Plurality of worlds : or letters, notes and memoranda, philosophical and critical occasioned by 'A series of discourses on the Christian revelation, viewed in connection with the modern astronomy / By Thomas Chalmers, D.D.' [Anon].

By Alexander Maxwell

(See Landon Cat. 1810-31.)

Plurality of Worlds:

OR

LETTERS,

NOTES & MEMORANDA,

PHILOSOPHICAL AND CRITICAL,

OCCASIONED BY

" *A Series of Discourses on the Christian Revelation, viewed in connection with the Modern Astronomy.* BY THOMAS CHALMERS, D. D."

מי זה מחשיך עצה במלין בלי דעת

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ADVERTISEMENT.

THESE Letters were hastily written, and addressed to a Friend, being intended for a periodical work to which the Author occasionally contributes some minor pieces. The Notes and Memoranda imperceptibly gathering, led him to acquiesce in the request, to print the whole in a volume. As such, they are now presented to the Public.

September 1, 1817.

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PLURALITY OF WORLDS,

&c.

LETTER I.

INTRODUCTORY OBSERVATIONS.

He who suffers not his faculties to lie torpid, has a chance, whatever be his employment, of doing good to his fellow creatures. DR. JOHNSON.

DEAR SIR,

It appears surprising to you, that I am not enraptured by the late production of Dr. Chalmers, (1) as you knew that I once found pleasure in the study of astronomy, and some other branches of natural philosophy. Such astonishment, however, may cease to operate, when I candidly express my sentiments. To the merits of the worthy

(1) "A Series of Discourses on the Christian Revelation, viewed in connection with the modern Astronomy."

author, I am not altogether insensible; to the piety, the talents, and the splendour of his imagination, I desire to pay every just tribute of respect and praise; but these things, you must acknowledge, are very different from strength of reasoning, careful examination, accuracy of style, and soundness of intellect. The subject which has occupied his attention is of great importance, highly interesting to the christian, and no less instructive to the philosopher: and one more especially at the present crisis, which should be treated with more than ordinary precision, as it is a subject which has been differently explained by persons of eminent learning and worth, and whose labours in the cause of sacred literature, ought not to be entirely forgotten.

With the book, as a whole, I feel much dissatisfaction; and, though I may oppose the popular sentiment and strong feelings of many of its admirers, I am not to be swayed by, although I do not despise the example of numbers. To you, however, I may say, that I consider this production as a very poor and flimsy performance. If you will patiently attend to a few remarks, which I shall hazard upon the subject, and immediately connected with the design of this book, you will then be able to see the justness or falsity of my conclusions. The age, Sir, in which we live, is the age of light reading and of little thinking. Knowledge is widely diffused, but it generally moves upon the surface: it is not deep and penetrating. So much time

is occupied in the reading of periodical works and a few modern authors, that standards of excellence become almost entirely neglected. The few who have read and thought most, especially upon difficult subjects, are not the first to obtrude themselves upon the public attention. Literature, therefore, becomes a trade, a kind of manufactory, where books are made upon the spur of the moment. Authors are often requested to write upon subjects, that have never given them a moment's previous application. They come disposed indeed, to write upon all subjects (2); and many of them are persons of loose morals, and entirely devoted to the cause of Infidelity (3). The Science of Astronomy is very pleasing and delightful, and it generally forms part of a good education; it has become fashionable, at least to have some little knowledge of it,

(2) To prove this, I would only request you to watch the authors that attract general attention. Works that please and delight the imagination, that regale the idle hour, and prevent the exercise of thought—the Scotts, the Byrons, the Edgeworths, the Moores — with a variety of others of an inferior stamp.

(3) This was pretty much the case with the late Dr. Priestley. When he wished to understand a subject, "he generally wrote a book; and when it was attacked two or three times, and he had written replies, then he considered himself as possessing some tolerable acquaintance with his subject." This I had from one of his particular friends, who had it from himself.——Well might it be said of him "that his pen went much faster than his understanding."

sufficient to appear in parlour conversation. The latest speculation, or pretended discovery, if sanctioned by a great name, is sure to be received without examination. The remarks of the last *visionary*, obtains immediate circulation, and the more marvellous the better. Astronomers, who are generally very sceptical upon the discoveries of revelation, are yet the most credulous persons in the world. Possessing some knowledge of mathematical science, they apply that little knowledge, not to objects within the sphere of human vision, and the actual reach of demonstration, but to a thousand airy dreams and speculations (4). When these are retailed to the public, or taught to our children, or patched into lectures, they are not placed upon their real foundation. The dream is not separated from the reality; the proper boundary of human knowledge is never marked out, and the vision being more agreeable to the fancy and the imagination, it obtains the ascendancy over the other powers of the mind, so that hypothesis is substituted for genuine truth, and idle conjecture for actual demonstration. The young man is thus enamoured with the enlightened age in which he lives; and has only to burst asunder the prejudices or the fetters which seem to repress the violence of

(4) Parents should be particularly cautious in the selection of children's books, without a genuine name and authority. The poison of Infidelity is conveyed secretly, and rendered very sweet, and genteel, and palatable.

his passions; he gains new light, is transported into ecstacy, and becomes familiar with the obscurest objects in nature, and in the most distant parts of the creation. Carried away by the impulse of imaginary realities, by the pride of his own heart, and the apparent strength of his own reason, he stamps upon the sacred page, and all the lessons of wisdom which experience and age have sanctioned. He is elevated in his conceptions; his eye beholds new wonders and new systems without end; he is not transported with devotional feelings, with gratitude and wonder, or love and praise; but with imaginary speculations, the ebullitions of vanity, the sportive creations of a deceptive genius, and the illusive visions of a distempered heart. The idle speculations of some grossly enthusiastic, and not unfrequently, stupid astronomer, (for such beings I have seen and known,) are considered more certain and authentic than the word of God. The predilections, the prejudices, the sanguine conclusions, the uncertain data, the novelty of discovery, and the fluctuation of system, never weigh one single moment with the generality of readers, or the youthful ardours of an aspiring mind; all is received without hesitation, as more sure and more certain than the sacred writings. It is thus that persons generally receive the discoveries of a Herschel, or some other daring pretender, "with their mouths wide open, and their eyes completely shut." They cannot, they dare not, they will not

reflect; the vision is so pleasing, so enchanting, that they are transported into the regions of fancy, and aerial demonstration. It is thus also, that the young noviciate, and the bold and the ignorant pretender, thrusts himself upon the attention of the public, while the modest, the unassuming, and the intelligent, are too often cast into the shade. If you make any reflections upon the objects passing in review before you, I think you will not say that these are mere assertions, but supported by proofs of every day occurrence. It has been much the same in every age. Quackery in all professions, especially in science and literary pursuits, gains a temporary ascendancy over the skill of practical knowledge, the labours of research, and the experience of age. But such popularity seldom continues; it ultimately sinks into its former oblivion. The universal applause given to Dr. Chalmers, does not excite in me so much surprize as to banish from my recollection, that popularity is a very fickle, changeable, unsubstantial thing, and seldom firm and lasting in her attachments. The knowledge of astronomy requisite for these discourses, is confined to a very small compass; indeed, a shilling pamphlet, written by Ferguson (5), is sufficient for the pur-

(5) "Idea of the material Universe, deduced from a Survey of the Solar System," by James Ferguson, 1756. By some persons, the paper in the Spectator, No. 565, would be deemed sufficient.

pose. Can popularity founded upon such a basis, be either firm or lasting?

The plan of reasoning, or rather high wrought declamation, adopted in these lectures, in the illustrative part, in connexion with the science of astronomy, is calculated, in my opinion, to strengthen the arguments of infidels, more than to repress and correct the pride of modern philosophy. The writer has given stability to all they wish and desire, without hesitation or doubt; and considered what at best is but conjecture, as fully and completely demonstrated. He has done it too without consulting or mentioning a single authority; so fully persuaded of the truth of these speculations, as to give licence to his feelings and to a most ungovernable imagination. That the system of modern astronomy in the way in which it is usually taught, should excite doubt, and speculation, and difficulty in the minds of inquiring men, is not at all surprising or wonderful. It has been a strong fort and rampart with the Infidel for many generations, and it still occupies a very prominent and strong position among writers of that description. (6) Even the arguments brought against them

(6) Lord Bolingbroke objects to the Mosaic account of the creation, and "that man is made by Moses as the final end, if not of the whole creation, yet at least of our system." Those who have read the Age of Reason, by Mr. Paine, know also what use he makes of the little smattering knowledge of astronomy which he possessed. I might also refer you to Cudworth,

have been reiterated from generation to generation (7).

to Cheyne, and many other authors, if necessary, in support of this remark, but I consider it unnecessary.

(7) "It is a great presumption in mankind to pretend to know all the ends which the wise Creator had, in the vast fabric of the universe; for some of the great parts of it are almost wholly unknown to us: I mean that of the fixed stars, every one of which of the first magnitude is said to be above a hundred times in bigness beyond the globe of the earth; and yet how small do they appear to us! But if we could get a fuller view of them, we cannot imagine that God's great ends could depend upon such a way of discovery. If all his designs had been to be admired by mankind for the greatness of his work, it would have been placed more within our reach; and the earth we live upon would have borne some bigger proportion to the celestial bodies, which is concluded to be but a point in comparison with the starry heavens; and the very orb of the sun is thought to be no more in respect of the whole firmament: so that the main part of the universe cannot be said to be made for our view. We grant, therefore, that the infinitely wise and powerful Creator hath great and glorious ends, which are far above our reach; but how doth it follow from hence, that he hath no ends which we can judge of?"

Stillingfleet's Origines Sacræ.

For a specimen of the true sublime of astronomical nonsense, I submit the following extract, for the amusement of my readers. "But, to illustrate this subject yet more fully, let it be further considered, that light, travelling at the rate of 200,000 miles in a second of time, is upwards of six years in passing from the nearest star to the sun, or to the earth (for the difference can never exceed a few minutes), and upwards of two thousand five hundred years from the remotest star in

The conjectures of the modern Astronomer, make no remarkable addition to the arguments of Infidelity, which have been repeatedly urged and confuted for the last two centuries; yet they are brought forward as the result of inquiries in the present *enlightened age*. To express any doubts as to the weakness and uncertainty of these con-

the solar division. So that, were the nearest star annihilated, it would *continue to be seen for upwards of six years afterwards;* and, were the inhabitants of the more distant parts furnished with telescopes of sufficient powers, *they would now be viewing those nations of the earth which existed two thousand five hundred years ago, and exist now no more.* Their actions, public and domestic, their foreign wars and civil broils; in short, the whole tenor of their lives from the cradle to the grave, *would once again become the objects of sight, in every respect the same as they were seen by their contemporaries.* Nay, so remote are some of the grand divisions of the stars visible to us, that they *must have existed forty thousand years, or they could not yet be seen; for the same reason, they will continue to be visible forty thousand years after they are utterly destroyed.* To the inhabitants of these divisions, the solar division, created five or six thousand years ago, will not be visible for more than thirty thousand years to come. *Thus may cities and states long since subverted, once more be seen in all their glory; and the history, not only of the earth, but of the universe, be repeatedly acted over again.* Thus also, may even time itself be, as it were, realized. Who shall bound the omnipotence of Deity!"

Woolsey's Celestial Companion, fol. 1801.

To perpetuate the renown and mighty labours of this celebrated writer, there is also a very fine portrait added, that posterity may judge of the countenance of the man to whom they are so much indebted.

jectures, is to expose oneself to the ridicule of men, who assume the appellation of learned, from no other cause than their superficial attainments, conceited superiority, boldness of declamation, and want of argument. Is the disciple of Infidelity permitted to express his doubts, nay to insult the Christian faith with impunity, while the sum of his mighty conjectures rests upon the most doubtful and deceitful of all experiments? Is no one permitted to utter a suspicion or conjecture, to propose a query, or to make any objections to the accuracy of statements, which never have, nay I may say without presumption, never can be demonstrated? Is all this farce to go on increasing and gathering strength, merely because the great mass of mankind have neither time, opportunity, nor taste to examine for themselves, and to exercise the principle of common sense? Has no one courage enough to lift up his hand, *that the plague may be stayed?*

I have no doubt, Sir, there are many persons fully qualified for the task, who perfectly understanding the subject, could very easily by force of reasoning experiment and fact, shew the futility of those conjectural principles, derived from the system of modern Astronomy. But few perhaps have courage enough to push against wind and tide to oppose the mighty rushing of a torrent, which when excited breaks through every boundary, and is regardless of all laws human and

divine. Instead of examining the fortress of the enemy and at once demolishing it by force, many are desirous of letting it stand, conceiving it perfectly harmless and indifferent. They suppose it may be rendered rather useful than otherwise; a piece of ornamental decoration, which may be turned occasionally on the christian side, and finally become a powerful auxiliary in the cause of truth(8). But such half measures will never stop the roaring of the cannon, or the ravages of the enemy. The fortress must be assailed, the rampart destroyed, the strong hold taken, ere the christian church be permitted to enjoy peace and safety, or the contest subside between the astronomical

(8) Such appears to be the design of the work generally attributed to Archdeacon Nares, Εἷς Θεος, Εις Μεσιτης; or An attempt to shew how far the Philosophical Notion of a Plurality of Worlds is consistent, or not so, with the language of the Holy Scriptures," 8vo. 1801. It contains much curious information, to which I shall have occasion again to refer. With the system of the author I do not coincide; but the subject is learnedly and skilfully handled. The modesty of the author commands attention. Although the advocate of the popular opinion, of innumerable systems, and the plurality of worlds, he treats the whole as conjectural; he never loses sight of the possibility of the opposite sentiment, the probability of mistake, and the uncertain data upon which it is built: and this probability and uncertainty, is the surest argument with the Astronomical Infidel, and such an argument as he never can confute, without a new demonstration of the Universe by an Infallible Hand.

infidel and the humble disciple of the christian faith. To attempt this, is the design of the following letters, and these I shall submit to your inspection. The first three lectures of Dr. Chalmers, afford the chief materials for remark, and upon which I shall animadvert freely. Truth is a cause worthy of all our labor and diligent research: she is seldom found among the speculations of fancy, or the wildness of enthusiasm; but she is discoverable often when least suspected, in the walks of retirement and in the pursuits of science, enlightened, supported, and cheered by the pages of inspiration.

I remain, dear Sir,

Yours, &c.

LETTER II.

HISTORICAL REMARKS.

What Plutarch particularly proves of the Stoics, that they spoke more improbabilities than the poets, *may be extended to a great part of philosophers, who have maintained opinions more absurd, than can be found in any of the most fabulous poets, or romantic writers.* KEIL.

DEAR SIR,

I do not suppose you are so much enamoured with these lectures, as to become indifferent to the previous question, which ought undoubtedly to have been first established — whether the modern conjectures about the planetary system are so well founded, as to afford any firm ground for the reasonings of Infidelity? If it should appear that the opinions indulged, are idle and supposititious, the labours of the learned Doctor become altogether useless. He has employed his time and talents upon a visionary theme, which may increase speculation and doubt, but which cannot afford any substantial benefit to the cause of

Christianity, or to the happiness of the human race. Of this I am fully persuaded. The mind of the writer is carried away with a principle that is false, and upon that falsehood, the airy vision is erected. We are informed, that " it has been reserved for these latter times, to resolve this great and interesting question. The sublimest powers of philosophy have been called to the exercise, and astronomy may now be looked upon as the most certain and established of the sciences(1)." If by resolving this great and interesting question, the writer refers to the opinion now generally prevalent, upon the plurality of worlds, and that astronomy has rendered this opinion certain, I conceive the assumption not only false, but extremely hazardous.

To confine this sentiment to the present age, manifests little acquaintance with the opinions of the antient philosophers. Every one conversant with the philosophy of antiquity must know the contrary. I could easily select abundant examples, from a group of speculations familiar to the antients, very similar to the conjectures now indulged in by modern astronomers. The merit, therefore, is much greater in them, if the sentiment is of any value, as they attained it, without " the sublime powers of philosophy which have been call-

(1) Chalmers' Discourses, page 24.

ed to the exercise," or those perfect instruments, which are of such boasted utility (2).

