnian night? In both these cases, must we not conclude, that for the purpose of lighting the planet, the rings were not intended? Do you suppose the rings of this planet are to assist the moons in lessening the gloom of fifteen years' darkness that reigns alternately around each of his poles, only reflect that the unenlightened side of the rings are always towards the dark pole of the planet.

Should you still persist in supposing they may be intended to cheer the night in the opposite hemisphere,

I answer, that but little of the enlightened part of the disk of the rings can be seen in the night: for on that part of the planet they are, *themselves*, eclipsed by it. And further: I can scarcely suppose the presence of the rings so absolutely necessary, when seven moons cheer the night, and when the nights are less than five hours in length.

If, then, these concentric rings be not purposely intended, by Creative Wisdom, to increase the light and heat of the *planet*, what conclusion can we come to, but that they were so disposed, in order to increase the planetary surface, for the accommodation of organized life? If we draw this conclusion, in this instance, must we not draw it, in all instances, where we suppose the same laws of matter to be exerted?

The matter composing the rings, if added to the body of the planet, would increase planetary surface, agreeably to the principles of the old theory. And why should the never-varying effects of nature depart in this instance from her regular line of conduct? It is believed she has not; but that the same principle extends, in a more or less degree, to all the planets belonging to the same system, governed, as they most unquestionably are, by the *same laws*.

And have we no reason for believing the planet Jupiter constituted similarly to that of Saturn? Let us inquire. The moons of Saturn, seven in number, are known to revolve, nearly in the plane, and over the edge of the rings; for Herschell saw them, like beads on a string, moving round the outer edge of the *rings*, when they presented their edges to him, and appeared like a white thread, drawn around the disk of the planet. This as La Place says, is in strict accordance with the laws of gravity, to which, of course, you will most scrupulously adhere. The accumulation of matter, upon and over the equatorial regions of Saturn, by the position of his rings, would cause the satellites to revolve in the same plane, by virtue of the superabundant influence of gravity exerted there.

If this be the fact, is not the same disposition of matter necessary to produce the same results in other planets? In other words, Are not the same physical causes necessary to produce the same physical effects? If you are disposed to reason fairly, you certainly must admit it. The satellites of the planet Jupiter are known to revolve, with even less deviation from the plane of his equator, than those of Saturn from the plane of his rings.

Does not this circumstance indicate the high probability, that Jupiter is also surrounded by concentric rings, and thus, by a like accumulation of matter over his equator, cause his moons to revolve in the same manner of those belonging to his next neighbor, Saturn; but from the position they constantly keep to the earth, and the rays of the Sun, have never been seen. When the plane of Saturn's rings pass through the Sun, as Jupiter's always do, it is difficult to see them, even with Dr. Herschell's powerful and best reflecting telescope: or, to use your own language, "that when their edges are turned towards us, they are completely invisible, even with the aid of very powerful telescopes." Now, this is the unvarying position Jupiter always maintains to the earth, and according to your own acknowledgments his spheres could not be seen.

For the sake of science, I have thus insisted on the analogy between these immense globes, and not on account of the new Theory; for its principles or *possibility*, I do conceive is clearly established by the planet Saturn.

But, the analogies between these *immense* planets do not stop here. You know they are both encircled with belts, or zones, which in Saturn vary in appearance according to the direction of his rings. Why are these belt-like appearances alternately light and dark? Why do they vary in their appearance, sometimes run into each other, again separate, and appear to move with different velocities? Have they ever been satisfactorily accounted for? or have they not always been matters of dispute, and of vague conjecture?

If Jupiter be a plain globe, how is it possible to account for the various changes which take place in his belts, or how account for the belts at all? How account for their parallelism with the planet's equator, or how account for the well known and acknowledged fact, that the spots on one belt rotate faster than those on another?

The City of Baltimore, when she gets her rail road, may advance faster than Philadelphia in commerce, but as "out side passengers," on the same *sphere*, I apprehend they must go round together. If these belts are not the *verges* of spheres, overhanging each other, and becoming narrow as they recede from the centre, what are they? You may say, as others have said, that they are clouds dispersed into belts or strakes, by the great diurnal velocity of the planet. This is as unsatisfactory as it is unphilosophical, and contrary to every thing

we see around us. Such a supposition is subverting the foundation of the Newtonian philosophy, and re establishing the old and long exploded doctrine, that, if the earth revolve from West to East, we should be constantly assailed by an Easterly storm. If the velocity of a planet be ever so great, I apprehend its atmosphere moves with it.

But if we adopt the principle of concentric spheres, in those enormous planets, which are from one thousand to sixteen hundred times as large as the earth, it does really appear, that we shall be no longer at a loss to account for these various appearances, which have hitherto been deemed inexplicable. Perhaps I am too sanguine in my temperament, and see reasons where none exist. You cannot, however, be charged with any *predilection* in *favor* of going beyond the *beaten track*, therefore I am willing you shall decide on the soundness of my positions.

These concentric spheres, it is *supposed*, are narrower as they lie above each other, and are removed farther from the centre of the aggregate. Now, sir, is not this supposition within the pale of sound philosophy? Does not the force of gravity diminish, according to the inverse *ratio* of the squares of the distance, while the centrifugal force increases in proportion to the distance from the centre of revolution?

Then, according to this principle—and it is strictly a Newtonian *principle*—will not bodies, which lie more remote from the centre of the aggregate, subject to a greater centrifugal force, yield more sensibly to that force, according to the diminution of gravity? Those concentric spheres, therefore, which lie farthest from the centre, would yield most to the centrifugal force, and lie narrower and narrower around the equatorial parts of the planet, while some that were very remote would be flattened into rings, or, as you express it, "*plates of matter.*"

Your views of the want of analogy between this planet and the earth appear to have been formed without any reference to the relative forces exerted on these planets. You remark, "Nothing, surely, can less resemble concentric spheres than these rings;" whilst, in the very next paragraph, you own, "they are placed under circumstances entirely different from those of the imaginary terrestrial crust." It requires a very small share of sagacity to discover a contradiction in these statements. Do you require bodies, "placed under very different circumstances," to be precisely the same?

But, the difference between the spheres of Saturn and the Earth is just what ought to be expected from this "*difference*" of situation.

The Earth is about eight thousand miles in diameter, and revolves once in twenty-four hours. From this slow rotary motion, the sphere would lie wide, as it is known to do, whether it be *hollow*, or a solid globe.

The outer spheres of Saturn are from one hundred and seventy-six to more than two hundred thousand miles in diameter, and revolve once in ten hours and a half. and therefore would lie narrower in proportion to their velocity. Hence, the difference of *appearance* and *situation* of which you speak does not arise from the effect of different laws, but in the difference in the *force* of *these laws*.

The *verges* or edges of inner spheres showing beyond those that lie higher and are narrower, will account for the general appearance. And if we suppose the *verges* to be deflected, as the appearance of nature indicates on our Earth, we can, *apparently*, account for the minutia of the planet. By its diurnal revolution with these spheres, all the regular and various appearances of the belts might be produced. The different angles at which the Sun's rays would strike the deflected *verges* would account for the more luminous parts of the belts, while the vacancies between the spheres would appear dark. The belts of comparative shade would be produced by refraction of the rays of light. One verge would sometimes eclipse the next below it, and at other times not, according to the position of the rings. The edge of one sphere rather overhanging another in one place, and receding from it in another, would appear to make the belts run into each other; and is not this the very state of things presented by these planets?

The spheres revolving on different axes and with different velocities will satisfactorily explain that which, on the old theory, does really appear *inexplicable*, that the spots or objects seen on the belts of a solid globe should *rotate with different velocities*.

Now, your objection to all this is really *overwhelming*. It displays all that *profundity* in research, *acuteness* in thought, and happy facility at "*demonstration*," one would naturally be led to expect from the *modest* declaration in your circular, that "Philadelphia has within herself a larger *fund* of *talent*, *erudition*, and *science*, than any other *American* City can *boast*."

That I may not do you injustice, I will carefully transcribe your own words: "In this case, the outer crusts

must be supposed to extend but a few degrees beyond the equator of Jupiter, but each one further than that which is above it; so that the edge of the planet would exhibit the appearance of notches or steps. But, in fact, the outline is perfectly well defined and unbroken; and thus we have the direct evidence of our senses against this wild hypothesis."

In looking at the roof of a house, at a great distance, do you see the "notches or steps" made by the layer of shingles, or is there any thing more plain, that the part of reflection wanting in the exterior sphere would be supplied by the one beneath, and thus render the disk complete? For illustration: when the poles of Saturn are at right angles to the plane of his orbit, as Jupiter's always are, his spheres, as you justly observe, "are completely invisible;" no "notches, steps," or ridges, to be seen; the disk is "perfectly well defined and unbroken;" and thus we have your own declaration, and the *direct evidence of our own senses, in favor of this wild hypothesis.*

I must admit the *force* of your *objection* in relation to the *Sun.* I was unaware that his *poles had ever been examined.* I had, indeed, been taught to regard him as affording but little evidence one way or the other, from the fact that he is always surrounded by a very luminous atmosphere, so much larger than the Earth, and that the earth was never very far from the plane of the Sun's equator.

The clearness with which you speak about the figure, *attraction,* and *influence* of the *Moon,* requires a passing notice.

The poles of the Moon, even at the time of *libration,* are not turned, in any perceptible degree, towards the Earth; hence, it is difficult to tell, from observation, whether there are polar openings or not: and you must own, this difficulty would be greatly increased from the atmosphere around the Moon being so extremely rare as to produce little or no refraction. Moreover, if the Moon, or any other planet, be near the opposition or conjunction, the polar openings will not be very easily discovered: for, if we are nearly in the direction of the light, no hollow would be visible, if the poles were ever so much turned to us, unless in the direction that would present an extended view through the planet.

The shadow of the earth on the Moon in partial eclipses, is, perhaps, among the most plausible objections you have urged. It presents a difficulty to my

own mind that has never been satisfactorily solved. However, on reflection and examination, I have concluded, in my own mind, that it is not "*demonstration*," and especially, in part, from the following considerations:

1st. The number of visible *eclipses* are few.

2d. The *author* may have placed the verges of the polar openings too near the equator.

3d. The plane of the opening being inclined to the plane of the equator, when the rays of the sun should happen, in an eclipse, to pass over the high part of the verge, the shadow would be *sensibly* circular; when they passed over the low part, the same result might be expected.

Should an eclipse happen at a time when the rays of the sun must pass over the plane of the opening, it would seem that a prolongation should appear on the shadow cast on the moon, occasioned by the high part of the verge; and on the authority of Ticho Brahi, Cassini, and Kepler, I am authorized to say, that such appearances have been seen.

A gentleman of high attainments in solid science, of your own city, informed me, that such a prolongation of the shadow of the earth, on the moon, had been noticed, and I believe, recorded, in the city of Philadelphia. If these authorities can at all be relied on, the *tables* will be turned, and this objection brought as one of the strongest arguments in favor of "*this wild hypothesis.*"

4th. It is also very possible that, since no observations have been made in reference to such *a state* of things, a slight deviation in the shadow from a true curve, might have happened, without being recorded. I leave it, if you please, *in medio*.

Within the effulgence of the Sun's rays, Mercury is lost from observation; and little is known of the planet *Georgium Sidus*, owing to his immense distance. If the spheres, or rings of Saturn, are to be regarded as mere appendages to light him, or to assist the moons in cheering the inhabitants, I suppose you can easily *demonstrate* how many spheres would be required to give the same light on Georgium Sidus, which, being double the distance from the Sun, enjoys, according to *Newton's calculation*, only one *fourth* the *quantity of light*.

I would willingly pursue the analysis of the planets *in extenso*, but am warned by the increasing length of this article to desist. I leave you, therefore, *en passant*, in the undisturbed possession of your reveries about the

planet Mars, to account for the *phenomena* of his polar regions, by arranging the *circles* of ice to suit your own fancy. Still more unwilling am I to snatch from you the meed of praise, you will doubtless acquire from the astronomers of Europe, when they learn that you doubt their authority, that the cusp, or horn of *Venus*, when a *crescent*, or nearly so on the Sun, ever bends in, as it were, on the body of the planet, to an extent of nearly fifteen degrees. *For this you ought to be elected Fellow of the Royal Society of London.*

Ere I conclude, there is one more *physical* view of this subject, to which I beg leave, most especially to invite your attention: it is, the law regulating the different densities of the planets.

With the solitary exception of Georgium Sidus, about which, however, there is but little known, their densities decrease, as the habitable world recedes from the centre of light and heat.

Mercury being - - - -	$9\frac{1}{16}$
Venus - - - - - -	$5\frac{11}{15}$
Earth - - - - - -	$4\frac{1}{2}$
Mars - - - - - -	$3\frac{2}{7}$
Jupiter - - - - -	$1\frac{1}{24}$
Saturn - - - - - -	$\frac{13}{32}$
Georgium Sidus, supposed to be -	$\frac{99}{100}$

Or, regarding the earth as five times the density or solidity of water, Mercury will be more than ten times the density of water, Venus about the same as the earth, Mars a little more than one half, Jupiter will be the density of water, while the planet Saturn is only one half the solidity of Jupiter.

On these calculations of density is reared the whole structure of the Newtonian Philosophy. Deny them, and that splendid and well proportioned *edifice*, that has been reared by so many master workmen, will lose its foundation, and fall to the ground.

And yet, have you never discovered any difficulty in this matter? Have you never reflected on the singular calculation, when you admit the planet to be sixty-eight thousand miles in diameter, and only one-half the solidity of water—one thousand times as large as the Earth, and to contain only ninety-eight times the quantity of matter? To this very doctrine you subscribe, and at the same time affect to laugh at the idea of the Earth being hollow.

I am not informed (perhaps you are) whether any Astronomer Royal on *Saturn*, has *demonstrated*, "in a *most direct manner*," his density by the experiments of the plumet at the base of his mountains. On this point however, you stand committed, and must, for the sake of consistency, admit, that similar experiments on other planets, would prove this "*increased density* of the *strata*" in descending toward the centre.

Then, sir, as the mean density of the planet Saturn is only one-half that of water, and if the heavy part of his materials lie in, around, and about, his centre, what do you suppose his surface is composed of? I will not attempt accuracy in calculation; I leave this department for you; but I will venture to say, that when you have made acute relative calculations, you will find the surface of that planet to be about one-fifth the density of water, and the ocean not much more solid than the common atmospheric air we breathe.