The sentiment now so fashionable in the present age, may be traced to very distant periods of time, for it appears among many other pagan fables, which may be easily collected: any modern Encyclopedia, or even Lempriere's Classical Dictionary, would be sufficient for the purpose. It was customary when the heathens shewed the tombs of their Deities, constantly to assert, that their souls were among the stars (3). Some even thought the stars were animated. Many of the heathen philosophers indulged the opinion, that the moon was a world, and also inhabited. Orpheus, a most ancient greek poet declared, that the moon had mountains, cities, and houses (4). Anaxagoras, Anaximenes, Democritus, Heraclides, and Pythagoras, all agree, that

(2) Whether the telescope was known to the antients, is much doubted: that they knew the magnifying powers of glass is certain. By the word *specula*, as used in Pliny, some understand telescope. *See the Postscript to Jones's Essay on the First Principles of Natural Philosophy. Dublin*, 1763.

(3) The Bishop of Clogher, the author of the Essay on Spirit, adopted the same notion, and said, that he should be content with one of the fixed stars for his habitation after the present life. He observes, "if every one of these stars may be reasonably supposed to have a planetary system, revolving about itself, well might our Saviour say, that in *his Father's house are many mansions.* See *Catcott on the Creation, p.* 25.

(4) Plutarch de Placitis Philosophorum.

it had firm and solid ground like to the earth we inhabit, containing many fields and divers inhabitants (5). These opinions were more or less in circulation till the time of Kepler (6), when his fer-

(5) Diog. Laert. Some of the ancients held a plurality of worlds very different from the moderns; a repeated succession of worlds by successive dissolution and renovation. To shew the similarity of these notions, we might select many Indian fables. The following is an extract from the introduction of a letter from the Great Moghol in 1582, to the King of Portugal, and might well suit a modern astronomer. "The wonderful extent of the heavens and earth, is but a minute part of the world of his creation, and infinite space but a small corner of his production." *Fraser's Life of Nadir Shaw, p.* 13.

(6) Somnium Astronomicum; de Astronomia lunari, sive de iis, quæ acciderent Lunæ incolis, quam luminis et dierum diversitatem experirentur, aliisque Astronomicis phænomenis hujusmodi. 1634. An Astronomical Dream concerning human Astronomy; or what things shall happen to the inhabitants of the Moon, what diversity of Light and Days they would experience, and concerning other Astronomical Phœnomena of this kind." See Bibliographie Astronomique avec l'Histoire de l'Astronomie depuis 1781 jusqu'à 1802, par Jer. De La Lande. Upon the above work he gives the following note. "Il parle de ce que verraient les habitans de la Lune. Weidler, page, 420. Ce livre est le premier où l'on ait traité de l'astronomie des habitans des planetes, dont Fontenelle et Huygens se sont occupés." Mr. Parkhurst in his Hebrew and English Lexicon, under the word בכב, makes the following just remarks upon the above work. "What Kepler proposed as a dream, Huygens, and a long list of Kepler's Newtonian followers, have treated as a reality, or at least as a high probability!"

tile brain gave it some apparent plausibility. It was doubted by some persons whether he wrote this treatise, from the convictions of his own mind, or merely as a philosophical romance. The book however is full of wild and extravagant notions; yet the chief discoveries of Sir Isaac Newton originated with him (7). Kepler had a number of followers upon this subject; but the most eminent was Huygens, whose treatise I carefully read some years ago, and which I consider more philosophical and rational than the former (8). It will not be

(7) As a specimen of Kepler's extravagance, I insert the following paragraph. "The planets he imagined to be huge animals, who swam round the sun, by means of certain fins acting upon the etherial fluid, as those of fishes do in the water; and agreeably to this notion, he imagined the comets to be monstrous and uncommon animals generated in the celestial spaces; and he explained how this excited this animal faculty." *Encyclopedia Perth. vol. 2, p. 667.*

(8) Cosmothereos, or the celestial worlds discovered; or conjectures concerning the inhabitants, plants, and productions of the planetary worlds, translated from the Latin by Ch. Huygens. *Lond.* 1698. This edition is very scarce. There are two editions, in French--*Paris*, 1702; *Amst.* 1718. See *Bibliographie Astronomique, by Jer. De La Lande.*

I ought not to omit Bishop Wilkins's Discovery of a New World in the Moon, fifth edit. 1684. It contains many absurd things. The good Bishop went much farther than some of the present day—he suggests "the probability of a passage thither."

Yet it is but justice to add, that in other places of his writ-

difficult to account for the ease with which such opinions are embraced by the human mind, when you reflect upon the force of example, and how few persons, attaining eminence in the science of practical astronomy, are sufficient to direct and influence popular feeling. But the most entertaining writer of this kind was Fontenelle (9), who dressed up these conjectures in a very romantic form, and by a number of far fetched analogies, presumed to be discovered between the starry heavens and the earth we inhabit, he has succeeded in gaining the attention of the public. Although not penned immediately in favour of Infidelity, yet the object of the writer, I conceive, was chiefly directed to this end. It is calculated to lead su-

ings, he spoke with greater propriety. I give as a specimen the following paragraph, taken from one of his sermons—On human learning. "The frame of this great universe, as it is represented to humane consideration and enquiry, appearing like a perplexed labyrinth, wherein there is so much ambiguity in the several ways, so much fallacy in the similitude of things and signs, such obliqueness and intricacy in the course of Nature, that even sense itself, which in such things is our chiefest guide, is fain to wander up and down in uncertainties, and instead of leading us *out*, does many times lead us *into* error. And for this reason, Philosophy hath been so often questioned and subverted in the very principle of it."

Bishop Wilkins' Sermons, p. 187.

(9) "Conversations on the Plurality of Worlds, with Additions, 1767." Within these few years a new edition, with improvements, has been published by La Lande.

perficial and unthinking minds astray. Without any direct attack upon the holy scriptures, it leaves the mind in the regions of wild conjecture, and amidst unnumbered worlds it is lost in eternal darkness (10).

The work of Fontenelle has given a tone to all the modern systems of Astronomy, and every little child is now taught to admit these conjectures and romantic effusions as absolute truths, completely within the sphere of mathematical demonstration. Whoever seriously reflects upon the force of education, the power of example, the association of ideas in the human mind, and the gradual reception of these conjectures, will have no great difficulty in accounting for their prevalence in the present age (11).

(10) The reading of this book, the celebrated Horace Walpole, afterwards Lord Orford, said, made him a sceptic. Upon the supposition of a plurality of worlds, he maintained the impossibility of any revelation. The reception of this opinion, he declared, was sufficient with him to destroy the credibility of all revelation. See Monthly Magazine, 1798, Article *Walpoliana.*

(11) "By this one easy and unbridled miscarriage of the understanding, (the association of ideas,) sandy and loose foundations become infallible principles, and will not suffer themselves to be touched or questioned: such unnatural connections become by custom as natural to the mind as that of the sun and light; and fire and warmth go together, and so seem to carry with them as natural an evidence as self-evident truths themselves." *Locke's Works, vol.* 3, *p.* 403. 1759.

It was some time before the bold speculations of Kepler could be received altogether by the learned world. Cudworth, whose mind had digested a vast mass of strange opinions and absurdities, and had traced them to their proper source, could not satisfactorily give up his understanding to astronomical authority (12). Many eminent writers of

(12) "We cannot certainly conclude that the works of God and his creation do not transcend those narrow limits which vulgar opinion and imagination sets them, that commonly terminates the universe but a little above the clouds, or at most supposes the fixed stars, being all fastened in one solid sphere, to be the utmost wall, or arched roof and rolling circumference thereof. Much less ought we, upon such groundless suppositions, to infer, that the world might therefore have been made much better than it is, because it might have been much more roomy and capacious. We explode the atheistic infinity of distant worlds; nor can we admit that *Cartesian*, seemingly more modest, indefinite extension of one corporeal universe, which yet really, according to that philosopher's meaning, hath *nullos fines, no bounds or limits at all.* For we persuade ourselves that the corporeal world is as incapable of a positive infinity of magnitude, as it is of time; there being no magnitude so great, but that more might still be added to it. Nevertheless, as we cannot possibly imagine the sun to be a quarter, or a hundredth part so big as we know it to be, so much more may the whole corporeal universe far transcend those narrow bounds which our imagination would circumscribe it in. The new celestial phænomena, and the late improvements of astronomy and philosophy made thereupon, render it so probable, that even this dull earth of ours is a planet, and the sun a fixed star in the center of that vortex wherein it moves,

the last century, distinguished for research and talent, and fully competent to judge of the subject, could not take in the ingenious reveries of the modern astronomer (13). Some late writers have the

that many have shrewdly suspected, that there are other habitable globes, besides this earth of ours (which may be sailed round about in a year or two), as also more suns, with their respective planets, than one. However, the distance of the fixed stars from us being so vast, that the diameter of the great orb makes no discernible parallax in the site of them; from whence it is also probable, that the other fixed stars are likewise vastly distant from one another: this, I say, widens the corporeal universe to us, and makes those *flamantia mania mundi*, as Lucretius calls them, those flaming whales of the world, to fly away before us. Now, it is not reasonable to think, that all this immense vastness should lie waste, desert, and uninhabited, and have nothing in it that could praise the Creator thereof, save only this one small spot of earth. *In my Father's house*, (saith our Saviour,) *are many mansions.* And Baruch, chap. 3, (appointed by our church to be read publicly,) *O Israel, how great is the house of God, and how large is the place of his possession! Great and hath no end, high and immeasurable!* Which yet we understand not of an absolute infinite, but only such an immense vastness, as far transcends vulgar opinion and imagination."

Cudworth's Intellectual System, vol. 2, 4to. *by Birch.* 1743.

(13) The late celebrated Mr. Wesley had some very just doubts upon this subject. He carried on a controversy with a writer in the London Magazine, the whole of which may be found in his very interesting and entertaining work, "A Survey of the Wisdom of God in the Creation, or a Compendium of Natural Philosophy," in 5 vols. 12mo, edit. 1809.—See the article, 'Doubts concerning Modern Astronomy.' I refer

modesty to arrange their speculations under the head conjectural; but they seem to wish in general to confound them with other things which are more certain. In your perusal of Dr. Chalmers' Lectures, I think you must have felt an occasional surprize at the *learned credulity* of the writer, the ready credence given to every novel speculation; not wishing as he states, " to throw any disguise over that comparative littleness which belongs to our planet, and which gives to the argument of Free-thinkers all its plausibility(14)." By this concurrence, he gives all that support to the infidel astronomer,

you also to the *Hutchinsonian writers*, among whom were men of considerable learning, and well acquainted with the Newtonian philosophy.

The following extract from the writings of Lord President Forbes, is characteristic of that modesty, becoming the great and good man. " It is rash to affirm that the universe, or even the solar system, was made principally for the sake of the earth, or of man; because for aught we know, there may be many more, and more considerable uses for it. It is at the same time not certain, at least to me it does not appear to be so, that there was any other use for creating these immense heavenly bodies, but to regulate the motion of the earth; to produce the other effects which some of them evidently have, and all of them in a greater or smaller proportion may have, on the earth; and to raise in man that idea of the magnificence, power, and skill of the Creator, which the contemplation of the immensity, motion, order, beauty, and utility of these bodies must produce." *Works, vol.* 2, *p.* 93.

(14) Page 6.

for which he is so tenacious, and which I consider so dangerous in its tendency. If, however, the Doctor means to say, that " by this great and interesting question being resolved in these latter times," he should refer us to the discoveries of Dr. Herschel; to these very discoveries I would also refer him (15) for proof of the wildness of speculation, and the pregnant associations, of a disordered mind. I have read them often with astonishment. Let any man go to the same telescope and examine the heavenly bodies for himself, and see if it be possible to adopt such wild theories, or to collect more extravagant absurdities, than have been invented by this celebrated astronomer. Philosophers have ever been fond of erecting schemes for the construction of the universe; of peopling the starry heavens, and neglecting the station they occupy in the scale of creation. Every age has had its Aristotle, or Descartes, or Newton. The fashionable system is received without investigation. All are convinced, and few examine; and these few invent theories fit only for the nursery, or speculations that might adorn the pages of Gulliver, and embellish the wonderful atchievements of the renowned Don Quixote.

I am, dear Sir,

Yours, &c.

(15) These discoveries are to be found in various parts of the Philosophical Transactions, within the last thirty years.

LETTER III.

ON THE ANGLE OF PARALLAX.

And indeed, to confess the truth, it is hardly possible for a man to distinguish, with any degree of certainty, seconds, *or even* ten seconds, *with instruments, let them be ever so skilfully made; therefore it is not at all to be wondered at, that the excessive nicety of this matter has eluded the many and ingenious endeavours of such skilful operators.*

Dr. HALLEY, *on finding the Sun's Parallax.*

DEAR SIR,

In perusing these lectures upon the science of astronomy, I have often been compelled to pause with astonishment at the boldness of the writer, and the confidence with which he speaks of those things founded altogether in uncertainty and conjecture. In a professed admirer of the Baconian style of reasoning we might have expected a little more caution, precision, and judgment; but there are some writers who select words, not to give cogency to the argument and accuracy to the reasoning, but merely for the sake of a fine period, or what is yet worse, to give colour to a

false and dangerous sentiment. We are told, in this book, " that by a process of measurement, which it is unnecessary at present to explain, we have ascertained first the distance, and then the magnitude, of some of those bodies which roll in the firmament." Now, Sir, it is to this *process of measurement* that I wish at present to direct your serious consideration. It is that link in the chain of reasoning upon which the strength of the cause entirely depends; and that link, if once broken, leaves the whole system in confusion and disorder. Touch this one link, and the airy structure and pleasing vision instantly dissolve.

That the three angles of a triangle are equal to 180° or two right angles, is known, and can be easily demonstrated; but that the angle of parallax can be ascertained with like certainty by geometrical principles, is altogether a fallacy, and I may add, a gross imposition. We know the measure of the earth; it is ascertained with great accuracy, and by this measure we obtain the earth's radius; and if we could take the angle of parallax, the distance of any planet might be easily found by the common rules of trigonometry. By a knowledge of the sun's distance from the earth, we acquire the supposed dimensions of the solar system. But who can remain satisfied with the mode by which this angle of parallax is obtained? The ease with which such measurements are received by different astronomers, shews the credulity of the human mind upon

the author himself, while he is writing this observation, exhibits in his own person the credulity of the human mind in a lamentable degree

those things which are agreeable to preconceived hypothesis. I have given this subject much consideration, and among the most eminent authorities can find nothing like satisfaction. If you will give yourself the trouble to make a fair examination of the case, I think your doubts will increase in exact proportion to the extent or depth of your inquiries.

The mode of obtaining the angle of parallax, must be liable to continual variation from known and unknown causes; and this is agreeable to fact and experiment (1). The process will not bear a strict examination. It is exposed to every puff of wind, and to every change in the atmosphere, and sometimes made dependent upon the distance of the eye from the glass of the telescope (2). You will please to observe, that the measurement of this angle requires great delicacy, and very few persons can or will undertake it. A single second makes a difference of about twelve million miles. You will observe likewise the twofold motion of the earth, and according to Dr. Chalmers it is moving

(1) It is also agreeable to etymology — παραλλαξις, of παραλλάω, to vary alternately.

(2) "The double motion of the earth and other moving orbs, difference of atmosphere, various degrees of light, as they are farther from or nearer to the sun, the universal struggle, termed vibration, contribute to make their nearness, and magnitude, and distance, uncertain."

Hutchinson's Works abridged, p. 163.

at the inconceivable velocity of a million and a half miles a day (3). You recollect also that the body

(3) "The first thing which strikes a scientific observer of the fixed stars, is their immeasurable distance. If the whole planetary system were lighted up into a globe of fire, it would exceed by many millions of times the magnitude of this world, and yet only appear a small lucid point from the nearest of them. If a body were projected from the sun with the velocity of a cannon ball, it would take hundreds of thousands of years before it described that mighty interval which separates the nearest of the fixed stars from our sun and from our system. If this earth, which moves at more than the inconceivable velocity of a million and a half miles a day, were to be hurried from its orbit, and to take the same rapid flight over this immense tract, it would not have arrived at the termination of its journey, after taking all the time which has elapsed since the creation of the world. These are great numbers and great calculations, and the mind feels its own impotency in attempting to grasp them. We can state them in words; we can exhibit them in figures; we can demonstrate them by the powers of a most rigid and infallible geometry: but no human fancy can summon up a lively or an adequate conception—can roam its ideal flight over this immeasurable largeness—can take in this mighty space in all its grandeur and in all its immensity—can sweep the outer boundaries of such a creation, or lift itself up to the majesty of that great and invisible arm, on which all is suspended."

Chalmers' Lectures, p. 36.

This extract contains some of the common-place conjectures, to be found in modern treatises of astronomy. To demonstrate them by any thing like geometrical reasoning, is impossible. I am inclined to believe, that the earth does not move above a diameter in twenty-four hours; probably much

upon which the angle of parallax terminates is exposed to a similar motion, and perhaps to a double motion. Add to these difficulties, the changes in the atmosphere, of light and heat, and refraction and aberration, and then endeavour to persuade yourself, if possible, that such an angle can be taken with any thing like tolerable accuracy. If we however appeal to fact and experiment, the cause is at once decided. Instead of being demonstrated as certain and infallible, it is ever changing, according to the caprice or to the skill of different astronomers. Such has been the fate of the sun's parallax—from nine seconds to thirty-two, or from twenty-six millions of miles to ninety-five; and from such opposite extremes the general result is found (4). We have no means by which we can

less. This is conjecture, you say, and so I give it: but this conjecture is as good as any in the above lectures, and possesses an additional advantage, as being far more rational. See *Baxter's Matho, in the Annotations to vol.* 2; and also *Catcott on the Creation, p.* 27.

(4) During the transit of Venus over the sun's disc in 1760 and in 1769, the parallax was taken at about nine seconds. Sir Isaac Newton had made it ten seconds, Mr. Whiston thirty-two, Mr. Machin about eight, Mr. Cassiri about four and a half, and Dr. Halley twelve. These experiments, made by skilful practitioners and with capital instruments, fully demonstrate the folly of the above assertions of Dr. Chalmers in the preceding note. Mr. Keil, who was undoubtedly a great astronomer, comes to this conclusion. "By these, and

rectify these mistakes; and they all tend to confute the random assertions in these lectures, that these great calculations are demonstrable, by the powers of a most rigid and infallible geometry.

Concerning the distance of the fixed stars, no scheme hitherto adopted, can discover it to us. Like a phantom, it ever eludes the grasp. Dr. Herschel has proposed some method for ascertaining the parallax, similar to Galileo and others. "But all the attempts of astronomers, to discover the change of position, or annual parallax, with the most accurate instruments, have been found insufficient to detect it (5)." When philosophers have a system floating in their brain, they only perceive objects in one direction; they never turn their eyes on one side or the other, and dare not look behind, lest some spectre should appear to give them trouble or uneasiness. I will put two extracts together, in the notes below, of this kind, which in my opinion overthrow all these pretty notions about the distances of the fixed stars. It requires little calculation. A schoolboy ac-

the like methods, if any phœnomenon has a parallax not less than one minute, it may be found out. In the moon we find the parallax very considerable, which in the horizon amounts to about a degree, or more. But there are some particular methods, only applicable to the moon, by which its parallax is known." *Keil's Astronomical Lectures, p.* 257. 1769.

(5) Brewster's Edinb. Encyclopædia, vol. 3, p. 677.

quainted with the rule of three, and with these extracts in his head, may be able to confound the greatest astronomer (6). If 12,000 feet elevation

(6) "If our earth rolls along the ecliptic, as is allowed, which crosses the equinoctial in an angle of twenty-three and a half degrees, and the sun's mean distance from us be about eighty-one millions of miles, by the rules of trigonometry it is plain, that the earth will sometimes be above thirty-two millions of miles on the north side of the equinoctial, and sometimes the like distance on the south side of it, or twenty-three and a half degrees on the globe; whence the fixed stars when in the zenith to an equatorean in our winter and summer, must evidently differ sixty-four millions of miles, or what our globes mark out for forty-seven degrees: that is, any fixed star which is in the zenith to an inhabitant in the equator, in December, will be above sixty-four millions of miles more southerly in June, than then; and let the stars' distance be ever so immensely great, it is no manner of service or refuge to an astronomer whatever, because our instruments are now so accurately made, as to tell to a second; and their situation or direction in this case, will be parallel both in our summer and winter. The earth's axis not only preserves a parallelism as to north and south, but likewise to one horizon, and is always parallel to itself. But no sensible difference as to the stars ever yet appeared to any observer, either in England or at the equator; for the very same stars which are in the zenith at one time of the year will be so throughout the whole year; and this no person can presume to deny. From hence it evidently appears, I think, that the earth rolls precisely in the equinoctial, with her axis perpendicular to the plane thereof, which finely exhibits the wisdom of the Creator, and banishes unnatural conjectures; for we know that nature delights in simplicity, and does nothing in vain." *Bamfield's Treatise of Astronomy.* 1764.

make such a difference in the organ of vision, how is it that sixty or seventy millions of miles, in the different positions of the earth in its orbit, is said to make no sensible difference (7)? Let common sense decide, and the enchantment will cease. Can men, with such conjectural evidence before them, presume to insult the sacred volume, a book containing the greatest intrinsic value and evidence, and supported by a train of facts, of miracles and prophecy, of such a train as no human imagination could possibly invent, and no combination of deceptive scenes could possibly impose?

In contrast to this extract I wish to place the following observations of Mr. Brydone.—He found in his journey to the top of Mount Etna, the milky way to make a glorious appearance, like a pure flame that shot across the heavens; and with the naked eye could observe clusters of stars that were invisible in the regions below. "We did not at first attend to the cause, or recollect, that we had now passed through ten or twelve thousand feet of gross vapour, that blunts and confuses every ray before it reaches the surface of the earth. We were amazed at the distinctness of vision, and exclaimed together, What a glorious situation for an observatory!"

Brydone's Tour, vol. 1, *p.* 199.

(7) Dr. Chalmers always takes the first principle for granted, and upon that he builds hypothetical notions. The measure, the distance—the certainty of the fixed stars being suns—these are some of the first principles by which he is carried away into the regions of immensity. He talks of the modesty of true science, and without a blush can utter the most unguarded and hazardous opinions.

They may continue to assault it, but their every attempt will rebound like the foaming billows, dashing with unremitting violence and apparent rage against the solid rock, firmly erected and proudly triumphant amidst the tumultuous and boisterous ocean.

If any thing could awaken the attention of mankind to the impossibility of attaining an exact knowledge of the distance, and consequently of the size of the planetary bodies, it must be the continual difference which appears between calculations made by able and distinguished astronomers. The two greatest astronomers of the present age are supposed by some to be Schroeter in Germany, and Dr. Herschel in England. They have both exercised their continual skill in the measurement of the new planets, found to exist between the orbits of Mars and Jupiter. With the application of the nicest instruments, they differ so materially, as to prove to a demonstration the uncertainty, if not the impossibility, of such calculations (8). If any man, after reading these

(8) According to the measurement of Herschel, the diameter of Ceres does not exceed 160 miles, while the observation of the German astronomer Schroeter makes it 1624 miles. Schroeter accounts for this remarkable difference between his measurements and those of Dr. Herschel, by maintaining, that the projection micrometer used by the English astronomer, was placed at too great a distance from the eye; and that he measured only the middle clear part of the nucleus of

statements, should consider the conjectures raised from such premises as deserving attention, let him, if he please; but let him not gravely assure the public, who know very little about it, that such immense calculations are founded upon certain principles, "even upon a rigid and infallible geometry (9)."

In measuring what are called the mountains, or more properly, the rugged appearances on the moon's surface, the proportion is taken from the shadow perpetually varying, and the radius of the moon; something is granted which is hypothetical, and the common reader is then informed that geometry can take the measure of a mountain on the moon, with the same ease as of one upon the earth.

the planet." "The diameter of Pallas is determined by Dr. Herschel at 80 miles, while Schroeter makes it no less than 2099 miles."

Brewster's Edinburgh Encyclopædia, vol. 2, p. 638.

A similar difference in calculation is observed in the other new planets. The results of Schroeter's experiments are generally greater than those of Dr. Herschel. The attempt to account for it, is as weak as it is futile. I have no doubt but it proceeds from the variation of density in the atmosphere. To allow this, however, would be very injurious to the fashionable system.

(9) I cannot suppose Dr. Chalmers to be altogether unacquainted with these things: they are discoverable in the Dictionary, for which he wrote one of the best articles to be found in that work, (Dr. Brewster's Edinburgh Encyclopædia) under the head *Christianity*.

The word geometry is used to enforce belief without inquiry; the mere assertion passes current for demonstration, and inferences are drawn, agreeable to the visionary schemes of a disordered imagination. In all this you perceive nothing like the cautious induction of experimental philosophy. It is the fault of these lectures, that they are not written upon geometrical principles, but upon principles chiefly invented by infidel philosophers.

In all these declamatory harangues, you read nothing about the possibility of optical illusion (10). No difficulties are started. No doubts are cherished (11). Every thing in the form of a discovery is

(10) "The habit of seeing as soon as we open our eyelids, makes us look upon that operation as a thing extremely plain and intelligible. However, I shall boldly assert, that the mysteries of our holy religion are not more above our understandings, than is the manner in which we see, or than that inmost sentiment which we experience, of the disposition and magnitude of the things which are so remote from us. That my eye by the help of an image but six lines broad, or my soul with the organ of half an inch, should see eight or ten leagues, and discern the beauty, the form, the situation and distances of one million of objects dispersed all over this plain, is a mystery truly inaccessible to all our reasonings. That operation must either be corporeal or spiritual. But whatever it may be supposed to be, it will in both cases be equally above our reason. It is an unfathomable abyss. But it is a truth, and an undoubted matter of fact."

Spectacle de la Nature, vol 4, *p.* 114, 8vo edit.

(11) "Let any one not skilled in painting, be told when

to be received, provided it swells the human imagination with pride and self-importance. If it sanctions the ideal immensity, which is by some persons considered as the best proof of genuine science, it is to be admitted among those truths which are considered self-evident. Magnitude and distance, are the two levers used to impel the imagination. To a mind that has thought over the nature of human vision, and the means by which we gradually attain our knowledge of distant objects, something more will be thought requisite. When we reflect on the absolute necessity of some intermediate chain of connection, in order to judge of distance, we shall never speak confidently of calculations formed hypothetically, however neat and delicate, merely by the aid of optical experiments (12). Many things are to be considered which should humble the pride of human science,

he sees bottles and tobacco pipes, and other things so painted, as in some places are shewn, that he does not see protuberances, and you will not convince him but by the touch; he will not believe that by an instantaneous legerdemain of his own thoughts, one idea is substituted for the other."

Locke's Works, vol. 3, *p.* 404. 8vo edit.

(12) Vide Bishop Berkeley's Essay towards a New Theory of Vision, to be found in his works, 2 vols. 4to. 1784. If this book is attentively read, and the principles it contains applied to our mode of estimating the size, distance, and measure of the planets, we should never, I think, lay much stress upon the hypothetical notions indulged in by many astronomers.

and prevent bold and daring conjecture. We are to remember, that the estimate we make of distant objects, especially those so considerably remote, is an act of the judgment, grounded on experience, rather than on sense. Not only the apparent magnitude, but the colour of the object, the various degrees of light and shade, the necessary conformation of the eyes, the proper direction of the optic axes, and the interposition of other agents, are to be taken into the calculation. To these we may add a suggestion on the proper sphere of human vision (13). Is it not proper to

(13) "It is observable, that the late astronomers have strongly magnified the bulk and distances of the stars, and as much lessened their apparent bigness; or we could not make each star a sun, especially such as are in the milky way, where the suns are very thick set. About sixty years ago they made the sun at 128 semidiameters of the earth from us: now Cassiri and Huygens reckon 22,000. Stars, in those days, were but 2000 times as far off as the sun; now, Syrius is 27,000 times as far off. Syrius, by Tycho, was computed at three minutes diameter; by others two minutes; and Galileo but five seconds: the moderns allow it no apparent diameter, and only see it as a lucid speck or point. Glasses of six or eight feet give it a considerable diameter: glasses between twenty and sixty feet see it with a diameter of seven or ten seconds; but glasses of a hundred feet see it as a speck. I do not doubt but at last, by lengthening the glasses, they may reduce the sun to a speck too. That telescopes do not lessen the diameters of the sun and moon (as they do those of the stars) is, that their light is brisk, and not weak: but that long telescopes do scatter and yet farther lessen weak light,

suppose, that some limitation is given to our researches, and more especially to the researches of the eye? Effects are visible; but are not the exciting causes concealed? Is it not reasonable to conclude, that the system of the heavenly bodies is very different from all the speculations of astronomers, whether ancient or modern? To say nothing of the optical knowledge we possess, much more is yet requisite, before we can use such inflated language. Who can assure me, that the human organ of the eye, aided by the best instruments, can penetrate this mighty boundary?

was observed by the French Academy when the great comet appeared in 1680. For after the head of the comet disappeared to the eye, it was seen by telescopes; by one of four feet, plain; but by one of twenty feet, confusedly and dimly. Nay, the tail of the comet was seen by the naked eye, long after it could not be seen through a telescope. This seems a little odd, that the tail and not the head should be seen latest by the eye, which is fitter to see a faint light, and takes into view a larger scope of the heavens. The tail of the comet could not be seen through the glasses because of the paucity and weakness of the rays; nor the head by the eye, because of the smallness of it, and rays from a great scope of the heavens confused it. And farther, I must say that the eye is fitter to represent the true magnitude, if freed from glaring light; which the most ingenious Sir Isaac Newton was convinced of, and therefore proposed reflecting glasses for this purpose. But as to telescopes, if the object be near, they magnify; and if at a vast distance, they represent objects too little, and will never answer to judge of the magnitude of the stars."

Innes' Miscell. Letters on Philosophy and Astronomy.

Vide *Catcott on the Creation, p.* 27.

By what experiment is it established? In what book is it written, and by what process of reasoning is it proved? Tell me, ye who understand the laws of vision, what changes take place, upon the appearances of objects at the distance of a thousand miles? Can you with these facts before you, think for a moment, that "astronomy is the most certain and best established of the sciences?" The flights of a romantic and picturesque imagination, are very different generally from the soberness of truth, and are better adapted to works of fiction, than the pursuits of rational science.

When we talk about the magnitude and distance of the fixed stars, and compare the imagery that is known, with that which is unknown, there can be no fair or legitimate conclusion. The comparison made between the lofty vessel, retiring from the coast, and the flight of the eagle with its expanded wings in the regions of the open air, are images, which do not fitly apply to the object intended. The little we know of the human eye, does not admit of such comparisons, with objects so remote as the fixed stars. The heavenly bodies may appear small to the eye of an inhabitant of the earth, not only from the immensity of the distance, but from the smallness of the object. Philosophers may be pleased, while contemplating bodies at very remote distances from the earth; the imagination may play over a million of miles, the immensity of space, and of space *without termination*;—these are big

words, and by the use of them, the individual may seem to flourish and shine. By a reiteration of such words, they may excite the vulgar stare; but they leave the mind, without just sentiments, or useful knowledge. Let Dr. Chalmers recollect, that if space has no termination, he is fast verging into the very gulph of atheism. I would not fasten such a conclusion upon his reasoning unjustly, but it is a conclusion, in my opinion, easily deducible from the sentiments which he has adopted (14).

how can finite minds comprehend infinite does the author in the plenitude of his arrogance presume to do it?

I am, dear Sir,

Yours, &c.

(14) "Space is only one of those ideas that are excited in the mind by matter, and the power in the mind of abstracting from its subject, just as we can image a colour to ourselves without connecting in our apprehension a subject with it wherein it exists; a little more of the same metaphysic which can prove that nothing is extended, will prove that space is purple. It is a very ingenious contrivance in philosophers, to render *nothing* a subject of inquiry and conception, by dressing it in a suit of clothes borrowed from *something*, and then gravely tell us that this nothing is the form of God."

Adams' Lectures on Natural Philosophy, vol. 3, *p.* 9. *edit.* 1794.

"Et certé spatium nihil est, nisi corporis ipsa
Mensura."

De Polignac anti Lucretius, vol. 1, *p.* 58.

"Pure space is a mere figment of philosophers, space not being absolute, but relative to the bodies comprehended it: so that if these were annihilated, space would perish along with

them; like all other relations, which cannot be conceived to exist without their correlatives." *Bishop Berkley.*

Vide *Biographia Britannica by Kippis, vol. 2, p. 253.*

In Dr. Chalmers, I object to such expressions as these.—"The planetary system has its boundary, but space has none." Page 34. "Those tracts, which sweep endlessly along, and merge into an awful and mysterious infinity," &c. Page 42. The same kind of jingle frequently occurs.—"We even ventured to expatiate on those tracts of infinity, which lie on the other side of all that eye or that telescope hath made known to us." Page 95.