How does Saturn present a reflecting disk, or a habitable surface? Fairies could scarce live on such a planet. I do not say Almighty power could not cause each planet to be inhabited by beings suited to it; so he could cause water to run up hill, or one planet to revolve and another to remain stationary, and at the same time produce all the variety of *season*; but, does he do it? Do we see our *orb* wheeling in its stately course, and another remaining stationary, or do we not see them alike in appearance, and in the laws which govern them?

Is the *infinite divisibility* of the particles of matter, or the principle of *chrystalization* resorted to, for an explanation of this singular state of things? What is this, but adopting for each planet, if not different laws, at least a different application of the same laws, to sustain which, I should like to see where you can get the *shadow* of analogy? I will go further, and say, that to suppose such an arrangement of the materials in a planet, is *unphilosophical*, because, it is admitting, "*as an element into the calculation*," a state of things, of which, in truth, we can form no idea; we have nothing to compare it to: for we have seen *nothing in nature like it*.

By this time, I can readily conceive your patience pretty well exhausted, and that you are about to take leave of the subject, by pronouncing me a *heretic* in philosophy. Allow me, however, to advise you to keep cool, and read on—there is nothing like being dispassionate. On no account, allow yourself to follow the example of a *distinguished Editor of your city*, who has,

on several occasions, indulged in *expressions* and *low comparisons*, (against those who supposed there was any thing new to be learned,) that might have put to *blush* the *fisherwomen in Billingsgate*. I would insert some of them here, were I not fearful they might *mildew* this communication, and disqualify it from appearing in any *respectable journal*.

How then do you suppose I shall meet this question of density? By denying the possibility of attaining a knowledge of the fact? No! you would then charge me with departing from the Newtonian principles. I will own that these calculations are well founded. If I may use the expression, the planets are weighed with determined accuracy, especially those which have satellites. Then my conclusion is this: if they cannot contain more matter than would render their mean density such as has been stated, is it not more philosophical, more consistent with *common sense*, with what we see and know of nature around us, and will it not render the planets more analogous to each other, to suppose them to be more or *less hollow*, instead of different densities, agreeably to the quantities of matter, which, from *rigid* calculation, they are known to contain?

Does not this restore a harmony hitherto unknown to the system? Instead of regarding one planet with spheres, and the rest solid, one like iron, and others like vapor, they are rendered more completely analogous to each other. Can philosophy reject this arrangement of the material? Wherein does it do violence to any of your favorite doctrines and darling principles? Does it add one particle of matter to, or substract one from, the planets? And is not the harmony of the system maintained by the relative influence of the planets on each other, and is not this relative influence produced by the relative quantities of matter they contain? I repeat, how can it interfere, or be at variance with a single calculation that has been made on correct principles since the days of Plato? Here I apprehend is the great difficulty: We have a new doctrine broached; the mind startles; our pride is aroused; we cannot brook the idea of beginning our studies again, *de novo*, and we pass sentence without further inquiry.

If the *doctrines* of spheres have any foundation in nature, it is in strict accordance with the laws laid down by Newton; it is founded on them, and instead of being considered a new system, might be called merely

one step in advance of the old, and by that *step*, at least, apparently account for the phenomena of nature hitherto deemed inexplicable.

Are these the mere visions of fancy, idle and speculative amusements? Are *these views* which a *Newtonian philosopher* cannot indulge with consistency and pleasure, not even when he finds the principles held by that great master in science, so well adapted to the explanation of the phenomena within the sphere of their influence? Does it not give us enlarged ideas of nature, and additional reasons to admire the power and wisdom of that Being, who spake, and worlds sprang into existence, and by the energies of whose power they are still sustained? Would not the mind soar beyond its accustomed limits, in beholding a Jupiter wheeling in his *Kingly* course, and supporting, as he would, more organized, and no doubt, intelligent *beings*, than the whole solar system, on the principle of the old doctrine?

How grand the thought, to see a Saturn with his splendid equipage of spheres and moons, not as *anomalies* of nature, but as a part of a mighty system of worlds, that extends not only throughout the whole solar system, but in other worlds "where the concave heaven unfolds its broad blue bosom."

And when we go still further, and contemplate the eighty millions of fixed stars, which a good glass presents to our view, each the centre of another, and a mighty system, around which other planets, similar to our own, are revolving in their respective orbits—and then on fancy's wing go on, on, still on, till our own sun has become like one of the most distant of the twinkling stars, and then reflect that all this is the mere *outpost* of creation. Yes, that all *these*, with more than thought has ever told, are probably revolving around some other centre, and that centre perhaps the *Throne of Deity*. Grand and sublime, and at the same time overwhelming as is such thought, it is even enlarged, in contemplating this new arrangement of the material, where every planet within itself becomes to a certain extent, a system of worlds. This view, though altogether *fanciful*, and not at all to be regarded in the light of argument, is, nevertheless, one which *natural theology* will ever delight to trace in the works of the *Great Architect*.

Surely, then, the mere *possibility* of the truth of such a doctrine, would seem to entitle it to a serious thought from the wisest philosopher of the present day.

And, speaking for myself, and on my own responsibility, this is all I require. I will go further, and say, that it should not be expected, in so early a stage of the investigation, that the evidence in favor of it should command a determined belief. I will go still further, and remark, that I would not myself give up my faith "*in the old fashioned philosophy*" in the present state of the inquiry. But, while there are any phenomena to be explained, I would maintain the doctrine fearlessly, to extend our researches, alike regardless whether they established a new theory, or gave confirmation to an old one. Indeed, I regard *theories* as mere *cob-webs*, at best, which are true or false, in exact proportion to the number of well authenticated facts upon which they are founded.

I did not set down to my desk, therefore, with the expectation of convincing you, or any other individual, that the earth is *hollow*. I have attempted to show that it might be so—with what success I leave for you and the candid to determine. I have, indeed, thought you failed very materially in your attempts to *prove* its *impossibility*. You will get along better with such *demonstrations*, after you have pulled down the *spheres* of *Saturn*, erased the belts of Jupiter, extended the *cusp* of Venus, shown how the spots on the belts of a solid *globe* can rotate with *different velocities*, rendered more rational the doctrine of densities, and "*demonstrated*" that the same physical *laws* ought not to produce the same results on *planets alike situated*.

If I have successfully repelled the *idea* you would convey, that the whole subject is ridiculous and impossible, it is the *ultimatum* of this communication. I shall resume the subject again, not with a view to say much more about the *theory*, but to give a few remarks in relation to the contemplated expedition. I shall show how unfair, or misinformed, you have been, and how contrary to facts you have gone, in blending them together, discouraging the one, because you could not subscribe to all the doctrines of the other. I conclude this article, in the very appropriate remarks of an excellent contemporary writer: "that the fate of many projectors have been so melancholy, that it requires at this time, the daring spirit, and the enthusiasm, which are naturally allied to genius in any man, to announce himself as the inventor of any thing new and extraordinary. The patience and perseverance of a Gallileo, and the adventurous spirit of a Fulton, are necessary to

him who would benefit his species by the results of original plans and forms, or that of new combinations of old and tried ones. Hence we cannot but respect and admire the man, who, regardless of the hard fate of so many who have trodden before him in the thorny path of improvment, still has the fortitude and philosophy of mind to spend years in toil and study, and trim the midnight lamp with the vigilance ascribed to the ancient *vestals*, in bringing to perfection an idea, from which he hopes to reap fame and benefit to himself, and to reflect credit, at the same time, on the *genius* of his *country*."

Respectfully, I am your obedient servant,

J. N. REYNOLDS.

No. II.

To the Editor of the American Quarterly Review:

SIR: I shall redeem my promise, made in the conclusion of the last number, to say but little about the "*wild hypothesis*." I do this the more readily, because I have no solicitude or ambition to carry on a paper warfare against such *heavy metal*. The very *name* of a grave *reviewer*, enthroned in his *editorial chair*, *Procrustes* like, *cutting*, *carding*, and *spliceing*, inspires me with respect and a *little timid dread*.

Indeed, I know of no good that could result from a prolonged, or *stubborn* controversy about an abstract proposition. If the doctrine of spheres be any thing more than the dream of fancy, its leading principles have been sufficiently unfolded in the past communication, to elicit the spirit of inquiry, and to answer all *my purpose* in the controversy, so far as I am interested.

Simple declamation, nor perhaps reasoning, with the materials, as yet acquired, cannot prove it true, and equally unsuccessful will you be in refuting it, by seizing on weak points, *laughing* when you ought to *reason*, destroying the *symmetry* of the *system*, and then bringing all your *strength* to beat it down, for its want of *regularity*. I will only notice two or three points, merely to show how you might be followed, and answered, even where you are encircled in all the self *complacency* of "*demonstration*."

I quote from your review the following very platonic sentence: "We come now to consider the arguments which are drawn from the evidence of voyagers and tra-

vellers in the arctic regions. This evidence, it would, indeed, seem, must be decisive of the question, *if any question still remain ;* [*If any question still remain : that is to say, gentle reader, dont you think my past reasoning has been very conclusive.*] for seas and lands, far within the imaginary verges, have been repeatedly traversed, in all directions, and no signs of a polar opening have been perceived."

This is, indeed, an objection I did not expect from you—one I have seldom, if ever, heard made by *men of science.* "No signs of a polar opening have been perceived." And what signs do you suppose ought to have been perceived ? The same as descending into a well, or some other such appearance, *I suppose.* A sphere of one thousand miles in thickness, must, necessarily, be fifteen hundred miles around it, from the exterior to the supposed interior: and such a gradual *convexity* would present the same appearance and plain sailing of any other part of the Globe.

It is true, on the verge of a *polar opening*, there are some phenomena that ought to be noticed in accurate observations; nor are they wanting. The latitude and longitude found by celestial observation, would sometimes differ very materially from the run of the *log line.* In sailing around, or obliquely across the verge, the altitude of a heavenly body would not rise and fall, in proportion to the distance sailed by the measurement of the *log ;* while, sailing directly across the verge, the contrary phenomenon would be noticed. Now it happens, that just such things have very frequently been noticed and recorded by navigators in high latitudes. As late and good authority, see Ross's Voyages, London edition, vol. 2, p. 4.

Corresponding to this would be the extent of vision on the plane of the verge. A conformation, however, to be received with caution, owing to the refractive quality of the atmosphere in the polar regions.

There is no part of the Earth where *optical delusions* are so frequent. Objects are sometimes reflected from the ice, depicted in the sky, in inverted positions ; overturned and reflected in a thousand different ways, offering to the view castles of crystal in ruins, shattered *pyramids* and *obelisks*, *arches* and *vaults*, *churches*, *towers*, and *battlements*, all suspended in the air.

It is not, however, to such cases as these I allude; but, where objects are really seen farther, (as it were by the eye extending along the verge,) than could be expect-

ed from the curve of a regular sphere, or *spheroid.* And if the phenomena recorded by Ross and others, of seeing land at the distance of one hundred and fifty and two hundred miles, are to be exclusively accounted for by refraction, then the *refractive power* of the atmosphere must raise the land four miles and a half high, in order to bring it to a plain, with the eye of the observer. Now, the single paragraph you quote from Ross, suits your purpose very well; but it proves nothing more than has been, and will always be, readily admitted. It does not at all reach the case, where the powers of vision have been greatly extended, independent of all refraction. See Ross, pp. 71, 135, 199, 206;* Capt. Parry's 2d voyage, June 15th, page not recollected; and many others that might be noticed.

One reason why I believe the *power* of vision is not always explained by simple refraction is, that Captain Scoresby, one of the most scientific seamen who ever sailed to the North, informs us that the power of seeing objects at an immense distance, appeared to be confined to two directions, while in the other two points of the compass the vision was even more limited than on the equatorial parts of the Earth. Evanescent and uncertain as these observations may be, this is pretty strong; though I have little doubt, from the examples I have witnessed of your *facility* at *demonstration*, it will appear to be the *natural result* of a *regular* sphere.

If you will take the trouble of walking to the respectable house of Messrs. Reed and Gray, in Market street, in your own City, you will find, that while Captain Reed commanded a vessel in commercial pursuits, he was once in those remote parts of the Earth which answers to the supposed verge—that he saw land distinctly at the astonishing distance of 180 miles, at a time when the atmosphere was so clear, that stars of the third magnitude was visible. He considered it extraordinary at the time—made a regular entry of the distance in his *log book*, which, I have no doubt, you can see at *any moment.*

There are many other phenomena of those regions that might be adduced in further confirmation, and I omit them, only because it is extremely difficult to render them clear to the comprehension of the reader, without the *use of globes.*

There is one reflection which would seem very natu-

* The pages will be found to vary in different editions.

rally to follow in this place. These observations have all been made strictly in reference to the Earth's being a sphere, and when objects have been seen at a greater distance than could be expected from its globular form, the subject has been referred to, and accounted for, on the *principle* of *refraction*.

"Land and seas far within the imaginary verges, have frequently been traversed in all directions," &c. This is very imposing, and requires a passing notice. You admit, *that meridians* in high latitudes would form curve lines, occasioned by the deflexion of the verge to the plane of the equator. If the theory be true, such, indeed, will be the fact. A meridian is not necessarily a straight line. The very definition of the term is, 12 o'clock. Hence, take as many points from the equator to the high part of the verge, as will show the Sun farthest above the horizon at the same instant, then draw a line uniting these points, and it will be a true meridian, whether a direct or *curved line*.

The navigator or the traveller, therefore, proceeding North from the Equator, on the continent of America, when he arrives in the neighborhood of the verge, the meridian on which he is travelling or sailing, will turn imperceptibly to the right, and will be first indicated by an increased variation of the magnetic needle to the West, occasioned, as it unquestionably would be, by the meridians forming curve lines to the highest point of the verge.

A traveller, in like manner, proceeding North on the continent of Asia, when in corresponding latitudes, would observe an Easterly variation of the needle, corresponding to the Westerly variation on the continent of America, occasioned, also, in like manner, by the meridian winding along the verge to its highest or most *Northerly point*. That such are the phenomena of the needle, you have not attempted to deny, or to afford any other solution.

As it regards that mysterious agency which gives polarity to the needle, I profess not to be able to remove the veil which obscures it from the eye of philosophy. There are, however, some phenomena of the needle, that would seem strongly to corroborate the doctrine of winding meridians.

For many years after the discovery of the *compass*, it was believed that the needle exactly coincided with the plane of the meridian, and, consequently, that all the points of the compass agreed with the corresponding

points of the *horizon*. Columbus was the first who discovered the variation of the needle from a true meridian; but he was not aware that the variation was different, at different periods of time in the same place.