"This same infinite space is the most wonderful thing within the whole range of being. It is neither God nor his creature, and yet is inseparable from the being, either of God or of any thing he can create. It is infinite both in its extension and its duration. It is immoveable and indivisible. If a compleat definition of it were put into a lady's pocket book, she would guess it to be an enigma for *nothing*, and would be astonished to hear that it is the quintessence of a most metaphysical and most subtle argument maintained by a most celebrated divine and philosopher."

Wesley's Wisdom of God, vol. 3, p. 276.

"Others have considered infinite space as the receptacle, or rather the habitation of the Almighty; but the noblest and most exalted way of considering this infinite space, is that of Sir Isaac Newton, who calls it the sensorium of the Godhead."

Spectator, p. 565.

LETTER IV.

UNCERTAINTY OF SYSTEMS.

In our passage through the boundless ocean of disquisition, we often take fogs for land; and after having toiled to approach them, find, instead of repose and harbours, new storms of objection, and fluctuations of uncertainty. DR. JOHNSON.

DEAR SIR,

If you have a taste for the works of nature, and wish to acquire that knowledge which is useful, you must not place too much dependence upon systems, however well established, when the first elements upon which they are founded, are only hypothetical. With some parts of science, this will always be the case. With the physical parts of astronomy, it is chiefly the case. Most of the elementary books receive the prevailing system, and few individuals make any further inquiries. The more progress you make, the more diffident you will become; enough is discoverable to satisfy an ingenuous and devout mind, but very

little, to satisfy the inflated notions of human pride, and the love of *science falsely so called.* The history of philosophy, is the history of human weakness and folly. Fables have too often been taken for realities, and the love of nonsense, for the love of truth (1).

Considerable light has been thrown upon scientific subjects, and the operations of nature, by the labours of experimental philosophers; but the persons thus occupied are often so embarrassed by system, that every new discovery in the agency of the surrounding elements, appears more like the effect of accident, than the result of theory

(1) "In the mean time, the world is tossed in a blanket among them; they hoise the earth up and down like a ball, make it stand and goe at their pleasures: one saith, the sunne stands, another he moves, a third comes in, taking them all at rebound: and lest there should any paradox be wanting, he finds certaine spots of clouds in the sun; by the help of glasses, by means of which, the sun must turne round upon his own center, or they about the sun. *Fabritius* put only three, and those in the sun; *Appelles* fifteen, and those without the sun, floating like *Cyanean* isles in the Euxine Sea, and are so confident, that they have made tables of their motions. The *Hollander*, in his Dissertatiuncula cum *Apelle*, censures all: and so whilst these men contend about the sun and moon, like the philosophers in Lucian, it is to be feared the sun and moon will hide themselves, and be as much offended as she was with those, and send another message to *Juppiter*, by some new-fangled Icaromenippus, to make an end of all those curious controversies, and scatter them abroad."

Burton's Anatomy of Melancholy, p. 218. edit. 1624.

and rational deduction. The plan suggested by Lord Bacon is very admirable, and he is the proper subject of just eulogium; but how few of his pretended admirers put into practice, the rules which he advised. In these lectures, his name appears, with a kind of radiant beauty; but to me it would seem, as a mere expletive, a kind of set-off, to the opinions of the writer; for surely it can never be said, that these lectures, are the result of the Baconian philosophy (2).

(2) "Experimental philosophy deduces the properties of bodies from actual trials; reasoning first by analysis, and then by composition. It has an advantage in being more nearly allied to Natural History than the systematic forms: for as, that is the best moral philosophy which is built on the real history of man, so that must always be the best natural philosophy which is built upon the history of nature. It is in philosophy as in other things, experience is the greatest of all masters; and if it does not teach us something in philosophy, this can only happen because we had been falsely taught before. The alchymist began his labours with this persuasion, that Nature intends all metals for gold; and wanted nothing but the assistance of art to carry on its operation to its due effect, in all those instances where nature itself had miscarried: there his experiments never gave him any light; he paid dearer for wit than most men, and never found it at last. Lord Bacon was the first who attempted to rescue the learned from the bondage of system, and recall them from abstract reasonings to experiments. He threw out his natural history in the form of a loose undigested collection of facts, to excite the public curiosity; as knowing that a farther enquiry, upon the same ground of actual observation, would

I have always found those persons to speak with much reserve and caution, who have made the greatest proficiency in science, and who have examined with candour the foundation of those opinions now most generally prevalent respecting the system of nature. Aware of difficulties, their conjectural reasoning is modest. Those who take up the common opinions without inquiry, are generally carried off by a centrifugal force ; under the influence of one impulse, they *proceed* in a right line, and are seldom drawn to any just centre of attraction. Like the writer of these lectures, their imagination is " lighted up" rather than their judgment. When geometry is applied to certain ingenious combinations of matter, they are both amalgamated, and the certainty of the one is

naturally tend to take men off from their beloved notions and theories, to examine the real constitution of the world. All the late discoveries in Electricity, which have opened an entire new field in philosophy, have arisen from facts, to which the experimenters themselves were not led by any previous train of reasoning, but conducted by accident. Experimental philosophy shews us, that certain effects are produced under such particular circumstances, which must be minutely attended to. Systematic philosophy undertakes to shew why they are produced; and from some known effects, deduces many others of the same kind. But with all this, there are few practitioners who are not attached by education or affection to some system; so that they will speak for an experiment, instead of permitting it to speak for itself."

Jones' Physiological Disquisitions, 4to. *p.* 14. 1781.

considered as a sufficient passport for the other. But the fallacy is easily discoverable, if the disposition is willing to encounter it (3). The Copernican system is generally admired, and adopted without any reserve. It would be almost a kind of heresy not to adopt it. But it is clogged with difficulties. I am persuaded of the truth of the Copernican system, under some different scale of proportions, and believe that it will answer for the general phœnomena of the heavens; but I perceive an almost insuperable difficulty, and that difficulty proceeds chiefly from the love of system (4). If the earth's orbit was comparatively small, and the orbits of the other

(3) "Epicurus, exhausted by voluptuousness, framed his world and his atoms, which exclude all ideas of a Providence, from his apathy; the geometrician forms it with his compasses; the chemist with salts; the mineralogist derives its origin from fire; and those who apply themselves to nothing, and they are not a few, suppose it, like themselves, in chaos, and wandering at random. Thus the corruption of our heart is the first source of our errors."

St. Pierre's Works, vol. 1, *p.* 148.

(4) "That the earth is only a point in respect to the universe, though it be a pretty large *postulatum*, yet possibly must be granted upon any hypothesis; but that not only the earth, but the whole *magnus orbis*, or that vast orbit which the earth describes round the sun, should be esteemed a point, (without which supposition the Copernican hypothesis cannot be maintained,) is such a *postulatum* in astronomy, as the more a man thinks of, the less easily he can assent to."

Baker's Reflections on Learning, p. 107. *edit.* 1738.

planets in similar proportions, the scheme would be far more rational, consistent, and harmonious.

The course of nature, after all our conjectures, experiments, and calculations, may be very different, from any known hypothesis (5). Conjecture is the summit of all our knowledge of the solar system. What then must be our knowledge of the fixed stars, and those distant parts of the system, which are magnified by a telescopic imagination! Take a view of the fixed stars, and the nebulæ and maculæ, if you please, by the aid of the best

(5) "The Copernican, or rather the Newtonian system, cannot be said to be capable of demonstration in this point of view, though mathematics have been so far and so wonderfully applied to prove it: for after all, who has ever seen the earth revolve? Or what is more, who can persuade himself by the mere testimony of the senses, that the body of *the sun does not revolve?* A plurality of worlds is still less to be ascertained with any certainty."

"I believe *the figure of the earth* to be fairly demonstrated. I believe the conjectures about the cause of its form to be exceedingly philosophical, and as near as can be, demonstrated also; but I would not undertake to say, that what we conjecture to be, was indisputably the cause:—*an oblate spheroid might be made*, without the revolution of a yielding substance as an imaginary axis, and even with the same proportional difference in diameter. I do not mean to say that I am not, as far as mere Philosophy can go, a perfect Newtonian; but I cannot admit that the works of God are in any instance so openly revealed as his word; and yet this, Deists seem to think a point not to be disputed."

Archdeacon Nares, on the Plurality of Worlds, p. 76.

glasses, and you will be convinced that much ingenuity is requisite to persuade any thinking man, whose head is not already systematized beforehand, with the prevailing notions of the modern astronomer. The system has been grafted upon the human intellect, and what is seen, is that which already pleases and delights the fancy. The understanding has been taken by surprise, and surrendered, before it was rationally convinced. The theory of Comets which is generally received, *proves* the uncertainty of systems formed merely to give strength to the speculative parts of scientific knowledge. Kepler is said to have discovered their paths; Dr. Bradly to have described their motions and computed their elements; and Dr. Halley erected a theory, agreeable to the system which he had adopted: but the labours of these eminent men have ended in nothing. The subject is yet a *desideratum* in the science of Astronomy (6).

(6) "The astronomy of comets, from what I can remember of it, appears to be clogged with very great difficulties, and even some absurdities. It is difficult to conceive that these immense bodies, after being drawn to the sun with *the velocity of a million of miles in an hour*, when they have at last come almost to touch him, should then fly off from his body, with the same velocity they approach it; and that too, by the power of this very motion, that his attraction has occasioned. The demonstration of this, I remember, is very curious and ingenious; but I wish it may be entirely free from sophistry."

Brydone's Tour, vol. 2, *p.* 145.

The discovery of four new planets, between the orbits of Mars and Jupiter, is one of the most singular events in the history of astronomy. Conjecture is now at work; but no rational solution is to be found. It seems to disturb the general harmony, and suppositions are indulged, which I conceive are incompatible with the beneficent care of an Almighty Parent; and altogether contrary to that Providence which is unfolded in the sacred volume (7). The Bible, however, is now grown obsolete with these self-elated theorists, and the more repugnant to that book, the more grateful to their feelings. They seem to leave us, alas! in a most pitiable and forlorn condition, at the mercy of some blazing comet, or some other mysterious and hidden power in matter, a quality easy and pliant,

(7) "The incompatibility of these phœnomena with the regularity of the planets' distances, and with the general harmony of the system, naturally suggests the opinion, that the irregularities in this part of the system were produced by some great convulsion, and that the four planets are the fragments of a large celestial body which once existed between Mars and Jupiter. If we suppose these bodies to be independent planets, as they must be if they did not originally form one, their diminutive size, the great eccentricity and inclination of their orbits, and their numerous intersections when projected on the plane of the ecliptic, are phœnomena absolutely inexplicable, on every principle of science, and completely subversive of that harmony and order which, before the discovery of these bodies, pervaded the planetary system."

Brewster's Edinburgh Encyclopædia, vol. 2, 641.

that will accomodate itself to all conjectures. How sceptical and miserable and cold the philosophy, which inculcates principles like these. Dreadful to consider, and melancholy to anticipate. You must read it with astonishment—you must read it again: for it proceeds from a professor of christianity, even from the pen of Dr. Chalmers. "We cannot anticipate with precision the consequences of an event, which every astronomer must know to lie within the *limits of chance and probability*. It may hurry on our globe towards the sun, or drag it to the outer regions of the planetary system, or give it a new axis of revolution; and the effect, which I shall simply announce without explaining, would be to change the place of the ocean, and bring another flood upon our islands and continents. These are changes which may happen in a single instant of time, and against which nothing known in the present system of things provides us with any security (8)."

If such conclusions as these are admissible in the theories of the modern astronomer, they are certainly not consistent with the principles of the christian philosophy, and the word of the divine testimony. The plain christian who has drawn the best of all his materials from the Bible, may justly take the alarm, at "the very sound and semblance of philosophy, and feel as if there was an utter irre-

(8) Lectures, p. 52.

concileable antipathy between its lessons on the one hand, and the soundness and piety of the Bible on the other (9)." Some apology however may be admitted for the worthy doctor. He has been walking near the cold and benighted precipice of infidelity, and his return to a more happy station has not yet produced all those salutary effects, which may be hereafter expected.

The difficulties connected with the Copernican system have been acknowledged by many of the greatest astronomers. Our tables have been improved more by observation than system. The calculations which now enrich the nautical ephemeris, are framed upon the necessary supposition, that the earth is at rest. Every scheme of the heavens hitherto invented, will more or less answer for the varied phœnomena; and nothing like geometrical certainty is to be expected. The motion of the earth is not absolutely proved beyond all possibility of doubt, and you will find that men of the greatest eminence, as mathematicians, express themselves with a modesty and caution, in perfect contrast to the author of these lectures (10). Are not such dif-

(9) Preface, p. 11.

(10) "It was acknowledged by Huygens, when questioned about the certainty of the earth's motion, that he replied, "In his opinion, as long as we were upon the earth, nobody could be able fully to prove the same." Sir Isaac spoke with caution and hesitation. "If the annual parallax of the fixed

ficulties to be expected? From the little knowledge we possess of those things which are immediately within the reach of experiment—of those things which we daily see, and feel, and taste, and know—which come under the cognizance of sensation, and which more properly attach to the earth we inhabit, is it not evident that we are surrounded with mystery and shrouded in darkness? The growth of a blade of grass, the most familiar insect, and the smallest atom of matter, defy the skill and talents of the profoundest observer (11). What then shall we say of bodies, far removed from the ken of human vision? How many things lie hid, and a-

stars could be obtained, we might be said to have arrived at a tolerable degree of certainty." Copernicus observed, "Since various hypotheses are often adapted to one notion (as in the course of the sun an eccentricity, and a motion about the center), an astronomer may chuse that, which is most easily comprehended." A greater probability may perhaps be required from a philosopher, yet neither of them can be able to discover anything with certainty *unless God reveals it to them.* Let no body, *therefore*, so far as it concerns an hypothesis, expect any thing certain from astronomy, since it won't afford any thing like that, least by admitting for truth, that which is dressed up for other purposes, he should leave this science with greater folly than he engaged in it."

Vide *Nieuwentyt's Religious Philosopher, vol.* 3, *p.* 1079, *&c.*

(11) "All chemistry ends in something that eludes our senses. We try to measure and class affinities, and other operations; but as to the primary cause of these things, all is as much conjecture as ever." *Archdeacon Nares, p.* 119.

bove the research or beyond the sphere of the human intellect? But it is from such latent sources as these, that Infidelity gathers its strongest arguments; and it is in this view that I think the author of these lectures is greatly culpable. He penetrates into the regions of conjecture and uncertainty, to find arguments in support of revelation;—arguments which are at best unnecessary, and arguments that will not weigh down a feather in the estimation of a mathematical infidel (12).

If the real system of nature was clearly understood by the intelligence of man, and discoverable by the powers of geometrical analysis, it would be

(12) "Be not so *positive*, especially with regard to things which are neither easy nor necessary to be determined. I ground this advice on my own experience. When I was young, I was *sure* of every thing. In a few years, having been mistaken a thousand times, I was not half so sure of most things as before. At present I am hardly sure of any thing, but what God has revealed to me. Upon the whole, an ingenious man may easily flourish on this head. How much more glorious it is for the great God to have created innumerable worlds, than this little globe only! But after all, I would ask one plain question. Suppose there are more worlds than there are sands on the sea shore;—is not the universe finite still? It must be, unless it be God. And if it be finite, it can still bear no proportion to him that is infinite, no more than this ball of earth does. How large soever it be, still compared to him, it is as nothing, or the small dust of the balance. Do you ask, then, what is this spot to the great God? Why, as much as millions of systems. *Great* and *little* have place, with regard to us; but before him they vanish

found much more simple and easy, than any perhaps hitherto invented. If we can judge by analogy from what we see and know, it would undoubtedly lead to such a conclusion. There is much in the present system of astronomy that deserves attention, as far as it can be rendered useful to the present situation and circumstances of man; beyond this, all is uncertainty and trifling. Take the nearest of the heavenly bodies, the moon; examine its appearance by the best constructed telescope; read all that has been written upon it by the most skilful astronomers, and nothing remains to satisfy a mind that thinks and reasons for itself, a mind not warped by theory and fanciful hypothesis(13). Its path is mysterious and difficult to calculate; its motion rapid and self-evident; but there is something so intricate and doubtful in all

away. Enlarge the bounds of creation as much as you please, still it is but a drop to the Creator."

Wesley's Wisdom of God, in the Works of Creation, vol. 3, *p.* 265.

I could willingly transcribe the whole of the chapter; but I recommend it to your particular attention.

(13) "One would be surprized that so small a matter as a little variation in the sun's force, should cause so many irregular motions in the moon, as she is found to have; much more, that they can be brought to no certain rules, but such as are in the highest degree intricate and laborious. So that this single secondary planet gives the astronomer more trouble than all the celestial bodies besides."

Emerson's Astronomy, p. 273.

that is said about this planet, that you will seek in vain for any thing like demonstration (14). Although this instrument of light has been supposed to be measured, its topography ingeniously illustrated (15), and its situation in the heavens calculated with the nicest accuracy; yet the whole theory of its motions is enveloped in confusion and darkness—much more the nature of its substance and the probability of its being inhabited. The mountains and valleys, the seas and rivers, the fields and orchards, the beauty of its scenery, and the nature of its productions, are all in the head of the observer, and not fairly deducible from the appearances which it presents (16). What is seen in that opaque body

(14) "It is very surprizing that the moon, which of all the heavenly bodies is the nearest to us, should be of such difficult access; that it should be so hard to find out her ways, and the causes of all her irregularities."

Keil's Astronomy, p. 103.

(15) *Vide* Schroeter's Topography of the Moon.—Fragmens Topographiques de la Lune, *Gott.* 1802. This work is said to merit the attention of every lover of astronomy. It contains a number of calculations and measurements of the supposed mountains and valleys in the moon, and speculations on its atmosphere.

(16) "The dark parts have, by some, been thought to be seas; and by others to be only a great number of caverns and pits, the dark sides of which next the sun, would cause those places to appear darker than others. The great irregularity of the line bounding the light and dark parts on

does not sanction, in my opinion, any proper ground of analogy, between the earth we inhabit, and the luminary by which it is enlightened (17). I have

every part of the surface, proves that there can be no very large tracts of water, as such a regular surface would necessarily produce a line, terminating the bright part, perfectly free from all irregularity. If there was much water upon its surface, and an atmosphere, as conjectured by some astronomers, the clouds and vapours might easily be discovered by the telescopes which we have now in use; but no such phœnomena have ever been observed."

Vince's Principles of Astronomy, *p.* 163.

Various speculations have been indulged in, concerning the spots on the moon's surface, equally idle and supposititious. Some philosophers have been so taken with the beauty of the brightest places showed in her disc, that they have imagined them to be rocks of diamond, and others, pearls and precious stones.

Vide *Encyclopædia Perthensis*, *vol.* 2, *p.* 664.

(17) "That the moon is an opake body, is no new discovery; the nature of eclipses has long since shewn it, and I am afraid it is little we yet know beyond this. For though the moon has been divided into sea and land, and the division so much acknowledged, that a man's parts must have been suspected, that would have doubted of the thing; and though the obscure parts of its body have been generally thought to be watry, and the luminous parts earthy and solid; yet this division seems rather to be grounded upon an inference of reason, to wit, that the obscure and watry parts imbibe the light, whereas the earthy solid parts reflect it, than upon the experience of sense, assisted by glasses. These glasses, indeed, discover the difference betwixt the dark and luminous parts

looked through excellent telescopes, but could not see any thing to support such an opinion: — to me it appears absurd and altogether ridiculous. The growing perfection of instruments, and the points of resemblance, afford us no certain data. That some of the heavenly bodies revolve, and that others are fixt, is all that we know; and all beyond is mere conjecture. Ever since I looked at the moon

much more clearly than the naked eye can, but will never shew the nature of either, or what substance they are of, much less distinguish the different portions of earth and water. But men come possessed with an opinion of seas and rivers, and then easily think they see them (as every sound does answer the tune that runs in our ears), and after one man has seen them it is a reproach to the next, not to be as acute and distinguishing as he: and so we cheat one another into a tolerable argument. That this is the case, I am verily persuaded: for though I can neither pretend to good eyes, nor good glasses, and therefore will lay no weight upon my own opinion, yet *Huygenius*, who had them in perfection, and who writ since these accurate maps were taken, could observe neither seas nor rivers in the moon, and expressly denies that any such are to be seen there. And there is this reason besides, that if any such were, they must necessarily raise a mighty atmosphere, which as it would hinder our clear prospect at all times, so by its clouds it would sometimes darken one part of the moon's body and sometimes another; whereas now the dark and luminous parts are always the same: so that as far as I can see, we know little more of the moon, than that it is an opake and solid body; and so much we were pretty well assured of before telescopes came in fashion."

Baker's Reflections on Learning, p. 111.

through a good telescope, I have been much surprized at the credulity of the human mind, in the combination of opinions raised from the appearances of this planet.

To the wild speculations of the modern astronomer difficulties present themselves in every direction: but these are easily obviated by some new conjecture; and this new conjecture being engrafted upon some former one, and illustrated by geometrical lines and figures and demonstrations, passes among the multitude for "rigid and infallible geometry." Had Dr. Chalmers been a real disciple of Lord Bacon, he would have proceeded more cautiously. Before he had admitted this visionary theory, he would have made sure of the first step of his argument, some first principle, or proof, and from hence he might have proceeded, by analogy, to a more extensive field. He might have taken the nearest object in the regions above, and having proved the moon to be a world, he might then have gone forward in his bold career. But that first link is wanting, and the whole is little better than a pleasing dream—an empty shadow—a *vox et nihil*—a speculation—the sportive phantom of a deluded imagination.

I am, Dear Sir,

Yours, &c.

LETTER V.

ON THE CHARACTER OF NEWTON AS A PHILOSOPHER & CHRISTIAN.

The sagacity of SIR ISAAC *was admired by all, and adored by his countrymen. His genius pushed him to discoveries in the most abstruse parts of the mathematics, that have caused the astonishment of the learned; and at the same time, from accurate observations made on nature, he has given hints, which, though by him flung out in the form of queries only, his countrymen have converted into so many certain propositions; and upon them have founded what they pretend to be a complete theory or system, which future experiments and discovery must try the solidity of. But it must be owned,* SIR ISAAC's *modesty was much greater than that of his followers, not only in the title he gave to his notions, but in the respect with which, notwithstanding his vast genius and superior knowledge, he treated the Deity and the Scriptures.*

LORD PRESIDENT FORBES.

Now the point that I want to impress upon you is, that the same public who are so dazzled and overborne by the lustre of all this superiority, are utterly in the dark as to what that is which confers its chief merit on the philosophy of Newton.

DR. CHALMERS.

DEAR SIR,

The biography of learned and eminent

men, is always interesting and peculiarly instructive; yet we have reason to lament that we can seldom obtain a correct picture, and generally a very flattering likeness (1). The light is so vivid and dazzling, that it is with much difficulty we detect the original features; so that the likeness is lost in the brilliancy of the colouring. With persons of an ordinary cast of mind, and whose talents do not rise above mediocrity, it is generally the case. The writer has a task imposed, perhaps from interest, or affection, or the love of popularity; and he wishes to compose something that shall please the taste of the public; and perhaps at the same time, he endeavours to preserve the distinguishing features in the original character. In this

(1) A portrait painter once told me the following anecdote. "A gentleman requested him to take his likeness, and looking round upon some fine portraits in his drawing room, which he kept for exhibition and for proof of his talents, said, "he wished the form of his countenance should be accurately drawn, but he should like a very handsome and beautiful portrait. I should like (said he) the forehead of this—the eye of that—the nose of a third—the mouth of a fourth—the chin of a fifth.——I must have a very beautiful portrait." In much the same way authors are sometimes compelled to write biography. Dr. Johnson has justly observed, "The necessity of complying with the times, and of sparing persons, is the great impediment of biography. History may be formed from permanent monuments and records; but lives can only be written from personal knowledge, which is growing every day less, and in a short time is lost for ever."

he often fails, because we see all light and no shade; the beauty and the harmony of nature is altogether forgotten. The perusal of Dr. Chalmers' third lecture naturally leads to reflections like these.

Of Sir Isaac Newton I believe we know comparatively little (2). The excellencies and defects of his character, are chiefly discoverable in his writings. That he had many excellencies is certain; and that he had some defects is equally well known. When we see him drawn therefore, in very glowing colours, and the picture hung up for public inspection, and worshipped as a kind of little deity, it becomes us to warn mankind of the danger of being led astray by the very production which yields them pleasure (3). If you form an estimate of his cha-

(2) "The first life of this illustrious man which appeared, was drawn up by Fontenelle, from materials furnished by Sir Isaac's nephew, and published in the Memoirs of the French Academy. Why none of his countrymen executed such an undertaking, we shall not inquire. This, however, is the life from which all succeeding biographers have extracted their materials; and it formed the ground-work of the long, but somewhat confused account, that has hitherto appeared in this Dictionary. But like almost all the *eloges* published in the Memoirs of the French Academy, it seems better calculated to display the abilities, and answer the private views of Fontenelle, than to convey accurate information."

Chalmers' Biographical Dictionary, vol. 23, *p.* 137.

(3) Dr. Chalmers, it is true, is not the only one who has made an idol of Newton. "Does Mr. Newton eat, drink, or sleep like other men? said the Marquis de l'Hopital, one of

racter from this lecture, and imagine you have got a correct likeness, you will, I think, be grossly mistaken. With respect to the anxieties of his mind, the difficulties he endured, and the wrongs he suffered, they were trifling. Few men passed through life with more ease and apparent enjoyment, and very few, especially of public men, with less opposition. A common tradesman acquainted with the difficulties and anxieties of life, has far more to endure than the close sequestered student, whose circumstances are easy, surrounded by amiable friends, and whose habits of life are virtuous and correct. Persons confined to the study, and who know little practically of human life, sometimes imagine a feather to be a mountain, and a little drop of water to possess the gravity of the ocean. Dr. Johnson knew human life well in all its varieties, and felt much agitation of passion; but I apprehend Newton felt little. His life was one continued calm, with scarce a ruffle to accelerate his progress. He continued long upon the ocean, gently sailing, without any violent storm, pursuing an even and steady course, amidst the clear beams of a summer's sun, until he finally arrived at the haven of rest.

the greatest mathematicians of the age, to the English who visited him. I represent him to myself as a celestial genius, entirely disengaged from matter." *Ibid.*

" Thus God gives to every man
The virtue, temper, understanding, taste,
That lifts him into life and lets him fall
Just in the niche he was ordained to fill."

The modesty of Sir Isaac Newton was undoubtedly great: it might be partly constitutional, and partly from his peculiar habits (4). In some instances it might proceed from indecision; a fluctuation of mind which could not fully determine: for this disposition,

(4) " He had a particular aversion to disputes, and was with difficulty induced to enter into any controversy. The warm opposition his admirable discoveries in optics met with, in his youth, deprived the world of a full account of them for many years, till there appeared a greater disposition among the learned to receive them; and induced him to retain other important inventions by him, from an apprehension of the disputes in which a publication might involve him. He thus weighed the reasons of things impartially and coolly, before a publication of them can be suspected to have engaged him in their defence. It is well known how slow he was in publishing: and we cannot but observe, that the temper and dispotition of mind, as well as the abilities of this great man, fitted him in a particular manner for penetrating far into nature, and unfolding her harmony."

Maclaurin's Account of Sir Isaac Newton's Discoveries, 4to. p. 13. *edit.* 1748.

The following extract is a strong proof of modesty and real dignity. " In Spence's Anecdotes we are told, that when Ramsay was one day complimenting him on his discoveries in philosophy, he answered, ' Alas! I am only like a child picking up pebbles on the shore of the great ocean of truth.' "

Chalmers' Dictionary.

I think, is apparent in his philosophy, and religion. In his philosophy it is evidently conspicuous. The greatness of his mind as a mathematician is universally acknowledged; no man ever possessed stronger faculties of penetration, or had greater success in the higher departments of calculation (5). His mechanical genius was of the first order, of which he gave surprising proofs at an early age. But with all these talents, it is possible to fall into the love of system, of wild speculation and philosophical romance. What has been supposed to be discovered by the force of mathematical reasoning, and the cautious induction of experiment, is traced by himself to a mere accidental circumstance (6) to which he applied the associations he had gathered from Kepler, if not

(5) "In contemplating his genius, it becomes a doubt, which of these endowments had the greatest share; sagacity, penetration, strength, or diligence; and after all, the mark that seems most to distinguish it is, that he himself made the justest estimation of it, declaring, that if he had done the world any service, it was due to nothing but industry and patient thought; that he kept the subject under consideration constantly before him, and waited till the first dawning opened gradually by little and little, into a full and clear light."

Ibid.

(6) "In 1665, when he retired to his own estate on account of the plague, the idea of his system of gravitation first occurred to him, in consequence of seeing an apple fall from a tree. This remarkable apple tree is still remaining, and is usually shown to strangers as a curiosity." *Ibid.*

from more mystical writers (7). He saw difficulties

(7) That Sir Isaac Newton was acquainted with the occult philosophy, is well known. Chalmers, in his Dictionary, says, that "a desire to know whether there was any truth in judicial astrology, first put him upon the study of the mathematics. He discovered the emptiness of that study as soon as he erected a figure." That he discovered the fallacy so soon, is not probable; because it would require many experiments. It is well known, I believe, that he studied astrology and alchemy, for some time; and this is not to be wondered at, when many great men, near his time, had followed the like pursuits. Warton observes, "Who could imagine that Locke was fond of romances; that Newton once studied astrology; that Dr. Clarke valued himself for his agility, and frequently amused himself in a private room in his house, in leaping over chairs and tables; and that our author himself was a great epicure."

Warton on the Genius and Writings of Pope, vol. 2, *p.* 186.

The celebrated Mr. Law traces the discoveries of Sir Isaac Newton to the works of Jacob Behmen. "The illustrious Sir Isaac Newton, when he wrote his Principia, and published to the world his great doctrine of attraction, and those laws of nature; by which the planets began and continue to move in their orbits, could have told the world, that the true and infallible ground of what he there advanced, was to be found in the *Teutonic Theosophus*, in his three first properties of eternal nature: he could have told them that he had been a diligent reader of that wonderful author, that he had made large extracts out of him, and could have referred to him for the ground of what he had observed of the number *seven*. Now why did not this great man do thus? Must we suppose that he was loth to have it thought that he had been helped by any thing he had read? No; it is an unworthy thought. But Sir Isaac well knew that prejudice and partiality had such

in his system he could never solve, and upon which

power over many people's judgments, that doctrines though ever so deeply founded in, and proved by all the appearances of nature, would be suspected by some as dangerous, and considered by others as false and wicked, had he made any references to an author, that was only called an enthusiast."

Law's Appeal in answer to Trapp, 3d edit. p. 314.

A correspondent in the Gentleman's Magazine attempts a further proof of this statement, from a letter of Mr. Law's which he wrote for the satisfaction of some friend. "When Sir Isaac Newton died, there were found among his papers large extracts out of Jacob Behmen's works, written with his own hand. This I have from undoubted authority; as also, that in the former part of his life, he was led into a search of the Philosopher's Tincture, from the same author. My vouchers are names well known, and of great esteem with you. It is evidently plain, that all that Sir Isaac has said of the universality, nature, and effects of attraction, and of the three first laws of nature, was not only said, but proved in its deepest ground, by Jacob Behmen, in his three first Properties of Eternal Nature; and from thence they are derived into this temporal out-birth. This, added to the information above, is, I think, a sufficient warrant for my having said, that Sir Isaac could have referred to Behmen for the true ground, &c. From the authority above I can assure you, that Sir Isaac was formerly so deep in Jacob Behmen that he, together with one Dr. Newton, his relation, set up furnaces, and were for several months at work in quest of the Tincture, purely from what they conceived from him. It is no wonder then that attraction, with its two inseparable properties, which make in Jacob Behmen the first three Properties of Eternal Nature, should come to be the grand foundation of the Newtonian Philosophy. It is my *conjecture*, that Sir Isaac declared so openly at first his total ignorance of the same cause of attrac-

his commentators have never yet agreed (8). If

tion, to prevent all suspicion of his having been led into it from Behmen's doctrine. It is plain, he knew the deep ground which Behmen had given of it. No one, from Behmen, can know any thing of the Tincture, or the means and possibility of coming at it, without knowing and believing, as Behmen does, the ground of universal attraction: and therefore Sir Isaac's silence and ignorance of this ground must have been affected, and for certain reasons, which can now only be guessed at." *Gentleman's Magazine, vol.* 62, *p.* 329. 1782.

To this letter an answer appeared in the same year, p. 576, written in a burlesque and rather humourous style: but the fact has never been contradicted from the proper source—from those who had possession of the manuscripts. Mr. Law's authority will remain good, until a satisfactory answer is given. The papers of Sir Isaac were examined by the late Bishop Horsley. He declined publishing, and it is thought, most probably on account of his religious opinions. There was something, undoubtedly, to excite disgust, either philosophically or religiously.