In the year 1394, we find, from the works of Edw. Gillibrand, Professor of Astronomy in Gresham College, that the variation of the needle was not always the same in the same place; and a thousand recent observations have confirmed it.

From the observations of Mr. Burrows, in 1580, the variation had diminished more than 7° in 54 years. In the year 1657, according to Mr. Bond's observations, there was no variation of the needle at London; but since that time it has been declining Westward, and is, at this time, about 24° Westerly of a true meridian.

We may then say, that on any meridian, to the 50° or 60° North latitude, there is a slight variation, or, perhaps, more properly speaking, an oscillation of the needle, alternately varying from East to West, and, after a succession of years, from West to East again.

The observations, within the above latitudes, are recorded, alike in Europe, Asia, and America. Now, the application or inquiry to be made is simply *this*: Why does the needle vary from 24° to 124° West, in high latitudes, as has been recorded by Ross and Parry, and never East, unless the meridian deviates from a true line? The same may be asked in relation to Asia. Proceeding North of Spitzbergen, the needle does not appear to vary, very materially, from low latitudes; and this is just what ought to be expected, from the meridian crossing more directly over the high point of the verge. The frequent sallies of the needle prove nothing against the general results; they only prove that, in high latitudes, it is more easily affected by local attraction.

It is believed, a navigator may proceed North, from our continent, guided by celestial observation, until he arrives at the 90°, where the meridians all meet under the pole-star or nearly so—and where the plane of the horizon will cut the axis of the earth at right angles; proceeding on in the same direction, until he arrives in Siberia, in Asia, suppose he had *exploded* the new Theory, and at the same time a polar opening of more than four thousand miles in diameter may exist. Hence all your observations about navigators having traversed, in all directions in the interior, does not need a comment, unless it be, the simple *remark*, that before a man attempts to criticise a Theory, he should, at least, make himself acquainted with it.

In remarking on the observations made on a meridian passing near Spitzbergen, you are equally unfortunate. You say they have been ten degrees within the verge. The error in your calculation appears to be founded on miscalculating the extent of the curve. Suppose the verge North of Europe commenced at 70° that it was 20° around it—would experiments made at 80°, be "10° *within it?*" Apply the same to the South. Besides, I know of no measurements taken in those high latitudes, and suppose you had reference to the vibrations of the pendulum. If the Theory be true, the labors of Sabine, will probably, when analyzed, indicate a greater flattenning at the poles, than was dreamed of in our old *fashioned philosophy.*

But, I have pursued this subject too far already, I did not intend to be led into a prolonged controversy, on the abstract question of the figure of the Earth. Such remarks as I supposed your review required, in relation to it, I have made.

I have purposely refrained from saying much about the general style of the investigation; I feared that I was not sufficiently impartial to do so. To examine the principles of the Theory was legitimately within the sphere of your Editorial labors, and no one has a right to complain. I leave it, however, for others to determine, how far you have been fortunate in the *manner* of your *analysis.*

If the subject deserved notice at all, it was as a matter of science, and ought to have been treated as such. Your play, therefore, upon words, and labored witticisms, will, I fear, be generally regarded as a *small business* for the Editor of a Quarterly.

Be this as it may, I come now to notice those parts of your review which I deem by far the most essential to be examined. They relate not so much to the theory as to matters of science and discovery in general, and this is the only light in which I shall treat them. If the positions you have so strongly assumed, be really true, then, there is at once an end to all further inquiry, and successful research toward the pole; there is a line, an *ultima Thule*, beyond which, human enterprise and adventure cannot extend.

Now, I have been taught to regard this in a very different point of view. I shall maintain, and with what success will hereafter appear, that there are important discoveries to be made independent, and altogether disconnected from "*visionary speculation.*"

I shall meet you on this point, and at the same time most studiously avoid saying any thing that can even be extorted into *theory*. If, in this inquiry, you shall, at any time, find yourself unpleasantly situated, the fault is yours, not mine. In the fervency of your zeal to explode a *new doctrine*, you may very imperceptibly and innocently have gone beyond the pale of well authenticated facts.

Not content with having *demonstrated* that the Earth *must be solid, with an increased density to the centre*, you go still further, and block up the polar regions with *eternal* and *interminable* fields of ice. And in relation to open seas in those directions, you observe, "*as to the North pole, we may now, perhaps, consider this as doubtful, as it is certainly not confirmed by the results of the late voyages.*"

This is the great and important point of inquiry. It is one on which we are directly at issue; as I shall maintain, that, so *far* from being the *fact*, the *reverse* is *true*; that there is apparently an icy circle, both to the North and to the South, which being once passed, the *ocean becomes* less *encumbered* with ice, "and the nearer the pole the less ice." This is, perhaps, a bold proposition, one certainly not to be decided by abstract calculation, or *speculation*, or *hypothesis*, or more probable *suppositions*; but must be received or rejected, in proportion to the evidence that can be collected and relied on.

I shall first examine the papers read before the Royal Society of London, by the Hon D. Barrington, and Col. Beaufoy, on the possibility of reaching the North Pole, as well as other authors. I shall make no attempts at originality, or chronological arrangement. Captain Robinson, in the year 1773, appears to have reached North latitude 82° 30′, and found the ocean open to the East, Northeast, and West, as far as he could distinguish from the mast head. His longitude was 8° East from the meridian of London. Captain Robinson is represented as having been an intelligent seaman, and with the experience of twenty years in the Greenland seas, gives it as his opinion, that the cold North of Spitzbergen, even in Winter, is by no means *intolerable*. See pages 17, 18, 19. In the year 1751, between the Spring and Fall fisheries, Capt. McCallam, an able seaman, determined to make an adventure towards the North pole, and accordingly did advance to 84°. The ocean was entirely unencumbered with ice. He maintains that he

might easily have gone North much farther, had it not been for the unnecessary fears of his mate, who entered his protest against his advancing in those remote, and perhaps, dangerous seas, especially as their business was *fishing*, and not *discovery*—page 21.

Many years ago, the Dutch were in the custom of sending a ship of war, to superintend and protect their Northern fisheries. On the authority of Dr. Campbell, the able continuator and revisor of Harris's Collection of Voyages, it is mentioned, that one of these vessels sailed North, in like manner, and with the same object of Captain McCallam, to the 88° of North latitude, or within 2° of the pole, where the "weather was warm, the sea perfectly free from ice, and rolling like the Bay of Biscay." The Captain would have proceeded further, but for his fears of being censured in Holland, and charged with neglecting his station at Spitzbergen.

For a long time after the Royal Society was instituted, it was customary for the Secretary to send questions to gentlemen residing in England, who had spent any time in distant countries. Nineteen questions were put to a Mr. Grey, who had remained some time in Greenland. The last question was: "How near any one hath been known to approach the North pole?" Answer: "I once met, upon the coast of Greenland, a Hollander, who swore that he had been but half a degree from the pole, showing me his journal, which was also attested by his mate, when they had seen no ice, or land, but all water." You will find a complete history of this account in Dr. Birch's History of the Royal Society, vol. 1, p. 202. I am well aware that this account may not only be considered as extraordinary, but improbable and impossible. Of its probability I shall say nothing—the fact is stated, whether with the intention to deceive, or from incorrect observations, I know not, neither shall I stop to inquire. Of its possibility, I would say a word.

Almost every voyage to those seas which abound with floating ice, proves the great difference between the quantities, as well as size, of those impediments to navigation, though in the same latitude, and in the same time of year. As illustration, when Davis went on his two first voyages to discover the Northwest Passage, he was not enabled to go beyond latitude 66°, while in his third voyage he penetrated to 72° 12′, with about the same difficulty. Around the great bank of Newfoundland, and in the harbor of Louisburgh, the ice is at some seasons so packed in with the land, that ves-

sels cannot sail beyond latitude 46°, while in other years Davis and Baffin have passed on nearly the same meridian, and in the same season, to latitude 70°. Indeed, there is nothing better established than the frequent changes and fluctuations of the field ice. A barrier, may be presented to-day of a hundred leagues in extent, and by the influence of winds and currents be removed in a few days or weeks, and afford a safe and easy passage to much higher latitudes.

If, however, the ice found in the Spitzbergen seas, come from the North, of course, the ocean round the pole must be free from such encumbrance, after the ice has left it. I cannot perceive, therefore, any impossibility attending a vessel in some favorable season, reaching even the above stated latitude.

It is not very probable that the ice found in those seas, comes from the *North pole*. Mr. Grey, as is stated in Brick's History of the Royal Society, says the South-east winds always bring the greatest quantity of ice to the coast of Spitzbergen, which is, indeed, highly probable. These winds sweeping along the coast of Siberia and Tartary, in Asia, carry along the ice which has been formed in the bays and among numerous islands, as well as in the immense rivers of those countries. In either case, it would not appear impossible to reach those high latitudes, unless from the difficulty of penetrating the field ice, in the first instance, of which I shall speak in another place.

There is an account in Harris's Collection of voyages, p. 396, given by Moxon, hydrographer to Charles the Second, of a Dutch captain, who sailed beyond the 90° and returned. The narrative is circumstantial and interesting.

You will find in the Philosophical Transactions for the year 1675, and No. 118, the following allusion, and indeed acknowledgment, of a vessel having reached a very high latitude: "For it is well known to all that sail Northward, that most of the Northern coasts are frozen up many leagues, though in the open sea it is not so, *no, nor under the pole itself*, unless by accident."

Captain Hutton, who had been engaged in the whale fishery for nearly forty years, frequently visited the Seven Islands, and the Straits of Waygat. In several of his voyages the sea was perfectly clear from ice to the North, as far as he could distinguish it with his best glasses. In one instance, he determined to make a bold attempt to reach the 90°, and maintains he would

have accomplished his object, had the mutiny of the common sailors, from superstitious notions, not prevented: they feared the attraction of the *pole* would pull all the nails out of the vessel, and leave them to perish! —p. 55.

In the same year and month Captain Gray was on the Western coast of Spitzbergen, and North latitude 79° 35′. After remaining in this bay for several days, proceeded North with an easy sail, for four days, expecting to meet with fields of ice, to which they might make fast; but they did not so much as encounter a piece that floated.

Mr. Adams, a gentleman of science, who was afterwards the Principal of an Academy at Waltham Abbey, in Essex, was on board, and made accurate observations, and found the latitude to be 83° North. The Captain, Mate, and Mr. Adams, went to the foretop-masthead, from whence they saw a sea as free from ice as any part of the Atlantic Ocean, and they all concurred in opinion, that had they been on a voyage of discovery, they might have advanced to a very high latitude, if not to the pole itself—p. 56.

Jonathan Wheatly, master of a Greenland ship, found an open sea, at lat. 81° 30, and says he saw Dutch Captains who had been much farther North—p. 58.

Hans Derick, in the German employ, reached latitude 86° North, with five vessels in company; they experienced little or no impediments from the floating ice—p. 60.

All the Greenland Captains agree, that the wind blowing a strong gale for any time from the North, opens the field ice. Such would hardly be the case if the *field ice* covered the whole Northern ocean.

Among other papers read before the R. Society, on the subject of the North Pole, was a letter from Samuel Standridge, dated Hull, March 4th, 1774. It contains in substance, that, having made an easy fortune in commerce, and trade becoming dull, he determined to visit the Greenland seas, to ascertain what opportunity there might be for making or losing a fortune. In April, he was in latitude 72°, catching seals among great bodies of floating ice.

After sailing through much loose ice, which is commonly the case, about the 6th of May he arrived at latitude 80°, which is near what the *Masters* call a good *fishing latitude.* He found the *farther North*, the *less quantity of ice*; and from the inquiry he made both

from the English and Dutch, which was very considerable, there was a great probability of ships going to the Pole, if not stopped by meeting *land* or *rocks*. It appeared to him, that the narrowest place in those seas, was betwixt Spitzbergen and the American coast, where the current is observed to come always from the North, which fills this narrow place with ice, but generally loose and floating. Those from whom he inquired, informed him that the *sea was abundantly clearer to the North of Spitzbergen*, "*and the further North the clearer*." This, he very justly concluded, went very strongly to prove a "*wide ocean, and a great opening to the North*," as the current comes from thence, that fills this passage as aforesaid.

The Astronomer Royal handed the following narrative of Captain Stephens, to the Hon. D. Barrington. As it comes from the Astronomer Royal, I suppose you will regard it as very high authority :

Captain S. was two years engaged in the Greenland fisheries. In his second voyage, his vessel, in company with a Dutch ship, were driven North by a Southerly wind, to latitude 84° 30′, or within 5° 30′ of the Pole. He did not find the cold excessive, met with but little ice, and the less the farther they went to the Northward—p. 79.

Such was the account given by Dr. Maskylene, and while we give him credit for his ingenious experiments on the base of the mountain Schehallian, we must, for *consistency's sake*, give our full faith to this statement of a navigator going far to the North, and finding an open sea. "As to the North Pole, this may now be doubted."—*Astronomer Royal* against the *Editor* of the *American Quarterly, Greek against Greek.*

One of the most interesting articles on the North Polar Seas I have met with, may be found in the *Encyclopædia Britannica*, vol. 6th, p. 214. It concludes in these words :

"On the whole, then, we should say, that the probability of an open sea towards the North Pole, rather predominates ; it is a *theory* which has been entertained since the days of Dr. Hooke, and all the Greenland fishermen are impressed with this opinion."

The Rev. Mr. Tooke, Chaplain to the factory at Petersburgh, has given several facts, which, if they can at all be relied on, go strongly to prove that the sea is open to the Pole. Mr. Tooke says he has been informed by persons who passed the Winter at Kola, in

Lapland, that in the severest weather, whenever a Northerly wind blows, the cold diminishes instantly, and that, if it continues, it always brings on a thaw, as long as it lasts. Extraordinary as this account may appear, it is, nevertheless, strengthened by Barrentz, who wintered on Nova Zembla, and by the Russians, on Maloy Brun. If my memory does not deceive me, Ross and Parry speak of the Northerly winds being very little, if any colder, than those from other points of the compass. The Northerly winds, therefore, cannot be supposed, in the coldest seasons of the year, to sweep over ten or twenty degrees of ice.

Should we, for a moment, leave the path of experience and observation, and reason from an abstract analysis of the polar ice, the same conclusion may be legitimately drawn. The ice generally formed in the ocean is seldom more than six inches in thickness. It appears like partially melted snow, that has become hardened : is more easily broken into pieces, less transparent, and when melted, is found to be intermixed with salt.

When the salt water is frozen around islands, in bays, in shallow water, and near the land, it is very different from that formed in fresh water. It is by no means so solid and transparent ; consists of thin *laminæ*, or plates, between which the brine is deposited. If the ice be washed, the brine may be removed, and the ice become sweet ; if melted together, it is brackish to the taste.

Now the great body of the polar ice is not of this kind, but solid and transparent, and must have been formed in fresh water, or at least, less salt than the main ocean ; from all of which, I conclude, that if the ice is not formed in the mid ocean, there is a time when the ocean is comparatively unincumbered with it, and that that time is late in the season, after the ice has melted ; or earlier in the Spring, before it becomes detached from the shore, from around islands, and in bays, and from thence thrown out into the main ocean, forming what is called islands of floating ice.

Hence it is not a matter of astonishment, that explorers have so often failed. They commence their voyage in the Spring ; encounter the field *ice ;* struggle with the rigor of nature all Summer, and go into Winter quarters at the very time, when, if they were distant from land, the ocean would be unincumbered with ice. The British navigators seeking a Northwest passage, were bound by their instructions to find it by scrutiniz-

ing the bays and coasts of the continent, and thus have been frequently stopped by the *young ice*, which begins to form near the shore, almost as soon as the heat of the Summer sun begins to decline. It is impossible, therefore, that voyages thus conducted should be more successful than the preceding. I appeal to any practical seaman to say, what can be expected, even from the intrepidity and daring adventure of a Parry, while contending with the impediments experienced by creeping around the indentations of the coast in the coldest part of the globe, or making way among numerous islands, each of which serves as a point of retardation, by affording the means of support and extension to the earliest ice which forms. But, suppose Parry had found an impassable barrier sailing West, among numerous islands, what has that to do with the possibility or practicability of exploring the polar regions, by a bold adventure in the mid ocean, to be persevered in, even when the ice begins to form near the land ?

Take the broad principles of nature, ever the same, under like circumstances, for our guide. Observe a large river, the ice is compact, and firmly attached to the shore, long before it is frozen in the centre. In Baffin's Bay, the Esquimaux go out in mid Winter, some twenty or thirty miles, and fish for seal over the edge of the ice ; so that a vessel might sail through the middle of that bay at any time before the ice has left the land. As proof of this, it is on authentic record, that the ice in a harbor in Hudson's bay, being broken up by an unusual swell, a vessel was driven out, and contrary to expectation, passed through the Straits without any impediments, and arrived in England in the middle of Winter, while in May and in June following, the Straits was blocked up with floating ice.—*Barrington.*

It is useless to multiply instances in which navigators have reached high latitudes. *You say that* the polar seas *are not open, and especially, that recent authority does not warrant such a conclusion.* Ancient authority is decidedly against you. Let us examine that which is more recent. You will find in Mr. *Walsh's* "*National Gazette*" of November 9th, 1825, the following strong confirmation of what I have already stated :

"We have much reason to believe, that there is no great extent of land approaching the North *Pole.* Whales that have been harpooned in the Greenland seas, have been found in the Pacific Ocean. They have been taken with stone lances sticking in their fat,

(a kind of weapon used by no nation now known) both in the sea of Spitsbergen and in Davis's Straits. The whalers uniformly agree in their statements relative to the diminution of ice beyond the eightieth degree of North latitude; and as Mr. Scoresby is of the most respectable authority, I quote the following passage from him: 'Our latitude, on those occasions, in the month of May, [1806] as decided from observations taken with a sextant, by myself and my father, was 86° 50′, 81° 2°, and 80° 12′; after which we sailed so far to the Northward, as made about 81° 30′.' Here Mr. S. could not have been repelled by ice, or he would have mentioned it. He does not assign any cause for returning. It is to be presumed that his fishing required his attendance. The Hon. James Barrington collected much valuable information on this head, which he read before the Royal Society," &c. &c. In the paper containing the above extracts, you will find a very interesting article written *on the North West Passage*, by a gentleman of the first order of intelligence, to whose correction I would advise you to submit all future articles that may appear in the Quarterly, on the geography of the Poles.

All the world knows, that Captain Ross, in the year 1818, penetrated the icy circle, and put back, while there was an open sea, with every necessary encouragement to advance to the North and Northwest. It is just as well known, that Parry saw an open sea to the North, while he was steering West, on his second voyage. Franklin, in the year 1818, when North of Baffin's Bay, informs us in his Journal, that all the ice he met with, would not have impeded the progress of a long-boat. Despatches from the same hardy and daring spirit, only two years ago, North of the same Bay, dated Winter quarters, inform us, "that from an elevation of two hundred feet, and with the best glass, not a speck of ice to be seen in the Polar sea. The white Whale and Seal were seen in greater abundance."

So much for the past and recent evidence in favor of open seas about the *Pole*.

I know the objections that may be urged against some of the accounts detailed. You may say they were not all men of science, and that they may have been deceived in the accuracy of their observations. This objection may be substantially true, and, at the same time, their evidence in favor of open seas, and the uni-

versal dimunition of ice beyond latitude 80°, not in the least impaired. It does not require an astronomer to *know* and to distinguish the difference between fields of floating ice, and an open ocean. And, without the least disrespect for you, I must say, that I would rather rely on the opinion and information given, by a man of plain, *practical* sense, who had been twenty or thirty years in those high latitudes, than on all the calculations and *demonstrations* you and I could make, at our desks, in a dozen years.

In addition to all this, Barrington and Beaufoy, as well as Pinckerton, in his voyages, maintain that the climate is not only milder, but the productions of nature more abundant at latitude 80°, North, than at 76°. On this point, as well as open seas, I shall introduce one more authority, in relation to the North Pole; an authority which, of itself, will put to blush the declarations you have made, as well as many an American citizen, that the Editor of an *American* Quarterly should have made it. I mean J. Barrow, F. R. S. and present Chief Clerk in the British Admiralty. In his "Voyages into the Polar Regions," I find the following: "That the North Pole may be approached by sea, has been an opinion entertained both by experienced navigators, and by men eminent for their learning and science [ex. Ed. American Quarterly] that several ships have, at different times, been carried 3° or 4° beyond Spitsbergen, and the usual limits of the whale fishery, is not merely a matter of opinion; and if the Polar Sea be navigable to the height of 84°, there seems to be no other physical obstruction, than the intervention of land, to the *practical* navigation of that sea, to the North Pole itself; as there is no reason to believe that the temperature of that point is lower in the Winter, while it is probably much higher in the Summer, than on the parallel of 80°; as it is *well known* that the latitude of 80° is generally not colder on the same meridian, and in many places much less severe, than that of 70° is in others. The Russians pass the Winter very well on Spitsbergen, but they had not ventured to Winter on Nova Zembla, many degrees to the Southward of it. Deer live and thrive in 80° latitude in Spitsbergen, but cannot live in 75° in Nova Zembla."—Page 373.

Barrington says: "Nova Zembla hath no soil, herbage, or animals; and yet, in Spitsbergen, in six degrees higher latitude, there are all three; and on the

top of the mountains, in the most Northern part, men strip themselves to their shirts, from the warmth. The celebrated Mr. Boyle, from these and many other instances, rejected the long-received notion, that the Pole was the principle of cold."—Page 101, and Morden's Account of Spitsbergen, page 105.

It is the invariable tradition of the Samoides and Tartars, who live beyond the Waygat, that the sea is open to the mouth of Nova Zembla, all the year; and the most knowing people of Russia are of the same opinion. These authorities ought certainly to have more weight than simple conjectures.—*Page* 103.

To the South, our information is limited to fewer facts. Little has been discovered in that hemisphere since the days of Cook: who, it is true, was not able to advance beyond 71°, 25′; but this attempt was not made in the most favorable season of the year. The *cold* is known to commence nearer to the equator in the Southern than in the Northern hemisphere, 55° being quite as intense as 70° in Lapland.

From this fact, the *ancients* took up the opinion, that the Southern Polar regions were composed of nothing but impassable barriers of field and floating ice, which, of course, increased and became excessive in approaching the *Pole*. The philosophers and learned Reviewers adopted the same belief. And yet, whoever will take the trouble to examine impartially their statements, weigh the contrariety of their opinions, and consider the singularity of their reasoning, will see, and be convinced how unsatisfactory their *notions* were, and how totally insufficient the subtle speculations and *demonstrations* of the human mind ever must be, in relation to matters of this kind, when altogether unassisted by the lights of experience and of *actual* observation.

An opinion hazarded, ten years ago, in favor of open seas to the South, beyond the icy circle, would probably have been regarded, and no doubt pronounced, by you, *visionary and impracticable*. Recent facts show that such is the case. The London Reviewers admit it, and you follow very *gracefully in the wake*, and say, "the South Pole is differently circumstanced."

You are compelled, from the example of the *transatlantic* Reviewers, to admit the account of the intrepid Weddell, who has lately shown that the icy circle to the South, as well as to the North, may be passed. To use his own words, "In latitude 74°, 25′, South, NOT a

speck of ice to be seen; the mildness of every thing around us is such, that our situation might be envied, were it not for the well known fact, that we have to penetrate immense fields of ice, in returning to the equator."

This is a most intensely interesting and imposing fact, and well calculated to arouse the spirit of *inquiry*. Does not this *fact*, a *navigator* dreading the ice in putting back towards the equator, but describing easy and plain sailing towards the Pole, awaken new thoughts, and more clearly show the propriety of extending our researches into those remote regions of our globe? In the words of Captain Parry, "who can tell what there is where man has never been?"

The experience and observations of Captain Weddell, led him to maintain the doctrine of a milder climate about the Poles; and that he believes there is an icy circle, may be very clearly inferred from the following paragraph: "The difficulties attendant on the navigation of the Antarctic sea, so far as I have seen, consist in having to pass through chains of *ice islands*, floating between *latitude* 60° and the *Polar* Circle. Within this portion of both hemispheres, probably, the principal ices will be met with."

The above authorities which I have quoted from in favor of a milder temperament and open sea about the poles, is very powerfully sustained by the collateral evidence derived from natural history. The migration of fish and animals of the arctic regions, is flatly denied; you say "it is by far more reasonable and probable, that the fish find a Winter retreat, in the deep sea where the temperature is uniform and moderate."

It is indeed very difficult to contend with a person who reasons as you do, denying a position, by saying something else is more *probable* or reasonable, and at the same time, not adducing a single fact, in support of your "*probability*."

The history of the Northern regions is one of curious inquiry, doubtless involved in some obscurity, and about which there is some contrariety in evidence. I regret that the limits of this communication will not allow me to enter into a full discussion of it. Such as I have time and space to give, you shall have. All *whalers* agree in their account of the immense shoals of *fish*, of various kinds, which appear to come down from the North in the Spring season of the year, progressing from the arctic regions towards the equator. The *herring*

is well known to be a fish of passage. I do not say that they come from the interior, but from beyond the *icy circle.* At any rate they set out from high latitudes, in vast colonies, and their number exceeds the power of the imagination to conceive.

As they begin their course to the South, they separate into two great divisions; one body moves to the West, and pours down the continent of America, as far South as the Carolinas. When they are first caught on the coast of Labrador or Newfoundland, they are in their finest and best condition; but, as they progress further South, become unfit for the market.

The other division takes a more Easterly direction, towards Europe, and falls in with the coast of Iceland about March.

Upon their arrival at that coast, their phalanx, which must have suffered much, by the indiscriminate attacks made upon it, by the sunfish, cacholot, porpoise, grampus, whale, &c. is nevertheless found to be many hundred miles in extent, or in the words of some authors, 'larger in extent than the Island of Great Britain and Ireland united."

That those shoals ever return North again is certainly a matter of great doubt; I know of no author that says they do; it is known they become very poor towards mid-summer, and millions of them die, and render many parts of our coasts offensive by floating on the shore. The young *herring* are found in great numbers in many places in low latitudes. I know of no direct evidence, that they go North to complete their growth, and prepare for the market. It is probable, however, they do; and yet, one could hardly suppose they go to the bottom of the sea, where the temperature "is more uniform," or huddle round *ice bergs*, in the *rigorous climate* of the "*icy belt*," which Weddell informs us extends from the 60° to the polar circles.

The German navigators, who, at various periods, have been detained in ice, say the ocean is almost destitute of fish in the Winter, which goes very strongly to prove that the migratory fish do not winter on this side or amongst the ice. Where then do they come from?

Basking shark are migratory from the arctic seas. They frequent the coast of *Norway*, Orkney Isles, and the West coast of Wales, some time in June, and at the end of July return again to the North.

In open seasons the vessels engaged in the whale

fisheries, generally find a passage through which they shoot forward along the coast of Spitsbergen, to latitude 79° or 80°, where the whale are most abundant. The chase of whale seldom lasts more than two months in the year, commencing at the close of April, and terminating with the month of June, when these vast monsters of the deep disappear. Where do they go? That they do not come South is within the knowledge of every intelligent individual.

Do you suppose they retire "into the deep sea, where the temperature is more uniform and moderate." How can this be (to equal you in authority) since Dr. Mitchill says a *whale is not a fish*? There is some philosophy in the doctor's remarks. A whale is constituted with lungs, and breathes as an ox, and cannot remain under water more than 20 or 30 minutes. So that in this the accuracy of your knowledge is only equalled by your *physical demonstrations*, where you attempt to show that a man, by the use of a lady's *fan*, might fly from one place to another, on the interior of a hollow sphere, constituted with polar openings.

In latitude 73°, in Baffin's Bay, Parry informs us that the number of whale was astonishing; that not less than 50 were seen in the course of a single watch. He considered it as a strong indication of an opening from Baffin's Bay into some sea still farther to the North, into which the whales were going, in consequence of being pursued by the fishermen in the lower seas. Page 58, Voyage of the year 1818, 1819, written by Fisher. On the 2d of August, when still further to the North, and at longitude 80°, 30, West, the number of whales was still greater, spouting in shoals like porpoises, many of them appeared young, at least of a small size—page 66. Vast number of beluga or white whale, were seen, the same which M'Kenzie, Hearne, and Franklin describe in the open polar seas. Barrington (page 50) says, "if the ice extends from North latitude 80°, 30′, to the pole, all the intermediate space is denied to the Spitsbergen whales, as well, perhaps, as to other fish. The whales which require so much room will be confined to two or three degrees of latitude in the neighborhood of Spitsbergen;" and yet the Germans inform us that these seas are destitute of *fish* and *whale** in the *Winter*. Where then shall we look for their Winter retreats, if not beyond the *icy circle?*

* See Pinkerton's Voyages.