Vide *Chalmers' Biographical Dictionary, vol.* 23, *p.* 132.

(8) I would advise you to read carefully the best commentators upon Sir Isaac's philosophy—such as Cotes, Clarke, Maclaurin, Pemberton, and Rowning. Let them be followed by Jones's First Principles of Natural Philosophy. What Newton was in mathematics, Jones was in physics; and no man ever followed the maxims of Bacon more closely. When he found that he was unable to draw any doctrine from these writers with precision, he sums up the evidence, or verdict if you please, in their own words, and leaves the reader to the exercise of his own judgment.

" Sir Isaac Newton.—" Gravity exists and acts."

Dr Friend.—" In *explaining* gravity, *Newton* has demonstrated it to arise from an *attractive force*."

you will take the pains to examine this subject mi-

M. Maupertius.—" It should be remembered in justice to *Sir Isaac Newton*, he has never considered *attraction* as an *explanation of gravity*. He considers it not as a *cause*, but as an *effect*."

Mr. Cotes.—" Gravity is the most simple of *causes*."

Dr. Clarke.—" It has often been distinctly declared, that by the term *attraction*, we do not mean to express the *cause* of bodies bending toward each other, but barely the *effect*, the *effect itself*, the *phænomenon*, or *matter of fact*."

Dr. Desaguliers.—" Attraction seems to be settled by the great Creator, as the *first of second causes*."

Mr. Rowning.—" When we use the term *attraction*, we do not determine the physical cause of it, but use it to signify an *effect*: nevertheless, to attraction, effects are *manifestly owing*."

Sir Isaac Newton.—" There are *agents in Nature* able to make the particles of bodies stick together by very strong *attractions*, and it is the business of experimental philosophy to *find them out*."

Dr. Desaguliers.—" We are not solicitous about the *cause of attraction*."

Dr. Friend.—" I believe *attraction* will always be *occult*."

" This is the result of my enquiry; and if any person should be so inclined, he is welcome to lay all the blame upon my want of understanding. But if these learned men, who are all vindicating the self-same principles of philosophy, had no clear ideas of what they affirmed, and could not understand *one another*, it is no wonder if the world should be at some loss to understand *them*."

Essay on the First Principles of Natural Philosophy, by the late Rev. W. Jones. 8vo edit. *p.* 70. 1763.

This book I consider as unanswerable; and whenever the force of prejudice in favour of the popular system shall abate,

nutely, and dismiss from your mind the bias you have received in favour of this celebrated theory, you will find the principle of attraction as much an occult quality as ever, and that it cannot be explained because it is occult. Preserve in your recollection, the difference between mathematical and physical principles, and you will easily perceive it

I have no doubt it will obtain that consideration it so richly deserves. I have never known a person to read it, and capable of understanding the subject, who has not acknowledged the "reasonableness of an impulsive agency," and which is sanctioned by all the known discoveries in experimental philosophy. About two years since I was conversing upon this subject with a very eminent mathematician, a worshipper of Newton, and who knew almost every line in the *Principia*. I was free to confess my doubts of the fundamental points of the Newtonian theory. He replied in the usual way: "It was now settled upon irrefragable demonstration—nothing could occur to shake his opinion." I requested, as a matter of favour, that he would carefully read the above work, which I lent him, and then candidly express his opinion. When he returned it, he told me, "he had never before properly understood the argument." He had been misled by mathematical data, confounding those things in philosophy which ought to be kept separate and distinct. In his opinion, it was impossible to refute the clear and solid argument which it contained. Such was the result, upon the mind of one of the greatest mathematicians of the present age, lately deceased. Happy would it have been for his own mind, and those connected with him, could he have been brought to examine the arguments in favour of revealed religion, with the same attention and candour. To that he was always averse; and he died, as too many abstract mathematicians die, *without God and without Hope.*

possible to apply mathematics to ingenious and visionary systems. It might as well be said to me, that the science of astrology is founded upon mathematical demonstration, as this celebrated theory of Sir Isaac Newton's (9). It has taken possession of the schools, much in a similar way to former theories, and is supported by prejudices equally strong, and as destructive to the progress of real science. He gave properties to matter—and he would not give them. Every edition of his optics gave it a new aspect, and the last is as obscure as the first (10). It was inherent or external, it was something or nothing, or altogether indifferent; a meteor, a spectre, which at-

(9) It is possible to apply mathematical principles to imaginary systems. The science of astrology, in this respect, stands upon as good a foundation as the theory of attraction. Much sophistry has been employed, to combine them together. I have read, in an old astrological work, reasoning equally ingenious in favour of the division of the heavens, as any thing to be found in the best writers, upon this mystic doctrine of Sir Isaac Newton. I refer more immediately to a French writer on that subject—Morinus de Astrologia Gallicæ, folio, 1661.

(10) As a specimen of contradictory reasoning, and of the indecision of his mind, I would direct you to Newton's Optics, third edit. 1721. Query 31st. "Have not the small particles of bodies certain powers, virtues, or forces, by which they act at a distance?" But lest you should overturn this opinion, in the same query you have an apology, in this curious remark: "How these attractions may be performed, I do not here consider. *What I call attraction may be performed by impulse, or*

tracts our pursuit, and finally eludes our researches. No two commentators on Sir Isaac ever agree upon the principle, and with the most consummate talents, leave it where their master found it—a cause, or an effect, material or immaterial, mechanical or not mechanical. Take it which way you please, but you must not attempt to disturb it. It is a most invaluable principle, and much like the philosopher's stone in the crucible of the alchymist. There is not a variation, or an eccentricity that appears in the motions of the heavenly bodies, but what is easily solved, by an appeal to this mysterious and unknown principle. The indecision in the mind of Newton upon the leading feature in his system of philosophy, has been productive therefore of the most injurious effects among those who have adopted his principles (11). It has given a peculiarity to the whole of the Newtonian system, which retards the

by some other means unknown to me." If it should be performed by impulse, attraction is a word altogether improper: it raises false associations in the mind, destructive of all sound philosophy.

(11) "So long as you keep within the limits of physics, you must account for the motions of nature, by referring them to *mechanical* causes; and when this cannot be done, you must consider them only as *appearances*, till you shall have some further light by experience. Be not amused with *names* and *qualities*, which contradict the known laws of mechanism, and are used to supersede the *agency of the elements*."

Adams's Lectures, vol. 3, *p.* 23.

progress of experimental knowledge. The knowledge which Bacon possessed of the economy of nature, showed clearly the absurdities which are more or less blended with such virtues and qualities, which are not only unnecessary but likewise unphilosophical (12). So that I adopt the words of Dr.

(12) " Whatever is invisible, either in respect of the fineness of the body itself, or the smallness of its parts, is but little inquired; and yet these be the things that govern nature principally, and without which you cannot make a true *analysis* and indication of her *proceedings*. The spirits or *pneumaticals* that are in all tangible bodies, are scarce known; sometimes they take them for a *vacuum*, whereas they are the most active of bodies; sometimes they take them for air, from which they differ as much as wine from water; sometimes they will have them to be natural heat, whereas some of them are cold; and sometimes they will have them to be the virtues and qualities of tangible parts which they see, whereas they are things by themselves; and when they come to plants and living creatures, they call them souls; and such superficial speculations they have; like prospectives that shew things inward, when they are but paintings. Neither is this *a question of words*, but infinitely material in nature. As to the motions corporal within the inclosures of bodies, whereby the effects pass between the spirits and the tangible parts, which are rarification, colliquation, concoction, maturition, &c. they are not at all handled, but they are put off by the *names* of *virtues*, *nature*, &c. and such other words." *Lord Bacon.*

" The attractions and repulsions, the vis inertiæ and immaterial powers so much used by Newton, owe their birth to Kepler. The observations, geometry, and calculations he has annexed to them, are without dispute superior to the work of Kepler: but have the attractive, repelling, and immaterial

Chalmers, but in a very different sense; "that the same public who are so dazzled and overborne, by the lustre of all this superiority, are utterly in the dark as to what that is which confers its chief merit on the philosophy of Newton."

Indecision was the peculiar characteristic of his religious sentiments. Upon this subject it may be considered as uncandid to dwell. Some persons profess to be warm advocates for free inquiry, for fair and open discussion, and the admirers of religious liberty; but if you touch ever so gently their peculiar sentiments, or happen to throw out the least reflection that might cast a shade on the cause they espouse, they become angry and indignant. It is not then the cause of truth and liberty, that is so much at heart, but the cause of their particular denomination. Such characters, give them once power, and they will become tyrants. The author of a pamphlet (13) in reply to Dr. Chalmers, is either very ignorant, or wilfully blind as to the religious sentiments of Sir Isaac Newton. Dr. Chalmers is extremely delicate, and seems desirous to give panegyric, rather than to state the simple truth; yet with all this delicacy we are told by this redoubtable

forces, acquired a greater merit or reality, than they had before, for having been put into better company?"

Abbe Pluche's History of the Heavens, vol. 2, p. 156.

(13) "A free critique on Dr. Chalmers' Discourses on Astronomy, or an English Attempt to grapple it with Scotch Sublimity." 1817.

champion, that the " admirers of Newton, and all the lovers of truth, will feel their blood mantle their cheeks, when they witness from the pen of one whose laboured panegyric, if it added not to Newton's fame, at least pledged the writer to defend him from calumny ; when they see from such a one an obscure insinuation that Newton was infected by some expiring heresy (14)." Upon this account he is very indignant ; and therefore published his pamphlet. He considers it without foundation, that Newton " did not believe the fundamental doctrine of Christianity ; and this not only without authority, but in the very teeth of the document, on which those who assert it profess to found it." But what authority does this writer quote ? None. If he is a mathematician, he ought to know that for every assertion, we require proof. If Sir Isaac Newton was an Arian, or a Socinian, or even a Deist, why should his professed friends and admirers be ashamed to own it ? If Newton was not orthodox, why endeavour to impose a falshood upon future generations ? Here is, I suspect, a little Socinian pride at the bottom, a pride that I have often witnessed. " Why it is true I am a Socinian, but I wish to be thought a genuine Christian ;—I don't like the name or odium attached to the party." But is there not positive proof that Newton was at least an Arian, or approximated very closely to the Socinian scheme ? Is not the

(14) Ibid, p. 34.

very proof established in the public mind, and apparent from his writings and conduct? I think it very evident (15). His associates were chiefly men

(15) Not only from the publication of "Two Letters to Le Clerc, on the Reading of the Greek text, 1 John, 5, 7." 1754—but from other evidence, which is already before the public, and which is not contradicted. It is conveyed in a quotation from Chevalier Ramsay by Dr. Warton, and animadverted upon by Mr. Lindsey. "Sir Isaac Newton, a profound mathematician, but no metaphysician at all, was a sincere believer in christianity; but being carried away with a fondness to refine upon the antient heresies of the East, he revived Arianism by the pen of his famous disciple and interpreter, Dr. Clarke."

Vide *Biographia Britannica by Kippis, vol.* 3, *p.* 606.

A fair and impartial statement was given by Mr. Lindsey; and as I like to speak from authority, shall give it you.—"Whether Sir Isaac Newton, Dr. Clarke's great friend, was of the Arian sentiments concerning the pre-existence of Christ, which was what the Doctor embraced, or rather believed his proper humanity, is uncertain. I have mentioned in another place*, some evidence of his being of the latter opinion. That he was, however, an *Unitarian Christian*†, although he conformed to the end of his life to the public Trinitarian worship, there can be no doubt. And though we might wish it had been otherwise, we must not take upon us to censure or condemn where we have no concern and are not judges; but only take care, that no authority however respectable misleads us. It seems to be owing to his natural shyness and modesty, and fear of being drawn into controversy, that this most eminent person never declared his sentiments on this important subject

* A Sequel to the Apology.

† Historical Account of Dr. Clarke, by Mr. Whiston, p. 8.

of that cast and temper of mind, inclining more to the religion of nature, than of christianity. Newton was undoubtedly a professed christian, and conformed to the Church of England; but he did much, I fear, that has been very injurious to the cause of truth and sound christianity. He was afraid, or ashamed, or undecided. The creed which passes under his name and authority, is not the creed of one who had proper views of divine revelation. He did not submit his understanding to the authority and dictates of the holy Scriptures; he maintained sentiments that were altogether subversive of its authority. Upon this subject the sincere christian should be always ready to speak, with clearness, candour, and precision. Who is Sir Isaac Newton, and what his authority, when put in competition with the Bible? What are all the opinions of the philosophers antient and modern, when compared to the

in his life-time; and rather insinuated them indirectly, in those writings which were published afterwards. I find, however, that some who lived near those times, ascribed this blameable reserve to an over-cautious restraint for fear of persecution: for the anonymous author of a pamphlet of some repute, who wrote about twenty years after Sir Isaac's death, having mentioned Mr. Emlyn's sufferings in this cause, proceeds to say, "This persecuting spirit kept in awe and silenced some extraordinary persons amongst us; Sir Peter King, Sir Joseph Jekyll, and the greatest man of the age and glory of the British nation. After which he points to Sir Isaac's then unpublished Discourse."

Gentleman's Magazine, vol. 56, *p.* 394. 1786.

authority of this book ?—mere dust in the balance, and lighter than vanity. Is it any thing wonderful or extraordinary for eminent philosophers to be opposed to the religion of christianity ? Some apology may be admitted. It was the fashion of the age in which Newton lived, even among the divines, to extol the religion of nature, and place it upon a wrong basis. Instead of its being the offspring, it was made the parent of revealed religion. All who taught philosophy in our public seminaries mingled it with sentiments of this kind. Imagination, and reason, and metaphysical speculation, were placed as standards of authority, and the human mind was left to float in the regions of doubt and uncertainty. The nature of human reason was not accurately defined, and what is called natural religion was easily substituted for the religion of the Bible (16). Many

(16) Sir Isaac Newton's Creed, supposed to be written in imitation of the Creed of St. Athanasius.

" This Being governs all things, not as the soul of the world, but as the Lord of the Universe; and upon account of his dominion, he is stiled the Lord God, Supreme over all. The Supreme God is an eternal, infinite, absolutely perfect Being; but a Being, how perfect soever, without dominion, is not Lord God. The term God, very frequently signifies Lord; but every Lord is not God. The dominion of a Spiritual Being constitutes him God; true dominion, true God; supreme dominion, supreme God; imaginary dominion, imaginary God. He is not eternity and infinity, but eternal and infinite. He is not duration and space, but his duration of existence is present, and by existing always and every where, he constitutes

eminent writers of the present day, have very indistinct views of the nature of human reason and its

duration and space—Eternity and Infinity. Since every part of space, and every indivisible moment of duration, is every where; certainly the Maker and Lord of all things, cannot be said to be in no time, and no place. He is omnipresent, not by his power only, but in his very substance; for power cannot subsist without substance. God is not at all affected by the motions of bodies, neither do they find any resistance from the omnipresence of God. He necessarily exists, and by the same necessity he exists always and every where. Whence also it follows, that he is all similar, all Eye, all Ear, all Brain, all Arm, all Sensation, all Understanding, all Active Power; but this not in a human, or corporeal, but in a manner wholly unknown to us, therefore not to be worshipped under a corporeal representation."

Vide *Gentleman's Magazine, vol.* 1, *p.* 202. 1731.

Here is a creed which may suit a Deist, but not a Christian. It may be philosophical, or metaphysical, if you please; but it is imagination in opposition to the scriptures; it is reasoning without data, and therefore without authority. The imagination of a philosopher is much of the same kind with the mystic, and scarcely more intelligible. If his religious creed be similar to his philosophical, and I really think there is an intimate connection between them, even the wanderings of his intellect, and follies of his imagination, may be the subject of panegyric. We are told by Dr. Chalmers, that "he deserves as much credit and admiration for those articles which he kept out of his creed, as for those which he introduced into it. It was the property of his mind, that it kept a tenacious hold of every position which had proof to substantiate it; but it forms a property equally characteristic, and which in fact gives its leading peculiarity to the whole spirit and style of his investigations, that he put a most determined

proper office in the attainment of religious knowledge. I cannot conclude this letter without a quotation from the late Bishop Horne, who has drawn the nicest distinction on this subject that I have seen; a distinction which, if preserved in your mind, will save it from the grossest attacks of the infidel philosopher (17). "Reason, we say, was made to learn, not to teach. What the eye is to the body, reason or understanding is to the soul, as saith the apostle, (Eph. I, 18,) having the eyes of your understanding enlightened. The eye is framed in such a manner as to be capable of seeing; reason in such a manner as to be capable of knowing. But the eye, though ever so good, cannot see without light; reason though ever so perfect, cannot know without instruction. Therefore the phrase light of reason, is improper; because it is as absurd to make reason its own informer, as to make the eye the source of its own light; whereas reason can be no more than the organ which receives instruction, as the eye admits the light of heaven. A man may as well take a view of things upon earth in a dark night by the

exclusion on every one position that was destitute of such proof." Lectures, p. 63. I make one excuse for the worthy doctor; he was endeavouring to paint a fine portrait, for under his pencil even the negatives in his character become extraordinary virtues.

(17) Horne's Works, vol. 1. p. 88.

"Thus infidelity is the joint offspring of an irreligious temper and unholy speculation, employed, not in examining the evi-

light of his own eye, as discover the things of heaven during the night of nature, by the light of his own reason."

I am, Dear Sir,

Yours, &c.

dences of christianity, but in detecting the vices and imperfections of professing Christians. It has passed through various stages, each distinguished by higher gradations of impiety; for when men arrogantly abandon their guide, and wilfully shut their eyes on the light of heaven, it is wisely ordained that their errors shall multiply at every step, until their extravagance confutes itself, and the mischief of their principles works its own antidote."

Hall on Modern Infidelity, p. 13.

LETTER VI.

ON THE INFLUENCE OF SIR ISAAC NEWTON'S PHILOSOPHY.

The mischief is not confined to philosophers, for the argument is got into other hands, and the popular illustrations that are now given to the sublimest truths of science, have widely disseminated all the Deism that has been grafted upon it; and the high tone of a decided contempt for the Gospel, is now associated with the flippancy of superficial acquirements; and which the venerable Newton, whose genius threw open those mighty fields of contemplation, found a fit exercise for his powers in the interpretation of the Bible—there are thousands and tens of thousands, who, though walking in the light which he held out to them, are seduced by a complacency which he never felt, and inflated by a pride which never entered into his pious and philosophical bosom, and whose only notion of the Bible, is to depreciate, and to deride, and to disown it.

DR. CHALMERS' *Lectures*, p. 99.

DEAR SIR,

There is an inseparable connection between sound philosophy, or true wisdom, and the sublime discoveries in the book of revelation; and that system, which draws our attention from this divine source of intelligence, ought immediately to be sus-

pected as possessing some dangerous or some fatal tendency. As principle and practice mutually support and strengthen each other, so the speculations of the philosopher often have a powerful influence upon the faculties of the mind, upon the happiness of man in his present state, and upon his different anticipations of the world to come. If the Bible be the word of God, all just views of the works of creation must coincide in some harmonious points, or possess some accordancy to the lineaments of sacred truth. When our knowledge of science is blended with the discoveries of divine revelation, when it leads to devotion, to the exercise of christian feeling and principle, when it produces admiration, gratitude, and thanksgiving; when it calls forth the latent energies of the heart, expands every noble and generous sentiment; when it leads to God, to holiness, and to goodness; we may then indulge the hope that pursuits of this kind, and producing effects like these, are infinitely beneficial to our present peace and our prospects of future happiness. The bible teaches by a divine analogy. Through the medium of the visible creation, we are instructed in the nature of invisible realities. A right knowledge of the natural world is essential to suitable and exalted conceptions of the spiritual world. Creation is a mirror, presenting imagery to our minds, pleasing, beautiful, and delightfully instructive, confirming the sentiment of the Apostle. *For the invisible things of him from the creation of the world are clearly seen,*

being understood by the things that are made, even his eternal power and Godhead.

The Bible, Sir, is the source of all true religion in the world; unless our views in theology correspond with that book they will be ever shifting, variable as the wind, and uncertain as the events in life. Take away the authority of this book from the conscience and the heart, and every man's mind becomes his own law, tribunal, and judge. You have no control sufficient to regulate his conduct. If the principles of science and philosophy do not harmonize with its instructions, or raise it in our esteem, or fix its discoveries more effectually upon our hearts, it is much to be feared that they will have an opposite tendency. Try your knowledge of science by this standard. Let the discoveries of Newton be examined by their practical and religious tendency: observe their moral influence, not only upon yourself but upon the minds of others, and I think from considerable observation that you will find they possess, instead of an attractive influence, a repelling force; a tendency to carry off the mind into the vortex of infidelity. Such was its original tendency upon the minds of those who first received these discoveries, and the rapid increase of modern infidelity may be easily traced to the same source.

Those persons who are at all acquainted with the age of Newton and his associates, and the objects they had in view, cannot be insensible to the baneful operations of these principles. If you examine the

speculative notions of this celebrated man, the ideas he possessed of God, and of natural religion; if you think candidly and seriously over his writings, you will perceive something adapted to lead the mind away from the divine authority and inspiration of the Holy Scriptures (1); something agreeable

(1) I entreat your attention to the following query. "Does it not appear from phœnomena, that there is a Being incorporeal, living, intelligent, omnipresent, who in infinite space, as it were in his sensory, sees the things themselves intimately, and thoroughly perceives them, and comprehends them wholly by their immediate presence to himself: of which things the images only are carried through the organs of sense into our little sensorium, are there seen and beheld by that, which in us perceives and thinks. And though every true step made in this philosophy, brings us not immediately to the knowledge of the First Cause, yet it brings us nearer to it, and on that account is to be highly valued." *Newton's Optics, p.* 345.

Attend also to the conclusion of the whole of his researches; it appears to me, as if this were the primary object of his labours—to teach men religion without the necessity of a revelation. "And if natural philosophy in all its parts, by pursuing this method, shall at length be perfected, the bounds of moral philosophy will be also enlarged. For so far as we can know by natural philosophy, what is the first cause, what power he has over us, and what benefits we receive from him, so far as our duty towards him, as well as that towards one another, will appear to us by the light of nature."

Newton's Optics, p. 381.

It is no want of charity to say, that men who can write such passages as these must have very defective views of the importance and authority of the sacred writings. These senti-

to Deism, but not the Gospel of Jesus Christ; something to please the philosopher, but nothing adapted to the true condition of man. If a man's character is influenced by his particular friends and associates, we shall not judge the most favourably of Newton (2). It is desirable to have the names

ments may be traced to another source, the ancient heathen philosophers, from whom no doubt, with little variation, he borrowed them. "The opinion of an immense void, of an infinite space, of an undisturbed extension, in which God exists by diffusion, is probably an old antiquated notion of Democritus and the Atomists, which was circulated and confuted by Socrates, Anaxagoras, and all the philosophers who believed that the thinking essence was distinct from the material substance."

Ramsay's Philosophical Principles of Natural and Revealed Religion, vol. 1. *p.* 68.

(2) I do not know that the veracity of Mr. Hutchinson was ever doubted—if the principles of his philosophy have been made the subject of odium and contempt. He expressly asserts, from personal knowledge of the different individuals, that their private views were hostile towards Christianity and directed to heathenism, and that John Toland was the agent of the party, and friend of Newton. For this purpose he was sent to Holland, to publish a pamphlet, entitled the *Pantheisticon*, in 1720. It was published in latin. The design was to form a society of Free Thinkers, or of Philosophical Idolators. The Newtonian system was the basis of these speculative dreams. An english translation appeared in 1751, which I have seen and read. Of this person I find the following account.—"*John Toland*, the natural son of an Irish Priest, was educated a Papist, afterwards turned Presbyterian, and then a Deist: this pretender to scholarship was of a mean and despicable

of great and eminent men on the side of religion, and as the advocates of sound doctrine and of scrip-

genius, without any one considerable talent but cunning; which, however, he made so dextrous a use of, that it served him for judgment, learning, and every other accomplishment; insomuch that he passed with many in Russia and England for a man of letters, and particularly for a great linguist. He was sent over by the fraternity of Deists on this side of the water, to propagate infidelity in Ireland, with appointments sufficient to support him in the rank of a gentleman; he no sooner arrived in Dublin, than his zeal for so good a cause prompted him to too open an exposure of himself and his principles; insomuch, that the clergy in that city taking the alarm, he had the mortification, the very first sunday after he set his foot on the Irish shore, to make one in an auditory, to which the preacher addressed a sermon, filled from beginning to end, with severe but just invectives against him. Such treatment in his own country, you may be sure, could not but ruffle one who was among the foremost of his own fraternity in conceit and *self-sufficiency*. In his passion he kept no measures, but ran into such indecencies, as soon made him ridiculous, and forced him to return in a huff before his money was out or he had done any thing for it. After his return, having supped by invitation with a wealthy Deist, a spoon was missing; poor *Toland*, as it is said, was suspected of the fact by his brethren, not because they were conscious of better principles than his, but probably, because he was needy and an *Irishman:* after being thought capable of such an action by his own deistical friends, others cannot have a high opinion of his morals; yet this person, despicable as he was, had a very important province committed to his pen by the club; it was no less than that of proving Christianity to be not mysterious; in which, under pretence of defending revelation against the charge of mysteriousness; he set himself with all his might, to prove

tural truth; yet we ought never to forget, that the

that God could never require the belief of a mystery, or a point too high to be accounted for; and then with little more than mere assertions, and texts of Scripture, which he neither did nor could prove to be applicable to his purpose; he by design, weakly shows, that nothing in the gospel dispensation is now mysterious, or incomprehensible. Although he abounds with professions of the highest regard for Christianity, yet he labours hard to prove the first; but as to the last, touches neither on the Incarnation, nor the Trinity; leaving our religion to answer, after all, for those and other mysteries which he had been at so much pains to prove, could never be made objects of our faith by Almighty God. This author was under no necessity of endeavouring to write clumsily, or reason weakly, as is evident to any candid reader who peruses that part of his performance, where he intends to be demonstrative. Were not all the other deistical writers guilty of the same, or a like artifice, I should charge the spoon on *Toland.* He who in the mask of a Christian gets admittance into the minds of his readers, in order to steal away their principles of religion and honesty, not to enrich his own, but only to disfurnish their minds; may, without a breach of charity, be thought capable of a theft, that puts something in his pocket." *Skelton's Deism Revealed, vol.* 2, *p.* 340.

For a just character of the writings of Toland, I refer also to Leland's View of the Deistical Writers, vol. 1, p. 78. How far Newton was implicated in Toland's different missions I do not assert; but he is described as one of his particular associates. For a candid statement of the above, see also Jones' Life of Bishop Horne, p. 27, prefixed to his works. In the correspondence between Mr. Locke and Mr. Molyneux, there are some particulars related of Mr. Toland. It is very evident they were ashamed of their acquaintance.

bible stands upon an eminence far above the speculations of modern science, and all the dogmas of a visionary philosophy. We are repeatedly informed by Dr. Chalmers, that Sir Isaac Newton proceeded solely by the recommendation of evidence, and that wherever such evidence is wanting, "he shut against it all the avenues of his understanding"(3). I know perfectly well what he means, but yet I say it is false reasoning: if this had been true you would have heard very little at this day of the Newtonian Philosophy. Take away the mathematical part, and little remains of experiment, or what more strictly attaches to natural philosophy; little else but conjecture and hypothesis. But all this fine declamation is taken for argument by the great majority of readers, and thus the human mind is led aside, and perplexed with doubts and theories, which rest only upon the most fallacious principles.

Whoever understands and admires the Newtonian Philosophy, especially the higher branches of it, such parts as attach to particular hypotheses, and what more especially are called new discoveries, cannot, if a friend to revelation, be insensible to its baneful operation and influence. Let any serious thinking person watch its operation on his own mind and character, and how easily is he drawn away by it into endless doubts and intricacies. It takes man from his proper station, and fills his mind with

(3) Discourses, p. 64.

visionary projects, ever restless, always pursuing, and never attaining(4). If he admits the authority of the Bible, it is often in a very confined and limited sense; it is in subordination to his new opinions, or the vagaries of a wild imagination. He is now enlightened, the child of reason, and professedly learned. His views of nature and of the divine perfections are not enlarged, but all his thoughts terminate in magnitude and extension. He knows little else, yet he recoils with fond pleasure and delight in the cobwebs of his own sophistry. It is well if he goes no farther. His mind is already doubtful, speculative, prepared to receive any fresh theory illustrated by mathematical lines and the

(4) "The Supreme Being, who has been pleased to make man, has prepared a habitation for him. He then first made the earth where he intended him to lodge. He has so advantageously placed this earth, that it might have a share in the spectacle of the world; and that being designed for the palace of man, heaven and the rest of the universe, meant it as an ornament and a covert. Let us not presume to speak of what God has made in other places; since we have no manner of knowledge thereof. It is enough for us to know what concerns ourselves. God, from a necessary consequence of his intentions with regard to man, has introduced into the world that light, which was to render every thing visible in it. He constructed the air which man was to breathe, and the fire which was to give him life. From the same scheme proceed the metals, salts, and all the terrestrial elements, which were designed throughout all ages to renew and maintain whatever should be necessary for the inhabitants of the earth."

Abbe Pluche's History of the Heavens, vol. 2. p. 189.

Newtonian Philosophy. Novelty is sufficient to attract the great mass of mankind, either in religion or philosophy. They leave the only standard of truth, the proper criterion of judgment to correct all human errors—the word of God; and hence they become the sport of opinions, *are tossed to and fro by every wind of doctrine.* How easily do they thus fall a prey to every deceived and corrupted heart! Upon this subject I write from personal knowledge, observation, and experience (5). Our opinions in philosophy have great influence upon our religious sentiments. Between them there is a close connection. Those who enter with ardour, and pursue with avidity, the present system of astronomy, have

(5) Till within these few years, the writer of these remarks was in the constant habit of visiting the mathematical and philosophical societies in London. Seldom a night occurred, in which he did not listen to some lecture, on one of the different branches of science. He has likewise been intimately acquainted with eminent mathematicians, and observed the tendency of their acquisitions, on the formation of religious opinion: and he does not scruple to assert the full conviction of his mind, that the admiration raised, especially in young men, by the developement of hypothetical opinions, particularly in metaphysics and astronomy, unless counteracted by strong prepossessions in favour of revelation, generally have a dangerous tendency. It is what others may observe, if they please. There is nothing more in all this, than what we might fully expect, since the mind is generally influenced by the acquired taste, inclination, and habits, and particularly those of a scientific kind.

many great difficulties to encounter, in order to preserve their christianity. They are compelled to dart forth into some new region of conjecture; and the mighty conflict ensues—a struggle between duty and system, between the believer in revelation, and the speculative infidel in modern philosophy. Conjecture is thus opposed to conjecture, one vision is introduced to solve the appearance of a former vision, fable is heaped upon fable, and philosophical romance, upon philosophical romance; while the elements of useful knowledge, are thus often very much neglected. The production of Dr. Chalmers appears to me as the necessary result of a mind convinced of the truth of the holy scriptures. Once he thought differently. He is now compelled, however, to meet his old prejudices and speculative notions. It contains the last sparks of the dying embers of hypothesis and doubt, which once rankled in his breast, now overcome by the superior light and strong effulgent beams of sacred truth. Let his future pursuits be influenced by that light, and he may live to see that the Bible is the best guide to true philosophy; the only data for sound thinking, containing the best materials for all that is valuable and excellent in human life, while it remains the best instructor for the life to come.

The Newtonian system not only excites sceptical notions in the human mind, but it gives properties to matter, which lie at the foundation of all the atheistical systems, whether ancient or modern; and

from hence I assert its dangerous tendency. I have already stated what I conceive to be the leading feature in this system, the theory of attraction—a principle founded in absurdity. It is this very absurdity, which gives to infidelity some of its strongest arguments. It goes back to sources like these to instil the destructive poison into the human heart. The principle of attraction, or the vestiges of an obscure hypothesis, are received by the majority of people with the same attention as an axiom in the science of geometry. It may be called an abuse of the Newtonian theory, if you please; but it is an abuse that was almost immediate, and early foreseen, even upon its first reception (6); an abuse

(6) "The greatest abuse of the Newtonian system would be, thinking that the attraction and the centrifugal force have constructed nature, disposed the planetary world, given a moon to the earth, four satellites to Jupiter, and five small moons and a ring to Saturn. 'Tis true, Newton never taught any such thing: far from it. He, on the contrary, positively says, that the order of the world must not be derived from any other cause but the will of God, and that it would not be acting like a philosopher to pretend, that the laws of nature which may preserve the world, have been able to fetch it out of the chaos, or to put it in order. But Whiston and some other Newtonians, although with some difference among themselves, yet have thought that the attractive force, whereof they had not the least demonstrative proof in the things they knew about them, was inherent in every particle of matter, and that this force had been sufficient to form all sorts of elements, then our world, and all the others with these elements."