In relation to land animals, our information may not be so well defined; few travellers having been North by land, compared with the many who have been in high latitudes by sea. Hearne, however, has given us much useful and interesting information. His opportunity has been very good to do so, having remained many years North of Hudson's Bay. He states that large droves of musk oxen abound within the polar circle, few of which are ever seen so far South as the Hudson's Bay factories. That the Winter retreat of the white *bear* appear to be unknown. Page 357, 368. The white arctic *foxes* come down from the North, in incredible numbers, and that there is much conjecture as to the place where they originate—page 364, 365. Hearne also informs us, that swans, geese, brants, ducks, and other wild water-fowl, are so numerous about Hudson's Bay, in the Spring and Summer, that the company every season salt up vast quantities of them, sometimes 60 or 70 hogsheads—page 442.

He enumerates ten different species of geese, several of which (particularly the snow geese, blue geese, brent geese and horned wavey,) raise their young in some country unknown even to the Indians—pages 442, 43, 44, 45, 46. Their eggs and young are never seen by them, neither have the most accurate observers been able to discover where they make their Winter residence, as it is well known that they do not migrate to the Southward; but few of them ever pass South, and some of the species are said never to have been seen South of latitude fifty-nine degrees—page 445.

Most of those fowls moult or shed their feathers in a peculiar manner, in the Summer, and become nearly naked. Hence it would seem, the time of their incubation must be in Winter, while absent, as it would not probably be while moulting; whereas, the migratory geese and ducks of this country are not known to shed their feathers in any great degree; and are all well known to raise their young in the Summer, while North. It may, therefore, be inferred, that many of those water fowl, which Hearne describes, raise their young beyond the *icy circle*. As many of the ten species of geese he saw there, are unknown further South, it establishes the fact, that they do not come South to winter.

The cold Winter of 1709 is within the recollection of every reader of history. Birds and beasts were found dead in the fields, sentinels were frozen at their posts, and men perished, in every part of Europe. The olive

plantations in the Southern part of France were nearly all destroyed, the Mediterranean was frozen over about Geneva, and the orange groves suffered in the finest parts of Italy. It was during this Winter that swans and various other water fowl migrated farther North than they had ever before been seen, where they found the sea unincumbered with ice, while all was solid and compact to the South. See Pontotidam's Natural History of Norway. Also, the History of Greenland, by the Moravian Missionary Crantz, p. 45.

In Rees' Cyclopediæ, article *Reindeer*, I find the following: "The reindeer are found in the neighborhood of Hudson's Bay, in most amazing numbers; columns of eight or ten thousand are seen annually passing from North to South, in the month of March or April, driven out of the *woods* by the musketoes, (driven out of the woods from the North,) seeking refreshment on the shore. In the Autumn, the *deer*, with their *fawns*, *remigrate* Northward again.

The *Indians*, also, kill great numbers of them during the season of migration, watching in their canoes, and spearing them, while passing over the rivers of their country, or from Island to Island."

In the article *Hudson's Bay* it is stated "The *reindeer* pass in vast herds towards the North, in October, seeking the extreme of cold."

Hudson's Bay is between North latitude 60° and 65°, from which it appears they start North "to seek the woods." Now let us see what Parry says: "On the 25th October, (1818) at lat. 74° 30′ and long. 110° W. all the deer set off to the West and N. W. when pursued, and even when not molested are observed to be travelling in that direction," p. 146-47. In latitude 75° speaking of the soil he says, "The soil of this land is much superior to any we have yet seen in those regions; along the shore, indeed, and for a little distance inland, it consists only of fine sand, but beyond this the surface is covered with a black mould, which, in a temperate climate, I have no doubt, would be very productive: for even here, in the valleys and the places where there is any moisture, it produces grass of a considerable length, and finest moss in abundance." Speaking of the musk ox he observes, "Although we have not yet seen many of these animals, it is very evident that this land must be frequented, if not constantly inhabited by them in great numbers; for their bones and horns are found scattered about in all directions," p. 109.

It is true, the reindeer remain in Lapland during the Winter, and this they may very readily do, finding shelter and sustenance in the thick forests and productions of the country. You speak very correctly, that the buffaloes Franklin saw, retire to the woods in the Winter: and that "Michel" should propose to Franklin, a journey to the West or Northwest, with the view of finding deer, in the woods, is just what any other Indian would have done. But why expect forests in that direction, since we have generally been taught to regard that as the point where vegetation is destroyed by the intensity of the climate?

I am strengthened in my opinion that the Winter retreat of these animals is still a matter of curious conjecture, and not too well understood, from the remarks of Commodore Phipps, on the natural history of Spitsbergen: "But the most wonderful thing of all is, how the deer can survive an eight months' famine. They feed upon nothing that can be perceived, but the vegetables which the earth spontaneously produces, and yet for eight months in the year the earth produces neither plant, shrub, nor blade of grass of any kind whatsoever. They are besides but thinly clad for such a climate, and what seems still worse, there is no woods to shelter them, within the distance that man has yet discovered. The means of their subsistence must remain, therefore, among the secrets of nature, never to be disclosed, as no human being can ever live here so as to trace these creatures to their Winter residence."

Trace these creatures to their winter residences; from which it would seem, the Commodore supposes they leave the Island, but where they go, is the great secret. *Malte Brun*, in his account of the same Island has this remark: "another animal, the amiable and timid *reindeer*, browses the moss with which all the rocks are covered; but as soon as the polar day is over, these animals return across the unknown countries to Asia or America."

Now, that they do not come to the continent of America, would seem pretty evident, from the immense distance; and that they do not migrate Southeast to Asia, I would conclude from the fact, that the rein-deer in Siberia, from latitude 70°, migrate North and Northeast, in the month of Oct. and return in the Spring. At least such is the fact, if the testimony of Professor Adams, of St. Petersburgh, can be relied on: in other matters he is regarded as good authority. You will find it among

the *Transactions*, and in the number containing the account of the large animal taken out of the Siberian ice, by the Professor, and under the direction of Alexander, late Emperor of Russia.

An author, on the Russian discoveries, makes use of the following arguments, drawn from Natural History, in favor of the Island *Alaksu* being united to the continent of America. "River otters, wolves, bears, and wild hogs, which were observed upon the island, will, perhaps, be thought to afford strong presumptions in favor of a neighboring continent: Martins were also caught there, *an animal which is not known in the Eastern part of Siberia, nor found upon any of the other islands; also, reindeer and wild dogs.* To these proofs from Natural History, we must add, the reports of a mountainous country covered with forests," &c.

The late Russian discoveries, and especially those of Baron Wrangle, show conclusively, that the continents of America and Asia are not united. The above arguments, therefore, prove, if they prove any thing, that the island Alaksu is connected with, or lying near to, some more extensive region of country, extending on to the North, East of the Fox and Aluthian islands, "covered with forests," and the boundaries of which are not yet known. (Coxe's* Russian Discoveries, pp. 232,233.)

Again, there were Indians, whom Hearne, in his Journal, calls strangers. They lived far to the Northwest, travelled a year in that direction, and agreeably to their account, there was no end to the country. In this, we must make due allowances for the limited knowledge of natives in the distance and course of countries, though in both, they have sometimes shown great sagacity. On the 11th of Jan. as some of the Indians belonging to Hearne's party, were engaged in hunting, they observed the tract of a single snow shoe, and tracing it came to a little hut, containing a lonely female. She appeared to be one of the natives who lived far to the Northwest, and had been taken prisoner, together with her party, by the Athapusco Indians, and was the only one of her party, who had not fallen a victim to their inhumanity. She had eloped from them with a

* William Coxe, A. M. F. R. S. one of the senior fellows of King's College, Cambridge, Member of the Imperial Æconomical Society at St. Petersburgh, of the Royal Academy of Sciences, at Copenhagen, and Chaplain to his Grace the Duke of MARLBOROUGH—I suppose you will readily admit, he has titles enough, in all conscience, to make his authority good.

view of returning to her own tribe, but the distance was so great she had lost the track, and had therefore made a little hut, and supported herself by snaring rabbits, for "seven moons" without seeing a human being.

The rigid philosopher, who regards nothing as certain, except squared by a mathematical *calculus*, may not consider this fact as very imposing; neither do I. It is not intended as *demonstration*. I am willing to let it pass without comment, for just what it is; a fact which would go to show a chain and continuation of human beings, residing on to the Northwest.

This appears to be a proper place to notice your remarks on the Arctic Highlanders. In the year 1818, Captain Ross, when North of Baffin's Bay, in latitude 75° 55′, met with natives, hitherto unknown to civilized man, and of whom, in substance, he gives the following account:

When Sacheuse, the Esquimaux interpreter, inquired from whence they came, they pointed to the North, where they said there were great many people, by their figurative expression, more than pieces of ice in the sea around the ships. They would not believe Ross when he informed them that he came from a contrary direction, pointing South, because, say they, "there is nothing but ice there." Beyond the land to the North, "much water there," open sea. "They seemed most happy and contented, their clothing was in good condition, and very suitable to the climate, and by their account, they had plenty of provisions. They had a *king*, whom they called *Tuloowah*, his residence was near an island," which Ross supposes must have been Wolstenholm, but did not ascertain the fact. He is represented as living in a house built of stone, as large as a ship; "great many houses and people there;" that he was a *strong* and *good man*; they gave him a portion of all they caught, "and returned to this place, when the sun went away, with the fruit of their labors."—p. 134.

I shall never forget the *grave* and *dignified* tone in which you respond to this evidence in favor of the continuation of *human beings* and *open seas North*.

"Now it happens that this mysterious country, was but a short distance from the places where the interview occurred; that it was soon after visited by Capt. Ross; and that he describes the nature of the country, their mode of living, dress, religion, and the very latitude and longitude." That I might not do you injustice, you see I have quoted your own words. What

comment shall I make on them? It will not do to say the Editor of the American Quarterly is unacquainted with the facts upon which he comments, and still worse to suppose he misunderstood them; and yet one of these two is most certainly true!

Let any reader, of the most ordinary sagacity, examine Ross's voyages, and he will most unquestionably and unequivocally find, that the whole number of natives seen was eighteen; that they were merely on a fishing excursion; that their habitations, seen from the ships, were only temporary, and that they returned North "with the fruit of their labor, when the same went away." Every fact which Captain Ross acquired, in relation to their *country, manners, customs, religion, dress*, &c. was got, not as you say, by visiting their habitations, for that *he never did*, but derived exclusively from the eighteen that visited his ships. Had you examined more than the index to Ross's voyage, or read further than the mere caption of chapter 7th, where these facts are given, you would have found the following in page 135, and which must be decisive of the point at issue, viz: that Ross never examined or visited the regular residence of these natives. These are his words: "We had not an opportunity of visiting the habitations of the Arctic Highlanders." After acquiring, through an interpreter, the facts, as detailed, of their manners, customs, religion, &c., he continues—"Such is the substance of what we collected, in our short intercourse with this interesting People, which may appear to be defective; but it must be recollected that the ships were always in motion, principally from the state of the weather, which rendered it impossible to send parties on shore after the first day. We still had daily hopes of obtaining a more complete access to them, even to *the last moment, when we were obliged to leave this part of the coast;* and proceeding Northward from our last station, had still the prospect of visiting the King, and filling up the measure of our information respecting them. These hopes were *ultimately disappointed*, as will appear from the events of the ensuing chapter." So much for the Arctic Highlanders. Further comment is not necessary; and the *fact*, that Ross met with natives North of Baffin's Bay, who resided further North than has yet been explored on that meridian, and that they would not believe that he came from the South, stands unimpaired, let the inference drawn from it be what it may!

To this I may add, that the extent of Greenland to

the Northwest, has evaded the persevering researches of the *Danish Missionaries*. All that is known, is, that the Greenlanders, after passing a *strait*, have communicated with *tribes* of their own race, North of Baffin's Bay—see the highest authority in physical and historical Geography, Malte Brun, book 64, p. 46.

I shall conclude this communication with a few remarks on the *phenomenon* of drift wood, in the Polar seas, which, as there is nothing new with you, you may dispose of and account for at your leisure.

On the currents flowing from the North, between Spitsbergen and the continent of America, large trees have frequently been found at latitude 80°, whereas, no timber is known to grow above latitude 70°. Every season, vast quantities of this floating timber is lodged on the coast of Norway, some of a tropical kind, and seeds evidently tropical in so recent a state as to germinate and grow. What makes the matter more astonishing, is, that these things appear to come by currents flowing from the North, whereas, according to your doctrine, these regions are covered with perpetual ice. It is believed, that these tropical seeds could not come from the Gulf stream, as that current loses itself in the great expanse of the Atlantic ocean long before it could be thrown into so high a latitude as to come South by currents flowing by Spitsbergen. Again: the Southeast currents, from Hudson's Bay and Davis's Straits would be likely to intercept its course to the North. The current from Hudson's Bay across to Europe, appears to be proven, from one of Capt. Parry's experiments. It was customary with Parry to throw a bottle over board every day, with their latitude, and other observations sealed in it. One of them was found in the Bay of Kilabra, in Ireland, after floating 10,080 miles, at the rate of three miles per day.

If this current be regular across the Atlantic, the course of the Gulf stream must necessarily be intercepted. The Europeans who reside in, or rather visit Greenland, as well as the inhabitants of that country, depend exclusively on drift wood for fuel, as well as every other use they make of timber. Among this wood are great trees torn up by the roots, which, being in the water a long time, rubbing and dashing against the ice, are quite bare of branches and bark, and corroded with *worm* holes, which proves it must once have been in milder climes. There is some green, with buds on it. The greatest part of this drift is pine and fir. There is also a good

deal of a species of wood finely veined, and with few branches. There is also a solid reddish wood, of more agreeable fragrancy than the common fir, with visible cross veins; it is supposed to be of the same species as the beautiful silver-fir, or zerbils. Crantz, in his history of Greenland, says: "It is plain this drift wood comes out of a cold but fruitful and mountainous country, but it is difficult to determine where that country is." Do you say it comes from Terra Labrador; how can this be, since it comes with the currents, and beats on that coast? Do you consider Canada the origin of this timber; I ask you why the ash, oak, and other species of timber, which grows in Canada, is not found with it, which is not the case. This drift wood is found in great abundance in Iceland.

Let us, then, pursue this subject still further, and see if its origin can be derived from Siberia in Asia. The Russian vessel which set out in the year 1735, by Imperial order, from the river Lena, to Kamschatka, in search of a N. E. passage, met with immense quantities of this timber in their Winter quarters; the shores were covered with it, which floated there from other countries. The shores between the rivers Gennesse and Ob were lined with it. The freshest lies close to the shore, and further on the land lie dry and rotten trunks, which clearly establishes the fact that this timber comes from some other than the interior of that country.

On Kamschatka great quantities of the same drift wood is found, where there is no fir growing; but, as the inhabitants report, comes from countries unknown to them. See Miller's collection of Russian Transactions, vol. 3d, p. 60. That I have not attached an importance or thrown a mystery over this subject, that does not belong to it, will be admitted from the following remarks of the sagacious Malte Brun: "But the wood that is denied to the Icelanders by the earth is brought to them by the ocean. The immense quantities of pines, and firs, and other trees which are thrown upon the Northern parts of Iceland, is *one of the most astonishing phenomena in nature.* The masses of floating wood thrown upon the Island of John De Mayen, often equals the whole of this Island in extent"—book 77, p. 105. If you say a part of this drift may be carried by the current putting North through Behring's Straits, into the polar basin, and from thence brought down upon these islands; this will subvert your own position, and establish the *one* I have been laboring to maintain—the free and unobstruct-

ed navigation of the polar seas, after the icy circle has once been passed. Without indulging in any visionary or theoretical speculations, what an extensive and interesting field is here opened for the contemplation of the philosopher and the naturalist! How very different from any thing the reader would be led to suppose, by the perusal of your article. In that he looks in vain for one liberal, one redeeming sentiment. If destined to preside over the republic of letters, to exercise an influence in forming the taste and directing the sentiments and thoughts of the community, how well it would become you to encourage the spirit of enterprise and adventure, and all the noble workings of genius of your own countrymen. In this I do not mean that you should tolerate *visionary speculation*, or admit without a gallant struggle any thing new in philosophy. The history of Reviewers will not allow me to indulge in any such expectation. They stand like watch dogs, on the *Hill of Science*, and snarl and bark at every *votary*, who has the hardihood to go one step beyond the *beaten track*. But no sooner is a new path, in any department of science successfully marked out, and received the sanction of public opinion, than you find *certain great writers*, who, a short time before, had denounced, place themselves in advance and in the most soothing and encouraging manner, *beckon* to the child of genius to *come on*. Hence your strictures on the New Theory has occasioned no surprise—it is such a pretty target to shoot at, and upon which to display your extraordinary powers of *demonstration*, that they might have been looked for. With me it is only a matter of regret that in your zeal to blow it *sky high* you should be led into a train of reasoning, which has an obvious tendency to retard the general progress of science and discovery. I appeal to any and every individual who has read your communication on this subject, if he can lay it down subscribing to your general conclusions, (not in relation to the *Theory*) of the *settled and well defined state of things about the Poles*, and feel the least interest in any further attempts at discovery in those remote parts of our globe. It is to this general *sentiment* I would reply, rather than *quibble* about Theories and enter into the *small business* of discussing the size of the *Esquimaux*. It is, and has been, my object to show the reasonableness of an expedition to the Poles, and that there is a high probability of making interesting discoveries, independent of all visionary speculation.

Had you admitted this, and stated a few other things a little differently from what you have, these hasty remarks, with the next and concluding number, had never been given to the public.

Very respectfully, I am, yours, &c.

J. N. REYNOLDS.

No. III.

To the Editor of the American Quarterly Review:

SIR: In page 237, of your Review, I find the following sentence: "The newspapers have teemed with essays, circulars have been addressed to all the learned Societies in Europe and America, addresses and petitions have been presented to our National and State Legislatures, certificates of conviction and adhesion have been procured by men in high literary and political stations, *in favor of the theory.*"

By this gratuitous sentence, what an elevated station you have assumed, and with what complacency you can look down upon the busy, bustling, productive multitude below! Newspapers editors, men in high literary and political stations, National and State Legislatures, are all to be enlightened, instructed, and corrected, by the *fulminations* of your luminous pen.

Is it not, however, a little strange, that, while hundreds of the most intelligent citizens, legislators, editors, and all, have simply thrown the weight of their influence, and, in many instances, contributed their means, towards *an expedition* to extend and improve the boundaries of human knowledge, strictly on the principles upon which other nations have acted, you should pretend to have misunderstood the nature of their efforts, disregard their declarations and publications, and then attempt to demonstrate that they too are visionary? In extenuation, it must be admitted the inducement to do so was very hard to be resisted.

Your Quarterly is to be republished in London and Paris; and, besides convincing the literati of the *Old World* that Philadelphia "can boast of a greater fund of talent, erudition, and science, than any other American City," you will stand forth in a most imposing and enviable *attitude*, as the mighty *Ajax*, the great *correcting and redeeming genius of your country!*

Now, sir, these things may do well enough when confined to *a Gazette;* but, when embodied in a regular

work, which will be read and preserved, if only for the sake of the versatility of talent displayed in the communications contained in it, the case is very materially altered, and it becomes necessary that the facts should be stated as they are, and as they have been received and considered by the community.

I might, with great justice, call on you for the evidence in favor of your declarations, but shall not do it. I will take the *onus probandi* on myself. I shall show, that although lectures have been and may again be delivered on the figure of the Earth, and on the importance of exploring the polar regions, yet, so far as I am interested, it was not with the intention or expectation of making *proselytes* to any *new doctrine*, but simply with the view of eliciting a spirit of enterprise, and of acquiring the means of prosecuting a voyage strictly on national and scientific principles: and that such is the only light in which it has been regarded by *editors*, *legislators*, &c. You, therefore, stand alone, and hold all the *honors* in your own hands that are due your *candor*, either in this country, or beyond the waters.

It then becomes necessary to inquire into the nature of the various essays which appeared at different times on this subject. The inquiry will be interesting at this time, not only to ascertain how well informed you have been, and how fairly you have represented the spirit of those essays, but *that* which is of far more importance, the expression it may afford of public sentiment, in relation to such an undertaking by the citizens of this country, at this time, under the direction, protection, and aid, of the *Navy Department*.

I shall confine myself to the *essays* which have appeared in relation to my own labors. The first was the intelligent editor of the Scioto Gazette, Ohio. He maintained, at some length, and with his usual ability, that, leaving all theories out of the question, the importance of an expedition to the Poles could not be doubted by any intelligent individual, and that there were, most certainly, to say the least, many unexplained phenomena in those regions well deserving the serious inquiry of any enlightened nation. The editors in Zanesville and other parts of Ohio responded in the same liberal spirit. In Wheeling, Virginia, a most lively interest was taken in favor of an expedition. The editor said, the doctrine of spheres was imposing, but advocated the expedition strictly on scientific and national considerations. The remarks of the Wheeling editor were republished in

Washington, Pennsylvania, and the same sentiments concurred in. In Pittsburg, there was much published on the nature and condition of the polar regions.

The abstract question of the figure of the Earth was discussed at some length, but all agreed that, so far as a voyage of discovery was the object to be decided on, it should receive the encouragement and hearty co-operation of all the friends of science.

The editor of the Mercury, present Mayor of the City, has given a liberal and persevering support in favor of such an undertaking. Essays have also appeared in the papers of Brownsville, Uniontown, Greensburgh, Bedford, Chambersburgh, Carlisle, Harrisburgh, Lancaster, York, and other places in the State, and all have been in favor of science and exploration. Now, sir, I venture the assertion you cannot find a paragragh in one, or from one of these papers, expressive of the "adhesion" of the editor or writer in full belief of the Earth being *hollow*. They were not called on to make any such declaration; they heard a theory explained, as a *head* under which facts could be arranged; and the only conclusion urged was, the "utility of extending our researches into those regions, with the view to collect facts, alike regardless of old or new doctrines;" and, to this proposition, such an expression has been given, as would, on any political subject, be regarded as decisive of the sentiments of the community.

Is *positive* testimony of this required? Then, let the language of the editor of the Franklin Repository speak for itself: "Few can resist the reasoning in favor of extending scientific research to the South seas, and we are not a little pleased to see the *liberal* ground on which the contemplated expedition is put, not being connected with any favorite or specific doctrine, but for discovery, as connected with matters of science and commerce. The undertaking from this country is novel, but not so from others. Many expeditions from England and other countries have been fitted out, aided by private subscriptions; and if they have not all been successful in making important discoveries, they have at least done something for the progressive stock of knowledge, and of course deserve the thanks of the human race."

The editors in the State of New Jersey, as far as I have been able to collect, have spoken but one language in relation to the expedition. I know of none who are proselytes to *new doctrines*, but the ablest of

them have maintained that an expedition to the South Pole could scarcely fail in adding much to our present limited knowledge of those regions, and to the honor of our country.

In New York, I have seen the most liberal sentiments expressed, especially in Utica, Schenectady, Albany, and the City of New York, and yet you will not find in any one of them an advocate of the *New Theory*. And why you should have attempted to blend them together is to me a matter of astonishment! Ever since an expedition has been spoken of, it has been advocated exclusively on those broad and liberal principles upon which the friends of science can all unite.

The first public annunciation of the expedition was from the Editor of the *New York Mirror*, and what does he say? "This will be no Utopian expedition. It is not undertaken on the presumption of the truth of any definite Theory, or supported by its advocates alone. The plan is taken up upon liberal views, for the extension of geographical knowledge, and the benefit of mankind, and is untrammelled by the fetters of any bigoted doctrine. All intelligent and scientific persons agree that the Polar Regions still offer an extensive field for enterprise and discovery; and they cannot fail to look with interest and encouragement upon any attempts to penetrate the mysteries of those unknown regions of the globe. A great many individuals of this kind, proselytes to no new doctrine, have, therefore, combined to give countenance and support to the projected expedition."

There is an article, which appeared in the *New York Advertiser*, of the 6th ultimo, under the head of "Voyages and Travels," of more than ordinary merit. I do not recollect to have met, *in any place*, a communication embracing so much useful and interesting information; I give an extract:

"At a period when the principal nations of Europe are exemplifying their claims to that distinction by the most laudable means; when, instead of rivalry in war, we see them cultivating the arts of peace, and proving themselves worthy of the title of civilized and enlightened, by assiduously prosecuting inquiries likely to benefit mankind by the improvement of science, we have thought that, to throw together, in a single point of view, a considerable mass of the floating intelligence upon one branch of pursuit, *that of geographical information and improvement*, might be acceptable to the public. England, Germany, Russia, and France, are all distinguished for the activity with which they have recently been, and are exerting themselves to augment our information with respect to those parts

of the globe which we inhabit, that are either altogether unknown to us, or very partially or imperfectly known. Surely, next to the grand lesson, 'Know thyself,' the most obvious business of human beings, endowed with reasoning faculties, is to make themselves acquainted with their species throughout the earth, which is their inheritance, and with the various forms, productions, and phenomena, of the earth itself. Otherwise, we resemble persons who live in ancient edifices, and are content with the apartments in common use, without caring for suites of rooms, galleries, turrets, vaults, and other places which surround them, and might be made to contribute greatly to their comforts and enjoyments. Indeed, it seems to be a reproach to Europe, that, during the last five hundred years, though so much has been done, so much has been left undone, in this matter. Of the four quarters of the globe, it may be said that even Europe has several portions unvisited—and Asia immense regions; that Africa is little understood even on her coasts—and that of America on three sides, we are all but ignorant. With the new quarter, (if it is so called,) Australia, we have still less familiarity; and yet we direct our most earnest attention to the sun, moon, and stars, in order to ascertain their courses, movements, climates, &c. &c., while so miserably defective in the intelligence respecting ourselves and our own planet. Let us hope that the spirit now abroad will, in good time, remove this cloud of darkness; and that, as becomes an age which boasts of its skill, and science, and enlightenment, we may, instead of hardly knowing one half of our ball, be able to give a tolerable account of the world on which we have our being."

I might adduce a thousand facts to prove that the memorial presented to Congress during the past session, was never regarded by those who signed it, even at a distance, as in any respect connected with speculations about the figure of the earth.

Noah, *in the New York Enquirer*, speaks of this matter as follows: "We mentioned a few days since, the memorial (now in a course of signature at Baltimore) to Congress, for aid and authority towards prosecuting a voyage of science and discovery in the Polar seas. It may be well to refer to that petition again. The English periodicals have expressed an opinion, that the discovery of a North west passage must be reserved for our country, should it be abandoned by Great Britain. And this opinion is certainly true. We have no jealousies on the subject; but still our pride and triumph would be inexpressibly great, if such an achievement should fall to the lot of this country. Hitherto we have contributed almost nothing to the science of maritime geography. The period has at length arrived, when the resources and experience of our rulers enable them to

enter upon new projects with greater certainty and more liberal means."

In speaking on this subject, the Editors of the State of Delaware have been very explicit. The Statesman says, "the memorial has been signed by a large number of the most respectable citizens of this place, and vicinity, who would give their hearty approbation, to an expedition of the kind suggested in the memorial." The Gazette concludes an essay on the subject in these words :

"The recollection, however, should be distinctly borne in mind, that the immediate object of his present pursuit is not to establish any particular theory ; but to induce an investigation into matters of science, and to lead to a voyage of discovery, with a view to a general advancement of knowledge, and the benefit of mankind; without regard to the effect it may have in establishing former opinions, or in producing new ones. It is for this purpose that he is endeavoring to procure signatures to a memorial to Congress ; and it affords us pleasure to say that the number and weight of character of the individuals who have signed it in this place, is such as to show that the general sense of our citizens is decidedly in its favor."

In a card which I had the honor of addressing to the citizens of Baltimore, will be found the following plain exposition of the grounds upon which the expedition has uniformly been placed : "It is essential to the success of the enterprise that the principles on which it is founded, be distinctly known ; and I avail myself of this opportunity of again repeating, that its object is to collect facts, without reference to the support of any theory."

I will select a few extracts from the Baltimore journals, for your special instruction.

"Whether the theory be true or not, the fact of its being either the one or the other, has nothing to do with ours, and what appears to us to be the object of Mr. R. We wish simply to promote an exploring expedition to the South. That there are interesting discoveries to be made in those seas, no one of sufficient intelligence to form an opinion will deny." Again, "in addition to the liberal and appropriate contributions of nautical instruments, noticed yesterday, as having been offered for the use of the proposed expedition of discovery, another gentleman of this city has offered a first rate day and night telescope, and another gentleman proffers a liberal contribution of ship-bread for the same service. These are all *voluntary offerings* to the cause of *science*, and evince a spirit in our citizens both

liberal and enlightened. Should Congress patronise such an expedition, we have no doubt the citizens of the United States would be well pleased. Of this, however, the formidable list of names that will accompany the memorial will afford the best testimony."

How much theory can you make out of the following editorial remarks of the Baltimore Chronicle, of September 27th? "With the object of Mr. R's visit to the seaboard, we confess we are pleased, and do hope he will find in his Atlantic brethren, a patronage that will enable him to carry his enterprise into full and perfect effect. The subject of an exploring expedition to the South, prosecuted by competent individuals, on scientific principles, must necessarily meet with the approbation of all who are friendly to the cause of science. In other cities Mr. R. has been patronized by many distinguished individuals, and comes before our citizens thus recommended to their notice," &c.

It was about this time, some *Editor*, I believe in the city of Philadelphia, took it into his head, as you have recently done, not to understand the nature of the contemplated expedition, and made some *very* witty remarks about the doctrine of spheres being the true philosophy of nature, instead of solid globes, which elicited from a Baltimore paper the following reply: "But why all this excitement? Why do not editors state things as they are given? Has not Mr. R. said in print, in public, and in private, that his object was to excite inquiry, and to elicit the patronage necessary to explore the South seas, unconnected and untrammelled with any bigoted doctrine or favorite theory? We have heard him repeat in his lectures, 'no matter what the contrariety of opinion may be, concerning the abstract figure of the earth, there can scarcely be but one opinion on the importance of extending scientific research.' It was the presentation of these liberal views, that elicited the few remarks we have made. It is in accordance with these views alone, Mr. R. solicits the patronage of the public. We have no doubt but Mr. R's highest expectations will be fully realized by his visit to our city. The liberality of his views does not require the question of the theory to be taken into consideration, by those who aid this laudable undertaking."

I might go on to notice all that has been published on this subject, in Fredericktown, Hagerstown, and Annapolis, in Maryland; of the spirited and liberal expression of the most intelligent citizens in each of those

places, but it is deemed unnecessary. In spirit it is precisely the same as that which has been given above.

In every part of Virginia, where the memorial has been presented, the same generous and ardent spirit has been evinced, and the memorial signed by such numbers and such characters, as evidently to show, that the citizens of the old domain would not be the last in community, in throwing the weight of their influence, in favor of an undertaking, which has for its object, even in a remote bearing, the improvement of science, the interest and glory of our common country, and the benefit of the human race, by enlarging the boundaries of human knowledge.

Of the encouragement given in this City and District, I need scarcely speak. The officers of Government and citizens have shown a liberal spirit, and were among the first on the list of patrons in favor of an expedition to be prosecuted on principles strictly national and scientific, as England, Russia, and France have done.

The *Potomac Chapter*, with a liberality congenial with the leading principles of its institution, ordered a contribution from its funds, accompanying which was this appropriate expression: "The donation was made, with the view to further whatever rational efforts should be made by men of science, or the philanthropist, to ameliorate the condition of the human race, and to aid in the general objects of a maritime expedition, unconnected with any theory whatever, respecting the figure of the Earth."

Such is a substantial, though very brief review of the interest manifested in this large portion of the community in favor of the present projected voyage of discovery. That I have not colored, or set aught down in malice, I appeal to the *Editors* and citizens of every place, of whose encouragement I have made mention.

It is not an appeal for protection. I feel able to defend myself against *all who* are censurably misinformed, or improperly represent, as you appear to have done. I mean nothing harsh, but I do mean to be understood, and to call things by their names. A few individuals might be set down as visionary, but it is ridiculous in the extreme, to insinuate or suppose the thousands who have stood forward as the supporters and encouragers of a voyage of discovery from this country, and who have petitioned Congress to that effect, should at the same time be engaged in abstract and philosophical speculations and disquisitions about the figure of the Earth.

The memorial has been published and republished in many places; Legislatures have signed and sanctioned it; and Congress has referred the whole subject to the Secretary of the Navy, for his disposal, within his discretionary power. I give an extract from it:

"The period of our national existence has been only about fifty years—and the history of man shows no parallel of the progress we have made in population, improvement, and power. From a small nation struggling for liberty, we have grown into a powerful one, capable of defending on the land or at sea, the blessings won by the war for independence. The American name is known and respected to the utmost verge of civilization—our eagle is a denizen of every clime—our sails are unfurled on every sea—our vessels are hailed in every foreign port as the harbingers of plenty—and the enterprise and perseverance, courage and constancy of the American People, are, if not unrivalled, at least not surpassed. What man can do, it is our character to feel able to attempt—What man has accomplished, the American feels that he is able to do—Whether it be to defend his liberties on the field of battle, to grapple with an enemy on the deep, or to penetrate the burning line, and pursue his gigantic game within the icy circle, and with an ardor that insures success, where the People of other nations would fail, because of a want of the same energy and zeal to excel.

"The enlightened British nation have been extending their researches to the North by land and by water; the final result of neither is yet given to the world; but if either should succeed in presenting any thing interesting to science, the glory of the discovery will justly belong to the British nation. We would rival them in all that is great and good, and return light to them for light received, in whatever is useful to science and the arts—and, therefore, respectfully suggest, that, under the patronage of the United States, an expedition should be fitted out without delay, and proceed to acquire a more perfect knowledge of the Northern parts of our own continent, or, if possible, to enter the more interesting and extensive field for enterprise, in the Southern hemisphere, and provided for the purpose, with hardy seamen, and scientific persons, bring home to us the result of their labors for the honor of our country, and the benefit of mankind. It is believed, that individuals proper for such an expedition might easily be prevailed upon to undertake it, and that the expenditure of a small sum, for an object so interesting, would meet with the approbation and support of the great body of the American People."

In this memorial you cannot find a single expression, or even an obscure allusion to the theory of Capt. Symmes; there was none intended. It is, therefore, an unfortunate and too late an hour for your mystifications, and you will be more successful in attempting

"To pluck bright honor from the pale faced moon."

than to acquire fame by this new method of making war on community; unless, indeed, it be a distinction of which few will be invidious—the distinction of being justly pitied.

It would seem enough has now been said to place this matter in its true point of view, and to throw back, with *leadened* weight, the allegations you have made, on the *sources* from whence they emanated.

The memorials presented to the State Legislatures only remain to be noticed. It is very true the memorial was presented to the General Assembly of the State of Maryland; and, in reference to it, Mr. Tyson introduced a preamble and resolutions, which passed, I believe, with but one or two dissenting votes:

"Whereas foreign nations have long turned their attention towards the acquirement of a more perfect knowledge of the geography of the earth, by means of voyages of discovery; and by their exertions have not only acquired reputation, but extended the weight of their influence, opened new channels for commercial enterprise, and benefited the human race by enlarging and improving the boundaries of knowledge: And whereas the Government of the United States has attained a high standing among the nations of the earth, (the practical result of the most stupendous, as well as successful experiment ever made in polities,) a population fast increasing, commercial relations and interest co-extensive with the civilized world, nautical skill, perseverance, and enterprise, if not unequalled, at least unsurpassed: And whereas, the sending out of one or two vessels on a voyage of discovery, would not be attended with any very heavy demands on the public treasury, and would seem to be in strict accordance with the character and liberal policy which ought to be pursued by a Government, whose political existence is in a great measure dependent on the general intelligence of her People: And whereas, a great number of the most enlightened citizens of different sections of our country, have memorialized the Senate and House of Representatives of the United States in Congress assembled, and have set forth in their memorial—'That, under the patronage of the United States, an expedition should be fitted out without delay, and proceed to acquire a more correct knowledge of our own continent, or, if possible, to enter the more interesting and extensive field for enterprise in the Southern Hemisphere; and, provided for the purpose, with hardy seamen and scientific persons, to bring home to us the result of their labors, for the honor of our country and the benefit of mankind.' And whereas, voyages of this kind, even when they fail in making important discoveries, bespeak a liberal policy, and give character to the people who undertake them. Therefore,

Resolved by the General Assembly of the State of Maryland, That we do highly approve of the views of the said me-

morialists, believing that a polar expedition, if properly conducted, could scarcely fail in adding something to the general stock of national wealth and knowledge, and to the honor and glory of the United States."

Is there any thing ambiguous in this resolution; or, is it not a liberal declaration, in behalf of a science alike credible to the members, to the State, and to the nation? Is there any thing visionary in it? Do you not suppose they were as well acquainted with their own intentions, and the import of their own language, as you are? If they had intended this declaration as an expression in matters of philosophy, do you suppose they had not independence enough to have said so? If you do, you have yet much to learn of the Maryland character.

Mr. Tyson, in his remarks in favor of the immediate passage of the resolution, in the House of Delegates, said, "I do not stand here as a philosopher, or a speculatist, or the advocate of any theory whatever; but as a legislator, bound to look upon all undertakings in the light of their probable effect upon the honor and interests of my country. Who will say, that the polar expeditions, fitted out under the British Government, have not added to her glory—though they have failed of the desired success. We should not only emulate her in this struggle of enterprise, but aim at surpassing her. We have surpassed her in the science of Government—we have beaten her on the ocean and on the land; we have conquered the conquerors of the conquerors of Europe: now let us surpass her in the field of discovery, the great regions yet open to nautical enterprise, the extreme North and South, where, if we fail, we fail with honor. Some gentlemen are deterred from voting for this resolution because they think the expression of the opinions of this Legislature will have little effect upon the decisions of Congress. I cannot think so meanly of the judgment of this Legislature, as to suppose it unworthy of a rational attention, nor can I have so poor an opinion of the good sense and liberality of Congress, as to suppose they would look upon that judgment with indifference. If they should, however, we will, by the passage of this resolution, shew ourselves superior, in public spirit and general intelligence, to those who, being superior to us in authority and power, should be not inferior in those qualifications necessary to constitute a great and growing Nation."

I will pursue the history of this subject further, and show that it has been viewed and acted on, in like man-

ner, by other Legislative bodies. The memorial was presented to the members of the Pennsylvania Legislature, and was signed by them. This act, to one or two editors of your city, has been a fruitful theme for remark, on several occasions. "Saul was among the prophets." They appear to have considered the honor of the State as compromitted, and brought their small shot to act in concert with the heavy guns of the *Quarterly*, to redeem it. Monstrous offence, that one hundred members of the Legislature should so far have lost sight of the *dignity* of the State, so far detracted from the "*talented* city of Philadelphia," as to admit there were any *new discoveries to be made;* and that they should suppose it would be honorable in this country to add something to the common stock of science, exactly on the same principle, and with the same motives, that England and other countries have done; and, worse than all, that they should have joined with their sister State, and with thousands of the most distinguished and intelligent citizens of the community, in simply recommending such an undertaking, to the consideration and patronage of Congress; that they should have done all this, (and I challenge you to show that they have done more) appears sufficient to call down the displeasure of the Editor of the Quarterly, who, by this, it would seem, intends to bear down, with a heavy hand, upon all undertakings in which he is not consulted: to admit or reject with the same inflexibility of purpose, and much in the same manner, that is ascribed to Lady Hauton, in her supercilious rule of the "*imperium in imperio*," of Almacks.

After all, what are the simple facts of the case? A memorial was presented to the members of the Legislature, setting forth the propriety of an expedition, without attempting to establish any hypothesis, that the example of European Nations to further the cause of science might be followed; that we might add something to science, or, at least, show the will to contribute our share; that, however young in years, as a Nation, we would not remain behind any other in zeal to improve and benefit the human race. Such was the nature and import of the memorial, and as such, they promptly sustained it, and, thereby, shewing a liberality of sentiment and zeal in the cause of general improvement, from which the Editor of the Quarterly might draw some instructive lessons.

Had I room, and were it proper to introduce, in this

place, the concise address I had the honor of delivering before that Legislature, it would forever, with the candid, show the principles upon which this whole matter has been uniformly conducted.

Some of these remarks appear to have been taken down and published in the Pennsylvania Intelligencer. If an apology be necessary for inserting an extract here, let it be found in your article, which, unresisted, must have a tendency to *paralyze* the efforts now making, however humble, in the field of discovery, by placing it before the public eye in colors and dress of your own selection.

"What is the nature of the memorial which I present for your sanction? Does it call on you to legislate on matters of philosophy—to decide on the relative merits of conflicting doctrines? No: let these be left for schoolmen. You have a higher and more important duty to perform. You are called on to throw the weight of your influence, not in favor of any special doctrine, but in favor of an attempt, on the part of the General Government to extend the boundaries of geographical knowledge. It is proposed to send one or two vessels to explore the immense and unknown regions surrounding the Southern pole, or to acquire a more perfect knowledge of the Northern parts of our own continent. In this proposition there is nothing concealed—no recommending one thing, and meaning another. There is nothing which has not been acted on by other Nations. It will be no Symmzonian expedition, though the truth or fallacy of his doctrines may possibly come within the scope of observation; it will be one, in some degree, of National concern; placed under the direction, and act under the instruction of the Navy Department, to which it properly belongs. It is on these broad and national views, that I place the consideration of this subject; it is on these alone I would act, were a nation's resources at my own disposal; it is on these principles alone you are called to act; it is on these general and liberal principles hundreds of your fellow citizens, in various parts of the country, have acted, when signing the memorial which is now before a Committee in the House of Representatives of the United States. It was in accordance with these high and national considerations that the House of Delegates of your sister State of Maryland gave its decisive vote in favor of the undertaking. With such views, also, did the Chief Magistrate and

Council of that State add their names to the memorial. Yes, and it has also been signed by the only hand which death has not *palsied*, of the list of choice spirits, who pledged their lives, their fortunes, and their sacred honor, in favor of our invaded rights and liberties—Charles Carroll, of Carrollton. He is still amongst us, like the proud Mausoleum of another age, scowling on the assaults of Time. The spirit of freedom hovers around him; he lives in the affections of ten millions of freemen. Yonder sun that has just set beneath the Western horizon, that has rolled around the heavens, from the commencement of time, never saw their equal, not even when he looked down upon the immortal Greeks, and beheld them spurning the Persian yoke, and nobly defending themselves on the bloody plains of Marathon. But this is a digression—perhaps, the impulse of feeling."

It is quite unnecessary to say more on this part of your review. I should not have said so much had I been the only individual interested. Sufficient has been presented, to show conclusively, that the expedition is by no means predicated on other, than principles upon which all the friends of science can unite. One conclusion, therefore, only, remains to be drawn. You have either been miserably misinformed, in part, on the subject upon which you have written, or, being informed, have not acted in regard to the light received. You are forced to one alternative, and may select between them.

In the House of Representatives, the proposed expedition was regarded and treated in its proper light. Mr. Buchanan, the able and efficient member from the State of Pensylvania, introduced the memorials from his State, accompanied by a few remarks: "that he held in his hand a memorial signed by a number of individuals, whose character in society, and whose sound judgment was not to be impeached, recommending an expedition, *not in relation to theory*, but for the purpose of discovery, in high Northern and Southern latitudes; and he hoped an expedition would be granted to explore the seas which wash the polar regions."

That the Select Committee, to whom the memorials were referred, regarded the subject in the same manner, will be seen from the subjoined statement, which I had the honor of submitting to them:

Gentlemen: I beg leave, succinctly, to state the case now before you as a Select Committee, in relation to a voyage of discovery. 1st. The memorial is most respectably sustained by

a resolution of the State of Maryland, and by the Governor and Council. By the Governor of Pennsylvania, and by near one hundred members of the State Legislature. By the Governor and other citizens of Ohio. You will also find memorials from the States of New York, Pennsylvania, Delaware, Virginia, Maryland, Ohio, &c. of the most respectable character. Presuming that the memorial, from the number and respectability of those who signed it, is deserving the most courteous consideration, I proceed, in the second place, to remark, that the objects of the memorialists will be promoted by a simple reference of the whole subject to the Secretary of the Navy, with a view, that, if an expedition be undertaken, in part, by individual means, it may receive the protection and aid of the Department, so far as is consistent with the general interest of the service, without increasing the expenses of it. The memorialists wish a reference, for the following reasons:

1st. The expeditions hitherto fitted out have not all returned, because it was impracticable to proceed further.

2d. Those who have gone furthest have, in more than one instance, put back with an open sea before them.

3d. The experience acquired by preceding attempts would enable an expedition to go to sea at this time, prepared to avoid many of the obstacles heretofore encountered.

4th. As far as explorers have yet gone North or South, human inhabitants, land, and marine animals, have been found.

5th. Our officers are brave and persevering, and our seamen among the most hardy and adventurous on earth.

6th. The history of maritime expeditions abundantly prove that successful adventure, in high latitudes, depend rather upon small, strong, and comfortable barks, with a well chosen and determined crew, than upon large vessels, with splendid and costly outfits.

7th. All these circumstances combined, justify us in believing, that an expedition, undertaken at this time, strictly with a view to the improvement of science, collect interesting facts in natural history, open new channels for commercial enterprise in animal furs and oil, could scarcely fail in adding something to the stock of general knowledge, and to the honor and glory of the United States.

8th. It is confidently believed that, with the protection of the Department, hundreds of the most distinguished citizens of our country will encourage the enterprise; this, joined to the means already tangible, will give strength and character to the expedition.

9th. To refuse a reference, is to discourage the spirit of enterprise of our citizens. To refer it, is, perhaps, the most unexceptionable method by which such adventures can be encouraged, as it cannot interfere with the powers assumed or denied, as belonging to the General Government.

Respectfully, I am, yours, &c.

J. N. REYNOLDS."

REPORT.

"The Select Committee, to whom were referred the memorials of sundry citizens of New York, Pennsylvania, Delaware, Maryland, Virginia, and Ohio, proposing that, "under the patronage of the United States, an expedition should be fitted out to acquire a more perfect knowledge of the Northern part of our own Continent; or, if possible, to enter the more interesting and extensive field for enterprise, in the Southern Hemisphere," beg leave to Report—

That, from the number and respectability of the memorialists, and the character of the proposed Expedition, the memorials are entitled to the most respectful consideration; but, your Committee, waiving the discussion of any present advantage to be derived from a more "perfect knowledge of the Northern parts of our own Continent," or the utility or feasibility of making further discoveries in the Polar regions of the South, deem it inexpedient, at this time, to make an appropriation of money to set on foot the expedition contemplated by the memorialists; but they nevertheless, recommend, that the said memorials be referred to the Secretary of the Navy."

This report was concurred in by the House.

The memorials being thus referred to the Secretary of the Navy, become a matter of record in that Department; and I am at *liberty* to state, have received the respecful consideration, to which the number and respectability of the petitioners are so justly entitled; and further, that so far as it relates to an expedition, on such principles as have been set forth in this number, and contemplated by the memorialists, the most cordial co-operation and friendly feelings of the Secretary may be relied on; that within his discretionary power, he will extend the aid and protection of the *Department so far as is consistent with the general interests of the service, without increasing the expenses of it.*

In this expedition there are no extravagant feelings or expectations entertained. Is is a plain practical common sense undertaking, such as other nations and People of other countries have encouraged and carried into full and perfect effect: one, which, though it may not strike out *deeds* of *wonder*, may nevertheless be the means of acquiring much useful information in the hydrography and geography of the Antarctic regions; as well as many important and interesting observations, on the atmospherical, magnetical, and electrical phenomena, which cannot fail materially to advance the science of Meteorology; and also in many valuable collections of objects in natural history, which inhabit a part of the globe, where few researches have yet been made in this branch of science; especially concerning the Winter re-

treats of those sea animals, which are peculiarly interesting as sources of commercial prosperity.

The hunting of the whale and seal, heretofore carried on with so much vigor, has produced the natural and necessary consequence of rendering those animals more timid and fewer in number, by their destruction, without reference to season.

This makes it extremely desirable that new situations should be explored, where these animals may be found in greater abundance, and procured with less uncertainty and risk. The result of the voyages, heretofore, show, conclusively, that the objects of value to this branch of commercial enterprise, are to be found, with great facility, in the remote polar regions.

In relation to Captain Parry's expedition, an able French writer makes these very judicious and liberal remarks: "Were the discoveries which Parry made, in relation to the obscure laws that govern the magnet, the only fruit of the English expeditions, they had not been undertaken in vain. But they have, besides, expanded the bounds of geographical knowledge, and added greatly to the whale fisheries; and, above all, they have thrown a new splendor over the nautical glories of Great Britain, and enhanced the dignity and value of human nature. They have proven, that man, enlightened by the arts, is more than a match for the obstacles of nature, in her wildest ferocity."

The Southern seas present, by far, the most interesting and extensive field for inquiry, and scientific research.

It is true, we find the whole surrounding coast of the North Polar Sea inhabited; the European part with Laplanders and Fins; the Asiatic shores with Ostiacks, Samoyedes, Tchustskies, and Koriacks, who derive their subsistence from rein deer and dried fish; and the Northern shores of America, by the various tribes of the Esquimaux; and it has yet to be determined how far human inhabitants, land, and marine animals extend towards the North Pole.

In looking, however, upon a globe, it will be found, that, from 60° to 70° North, more than half its circumference is land. Such great extent of coast must necessarily furnish large quantities of ice, which is thrown out in the Spring, and *floated* by the Northerly currents into the channel or sea between Spitsbergen and Greenland, *choaking* up this narrow part, and rendering a Northerly passage more difficult than to the South, where there is a great expans' of ocean, through which it is always

more easy to pass the field ice; and yet, if human testimony can be relied on, even the *icy circle* to the North may be passed.

I will make all the allowances you can require, for the want of science, in the observations of those men, stated in the second communication, as having attained high latitudes. Take them, however, as a mass of evidence, joined with those which have been more recent and accurate, and do they not speak a language that can scarcely be misinterpreted.

One can hardly suppose that so many men, at different periods of time, and entirely unknown to each other, should have combined to deceive mankind: so that the universal diminution of ice North of latitude 80°, and of open seas about the poles, rest on the same kind of testimony, and on a chain of evidence by far more interesting and irresistible than a thousand other facts in history, now in the entire possession of the public confidence.

The unexplored part of the Northern sea may be considered about twenty-four hundred miles across it, or seven thousand two hundred miles in circumference; whereas, to the South, there are more than a million and a half of square miles, which have never been visited by the footsteps of man.

The circumnavigation of the Southern hemisphere will not bear an average of more than 57° South latitude; hence, there may yet be many large islands undiscovered in that direction, which, indeed, is rendered very probable, from the quantity of field ice found in those seas.

A navigator might sail North, from the equator, on a meridian between Europe and America, to latitude 60° or 70°, and return, believing there was no land North of the equator. In the same manner, the few advances South prove nothing against the existence of land in that direction; the three farthest of which, even to latitude 71° 10′, 67°, and 67° 30′, and two of these, on meridians 136° and 148° West, which still leaves about 340° of longitude, in which the Antarctic circle has never been approached. To the above advances South, we may now add that of Weddell, who, a few years since, at latitude 74° 25′, hailed an iceless ocean, and gave it, as his opinion, that the great body of ice would be met with from lat. 60° to the circle.

If the icy barrier has been passed in one instance, it may be passed again; if Englishmen have crossed it, Americans "*can try.*"

All the world know our seamen are hardy and adventurous; and especially, that those from the Eastern States, who have been engaged in the whaling and sealing business, inured to cold, to hardship, and ice, would be inferior to none on earth for such a service. It has been justly said, by Burke, of England, many years ago, that the farthermost verge of the civilized world, was a mere stepping stone for them to go still further.

It is not intended to run heedlessly and without due preparation into this undertaking. Such an expedition as this is not a party of pleasure, and the dangers, hardships, and privations of navigating the polar seas, must be provided for, by furnishing the vessels with many comforts. We hear much about the splendor and cost of British Expeditions, and no doubt, they are splendid and costly. Their vessels were from 350 to 450 tons burden; furnished not only with the necessary conveniences, but even with luxuries; with printing apparatus, for issuing a small paper on board, and with proper articles to keep up the London fashions in masquerades, on the vessels. Plain Republicans can do very well without any such extra preparations; and with two vessels of only 200 tons burden each; with such little *barks*, well braced, made comfortable, and provisioned for at least two years, we would put off, without making any more *parade* than old Nantucket's sons do, when they go a sealing: and, if we did not make such interesting discoveries as the British, might, at least, make a beginning, see whether American officers and seamen can stand *frost* as well as Englishmen; and, perhaps plant some *land marks*, that may guide the future and more successful mariner.

If the *expedition* should only succeed in throwing a *harpoon, catching a seal, or chasing a whale* nearer the South Pole than any other Nation or People have done, it had not been undertaken in vain. But suppose, like Weddell, under some fortuitous circumstances, the icy circle should be passed, a few days press of sail would reach the 90°, where anchor might be cast on the axis of the earth, our *eagle* and *star-spangled* banner unfurled and planted, and left to wave on the very pole itself, where, amid the novelty, grandeur, and sublimity, of the scene, the two little vessels would turn once around in twenty-four hours. Such an achievement would add new lustre to the name of American philosophy, and new laurels to the hardy and daring enterprise of our

seamen. To say nothing about probabilities, just such a result is certainly possible, even to the present proposed expedition; and if so, where is the individual, so illiberal as to discourage, though he may not approve, or rather, where is the individual in community, who has the means, and would not contribute something towards its accomplishment?

The British have long taken the lead, in maritime discovery; the rivers, bays, promontories, and capes, of the North, bear the names of their Lords, their Dukes, and Admirals: Are there no discoveries to be made by Americans, that shall perpetuate the names and memories of our own distinguished citizens, statesmen, patriots, sages, and heroes?

It is urged that such adventures should be undertaken only by an act of Congress? However desirable such an event might be, who will say that it is even probable? To wait for such an event, it is believed, would be much like the man in the *fable*, who loitered on the banks of a river, waiting for the waters to flow by, that he might pass, not recollecting that the source from whence it emanated, was inexhaustible. The constitutional powers of the General Government, to make a direct appropriation, is a point on which politicians are divided, and no resolution could pass, without a prolonged and a doubtful controversy. This expedition is free from such objections; and is placed, perhaps, on the only principles that will be likely to succeed, at this time, or for many years.

So fond are we of every thing European, and frequently so much disposed to follow exactly in their footsteps, that some suppose nothing can ever again be done in the field of discovery, without the expensive equipages of a Ross and Parry. I own, vessels must be comfortable; but, it remains yet to be decided, how far such splendid and costly outfits, with the public hopes raised so high, will surpass those, with smaller vessels, fewer men, in behalf of which there is no national character pledged, or high expectation entertained.

Let the labors of a Hudson, a Davis, and a Baffin, speak in relation to this point. Let it be remembered that these men, in frail vessels, of only five and twenty tons, ill-provided, by intrepidity, perseverance, and skill, with the facility of managing small vessels among the ice, extended their researches nearly as far as the more recent adventurers have gone. Parry pays the highest tribute of respect to their memories, and to the fidelity

and accuracy of their observations, even in the longitude. "I feel, (says he) the highest pride on the one hand, approaching almost to humiliation on the other: of pride, in remembering it was our countrymen who performed these exploits; of humiliation, when I consider how little, with all our advantages, we have succeeded in going beyond them."

To this expedition, some of the choicest spirits of the Navy have offered their services. Several gentlemen of science have presented their names as volunteers; not mere pretenders, but men who are willing to go before any *Board*, and be examined as to their qualifications to fill a department in the scientific corps. A number of valuable instruments, the means for furnishing, provisioning, manning, and officering two vessels of two hundred tons each, for the term of two years; besides a small part of the funds, towards procuring the use and refitting the vessels, are at *this moment* in readiness. It is hoped, and confidently believed, that from the friends of science, the liberal, and the wealthy, the remaining and requisite amount can be raised. At any rate, every exertion can be made to effect it, and if successful, October next will be the time of setting sail. I have thus dwelt, in some degree, on particulars, that not only you, but the community, so far as it is interested, might not be misinformed. If there be any who do not approve of this *undertaking*, and do not think proper to add their names to the list of patrons, it is at least hoped, they will find nothing in it requiring or deserving their opposition; let its merits be judged of in their proper light, such as have been presented in this number.

Parry very justly says, "Such enterprises, so disinterested and useful in their objects, do honor to the country which undertakes them, even when they fail; they cannot but excite the admiration and respect of every liberal and cultivated mind, and the page of future history will undoubtedly record them as every way worthy of a powerful, a virtuous, and an enlightened nation."

I must now take my leave of you, and it will be with great reluctance, if ever I resume my pen on this subject again. I have no objections to your writing as many reviews and criticisms as you please about the New Theory; it has nothing more to do with this expedition, than the variation of the needle, or any other

unexplained phenomena; *but don't block up the Polar regions with ice!*

In the full flow of good feeling and good nature, I wish you a prosperous and pleasant Editorial career; and, if it should so happen, two or three years from this time, that you sit down to write a review of a Journal to the Southern Polar regions, it is hoped no remembrances of the present controversy will cause other than the milk of human kindness to flow from your pen. Respectfully, I am yours, &c.

J. N. REYNOLDS.

ERRATUM.—In page 41, 1st paragraph, 3d line, for "mouth of Nova Zembla," read, *North* of Nova Zembla.