Abbe Pluche's History of the Heavens, vol. 2, p. 169.

sanctioned by Voltaire, which has been continually increasing, particularly among the French philosophers, and which, I am much afraid, will yet increase; an abuse of the most awful and destructive kind, which spread the most combustible materials, and which has since, by the aid of a political match, lighted up the flames of the French Revolution. It produced a political volcano, the eruptions of which have not altogether subsided, and the crater remains the terror of all Europe, and a warning to the world. This may appear strong language to persons who have not read or thought much upon the subject; but of this I am persuaded—it is a fact; the evidence of it is well supported, of which there are abundant proofs in the annals of French literature (7).

(7) Lest you should suppose that I deviate from authority, I refer you to a work, published some years ago by Mr. Delaplace, who was considered one of the greatest ornaments of the French academy of sciences. He published the *Systeme du Monde*. In it he introduces this observation, after a panegyric upon Newton, "That a gravitation inversely proportional to the squares of the distances, was the only principle which could unite material Nature into a permanent system:" and then concludes with this reflection, which is a fair specimen of what is found in the French philosophy. "Beheld in its totality, astronomy is the noblest monument of the human mind, its chief title to intelligence. But seduced by the illusions of sense, and by self-conceit, we have considered ourselves as the centre of these motions; and our pride has been punished by the groundless fears which we have created to our-

From the age of Voltaire, until the time of Volney (8), you have a long succession of brilliant spi-

selves. We imagine, forsooth, that all this is for us, and that the stars influence our destinies! But the labours of ages have convinced us of our error, and we find ourselves on an insignificant planet, almost imperceptible in the immensity of space. But the sublime discoveries we have made richly repay this humble situation. Let us cherish these with care, as the delight of thinking beings; they have destroyed our mistakes as to our relation to the rest of the universe; errors which were the more fatal, because the social order depends on justice and truth alone. Far be from us the dangerous maxim, that it is sometimes useful to depart from these, and to deceive men, in order to ensure their happiness; but cruel experience has shewn us, that these laws are never totally extinct. Inhabitants of this pepper-corn, we think ourselves the peculiar favourites of heaven; nay, the chief objects of care to a Being, the Maker of all; and then we imagine, that after this life, we are to be happy or miserable, according as we accede or not to this subjugation to opinions which enslave us. But truth and justice have broken these bonds."

See also Robison's Proof of a Conspiracy, p. 233.

The above extract gives you a fair specimen of the *perfection* given to the Newtonian philosophy, under the cultivating hand of these French astronomers.

(8) Conversing one day with ———, an eminent scholar, I mentioned "Volney's Ruins of Empires;" and he replied, that he had visited the author of that book, while in Paris. He took him into his library. He looked round, put his hand upon several books, and said, "Here, Mr. Volney, are the sources of your novel opinions." He acknowledged to the Doctor, that he was right, and said, "I am not anxious about it." "Have you seen the reply of Dr. Priestley, and more particu-

rits among the French philosophers, inoculated with this amazing theory of gravitation and attraction, who have exhibited the strangest absurdities, and given the most wonderful powers to matter, derived solely from this extraordinary hypothesis. The darkest ages that history presents to our view appear illuminated as it respects real knowledge, when you compare them with some of the *soi disant* philosophers, and the age of the French republic. The science of astronomy is the idol, to which they paid their devotions. To her they poured forth all the incense of their flattery. It led them into new and untried paths, from which they discovered fresh fields for speculation, and new sources for romance. Dr. Chalmers endeavours to give a christian turn to some of these ebullitions of vanity and flights of philosophical enthusaism: but the attempt is vain. The natural tendency of these speculations is to carry off the mind from the discoveries of the sacred volume, and to tear up every religious feeling

larly, that of an English Clergyman?" He said, "No;" and then spoke to this effect. "I have no interest in defending the book; I do not pledge myself for the sentiments it contains. I was compelled to write, by desire of Buonaparte. I was ordered to manufacture a revolutionary book upon the subject of Religion. I consider myself as a private in the ranks, obeying the commands of his superior officer." Such is the origin of a book, full of astronomical fable;—a book which may injure persons of light and superficial reading, but can make little or no impression upon the minds of those who have been rightly instructed.

and sentiment that may be lodged in the breast of man (9).

Turn your attention to England, the country that gave you birth; to that country in which all your associations have been gathered, and where you have been taught the elements of knowledge, the principles of science, sanctioned by the pages of inspiration. Even in this happy island, the same principles have been nurtured and cherished, and taught by men of infidel attainments, and corrupted hearts. They have been gathering strength from like causes, and they must produce like effects. By their fruits you may know them. These very properties ascribed to matter, however indescribable, uncertain, occult, and mysterious, are considered as axioms in philosophy, admitted so by christian divines, taught in their elementary principles, without a single restrictive caution; and from such sources as these the sceptic collects his arguments, and barbs anew the blunted weapons of former controversy. The name of Newton, because of its powerful ascendency, is brought forward to give currency to these sentiments, and natural reli-

(9) "The giving of power to inanimate matter, is the strong hold of atheism; it is the first step to exclude God from the world. I know no species of motion, the primary cause of which we can comprehend; and yet philosophers have had the presumption to attempt a solution of the mysteries of the creation, and the government of the world."

Vince's Confutation of Atheism, p. 39.

gion, with all its appendages, is substituted for the pages of divine truth. The boldest writers against christianity have received their chief support from loose and unguarded expressions, as often used by christian writers in favour of deism; or what is more generally termed the law of nature, and the eternal reason and fitness of things (10). Between atheism and deism,

(10) "The book entitled "Christianity as old as the Creation," which is esteemed as one of the most able defences of Deism. It must be observed, that the author received his best support and strongest evidence from many passages extracted from our most eminent divines, in what they have injudiciously asserted concerning the law of nature."

Hodges on the Book of Job.

Natural Religion, independent of Revelation.—Upon this subject I wish to be clearly understood. When natural religion is used to signify that sense of Divine Providence, which proceeds from just observation on the course and constitution of nature in the visible creation, I consider it then as valuable and important. If the book of Nature is compared with the book of God, you will find them subservient to each other: there is a correspondence and harmony, adapted to all the purposes of human life. They elevate the conceptions, and animate the best feelings of the heart. In this view, the writings of Bishop Butler, Dr. Derham, Dr. Paley, Mr. Ray, and some others, may be read to great advantage. To young persons, I would particularly recommend a little work entitled, "The Book of Nature," by the late Rev. W. Jones, F.R.S. I am always sorry to see eminent divines placing natural religion upon a wrong foundation, and reversing the order of the divine economy. I allude to passages like these. "As revealed is *founded* upon natural religion, it is of great importance to establish the latter upon clear evidence. We must be first per-

there is an intimate and friendly connection; there is a degree of approximation not seen by the individual, but no less certain; the one is the path, the other is the termination of that path (11). If in the

suaded of this, as a fundamental principle, *without which, all religion is vain.* A person under the influence of natural religion, feeling its imperfection, will be led to revealed religion for the purpose of satisfying his doubts."

Vince's Confutation of Atheism, p. 51.

To shew the falsity of such sentiments, I would recommend to your perusal, Delany's Revelation examined with candor; Ellis on the Knowledge of divine Things; Theological Works of the Rev. W. Jones; and Skelton's Deism Revealed.

(11) Mr. Wilberforce said, "that Socinianism was the half way house to Infidelity." It is true. In like manner, Deism is the half way house to Atheism. A confirmed Deist only need to read "Mirabeau's System of Nature," or more properly, Diderot's *, or some book of that description, and if he

* "The author insists much upon the *morality* of Atheists; but where could his own morality or honour be, when he was not only ashamed to avow his own work, but at the same time not ashamed to put another man's name to it, who had no knowledge of it whatsoever, and is said to have been very undeserving of being made its reputed author? See *Dictionnaire Historique, art. Mirabaud.* A similar trick was played before, by another Frenchman, who published the most gross and obscene book that ever found a printer, in the name of a Spanish lady eminent for virtue and talents, who had been dead many years, and therefore was out of the way of vindicating her own fame. These anecdotes are for those free thinkers, who are so proud of the *honour* and *virtue* of their fraternity."

Archdeacon Nares, p. 8.

science of religion there are first elements, a commencement, a progress, a continual growth and advancement, so also in the science of infidelity. The human mind does not remain long stationary upon subjects like these; it is either going forward or backward; it is the path of the just, or that of the unjust; it is shining brighter and more refulgent, or it is growing more obscure, or more awfully mysterious, until covered with a blackness which conceals from our view the lustre of all that is fair and beautiful, of all that is grand and magnificent (12).

possess a strong and inquisitive, or speculative mind, the termination is certain. It is as regular as cause and effect. When a man gives up the bible, he has nothing left, in the discoveries of science, that will preserve his mind from an awful and a mysterious uncertainty. All with him is doubt, conjecture, and a *darkness which may be felt.*

(12) "You are lavish in your praise of Deism; it is so much better than Atheism, that I mean not to say any thing to its discredit: it is not, however, without its difficulties. What think you of an uncaused cause of every thing? of a Being, who has no relation to time, not being older to-day than he was yesterday, nor younger to-day than he will be to-morrow? who has no relation to space, not being a part here and a part there, or a whole any where? What think you of an omniscient Being, who cannot know the future actions of a man? Or, if his omniscience enables him to know them, what think you of the contingency of human actions? And if human actions are not contingent, what think you of the morality of actions, of the distinction between vice and virtue, crime and innocence, sin and duty? What think you of the infinite

That the chief admirers of Newton, those who may be said to have a full acquaintance with his philosophy, have generally renounced christianity and taken up with an avowed, or open profession of infidelity, I believe is a fact, which is almost universally and candidly acknowledged (13). Doubtless there are some great and honourable exceptions; but even among the persons excepted, there is a strong and latent bias in their opinions, which I consider as unfavourable to the principles of christianity, a bias greatly in favour of natural religion. If this

goodness of a Being, who existed through eternity without any emanation of his goodness manifested in the creation of sensitive beings? Or if you contend that there has been an eternal creation, what think you of an effect coeval with its cause, of matter not posterior to its Maker? What think you of the existence of evil, moral and natural, in the work of an infinite Being, powerful, wise, and good? What think you of the gift of freedom of will, when the abuse of freedom becomes the cause of general misery? I could propose to your consideration a great many other questions of a similar tendency, the contemplation of which has driven not a few from Deism to Atheism, just as the difficulties in Revealed Religion have driven yourself, and some others, from Christianity to Deism."

Watson's Apology for the Bible, p. 36.

(13) It is acknowledged in Dr. Chalmers' Lectures, "he was too well aware of the limit between what he knew, and what he did not know, to be seduced from the ground he had taken, by any of those brilliancies which have since led so many of his humble successors into the track of Infidelity."

P. 86.

be found generally the case, is it not then evident that there is something peculiar in this philosophy? some tendency in the system which is hostile or repugnant to the genius of christianity? Is it not clear that it contains something opposed to revealed religion, and to which its students, aided by all the learning, ingenuity, and argument of the christian philosopher, can never make it fully to accord? Let not the admirers of the gospel revelation be deluded by the outward splendours, the imposing appearances in the science of astronomy; "those brilliances," as they are here called, which attract the mind from the *truth as it is in Jesus;* which seem to dazzle us awhile, and easily confound the understanding and unstring the finest chords in the human heart! If the philosophy of Newton is found by experiment and fact to possess a dangerous tendency; if it casts a glare and a seducing brilliancy around its apparent discoveries; if it leads men to spurn the bible, with all the doctrine and piety of the bible; if it infuses the spirit of Antichrist into many of the literary establishments of the age; if it is that philosophy which has already produced the most disastrous effects; if it is the active principle, the leaven which is diffused through all the atheism in France, in Germany, and in England, and even in the continent of America; if it furnishes infidelity with the strongest weapons and the most powerful arguments; what then is the inference which we deduce from this reasoning?—that

whatever high pretensions this philosophy may have hitherto assumed, it is not that philosophy which accords with the discoveries of the bible (14).

I am, Dear Sir,

Yours, &c.

(14) Vide Lectures, p. 92.

I perfectly agree with Dr. Chalmers upon the "diversity of complexion," among the votaries of Infidelity. "It looks one thing in the man of science, and of liberal accomplishments—another in the refined voluptuary—another in the railer against priestly domination—another in the dark and unsettled spirit of him whose very breath is tinctured with gall—and another in the man of business, who has neither time, nor patience, for the details of the christian evidence." Under all these varieties, we detect one and the same principle. Vide *Lectures, p.* 88.

Faith may answer the purpose of those who take a pleasure in being beguiled by it,—But one matter of fact brought home to the conviction of the intellect with which it has pleased the Almighty to endow us, is worth a Cushit of Creeds of any Sects or Persuasion whatever.

LETTER VII.

ON THE PROPER BOUNDARY OF HUMAN KNOWLEDGE.

——— on that tree he also gazed;
And O fair plant, said he, with fruit surcharged,
Deigns none to ease thy load and taste thy sweet,
Nor God nor man? Is knowledge so despised?
Or envy, or what reserve forbids to taste?
Forbid who will, none shall from me withhold
Longer thy offered good, why else set here:
This said, he paused not, but with venturous arm
He pluck'd and tasted ———

MILTON.

DEAR SIR,

When a person of an inquisitive turn of mind and a romantic imagination, produces a speculative work on religion and philosophy, and adapted to the general taste of the times, the errors he may patronize become the more dangerous in proportion to the extent of his talents, the force of his reasoning, and the splendour of his arguments. He may be the idol of the public, but their idolatry is only an

addition to the many evils which result from the publication. The influence of such a name as Newton is almost unlimited; but yet how few are capable of investigating his discoveries, how few are able to examine for themselves, the force or propriety of his opinions. The errors of modern philosophy, chiefly originate from a total disregard to the only standard of principle and truth, a rejection of the light and authority of the holy scriptures. In the human mind there is an almost irresistible and boundless curiosity to penetrate the mysteries of nature; a desire or passion excited in the pursuit after those branches of knowledge, which are wisely concealed; a desire to retrace the past, and a more anxious desire to penetrate the future. What is novel and strange, seems "to rouse the mind from its dormant state, by giving it a quick and pleasing impulse" (1). Hence we sometimes make the fruitless and ineffectual attempt, by a feeble grasp, to draw aside the curtain of the material world, which conceals from our view the invisible state. If that were possible, new wonders might yet remain to kindle the passions of the soul, to light up in the breast a celestial flame, ever burning and never extinguished, and which shall continue to burn through the countless ages of eternity. It was this unceasing curiosity, which excited the labours of astronomers in past ages, to the study of judicial astrology. To attain some know-

This is the very reason that has stimulated men of all religions to be grasping after that which cannot be defined

(1) Blair's Lectures, vol. 1. p. 105.

ledge of this obsolete and conjectural science, has led many to the study of mathematics, and even to some of the most interesting branches of useful knowledge. To enlarge our veiws of the creation, to form imaginary pictures of other worlds, now calls up the zeal, and fires the imagination of the modern astronomer. It renders the science, in his apprehension, extremely fascinating. But most of these things, are little better than childish toys; and were it possible to ascend, to what is considered the height of the surrounding atmosphere, another scene would perhaps open, altogether different from any we have been taught to expect from the received opinions hitherto adopted, among the greatest philosophers. Surrounded as we are with light and knowledge, yet how little do we really understand of the principal objects which nature presents; of matter, motion, and spirit. When we have attained the utmost limits, we hear a voice saying,—*Thus far shalt thou go and no farther.*

"Man know thyself; all wisdom centers there."

Our knowledge of matter is necessarily limited. I see, I feel, I taste;—but what is it that is really passing about me? I cannot say where it begins, and I cannot tell where it ends. Every thing is wonderful—the heavens—the air—the elements—the earth—the sea—all is grand beyond conception. Though we taste, and see, and feel, yet we cannot pursue the inquiry; it for ever eludes our researches, and the *substratum* is lost in the refine-

ments of the philosopher (2). The powers of reason terminate in some non-entity, which is altogether inexplicable, and we are compelled to take our station in the back ground, with the ignorant of mankind; and common sense is found the most formidable opponent (3).

If such be the case as to the substance of matter, the qualities it may possess, and the appearances it may assume, are still more inexplicable. Here, doubtless, conjecture and uncertainty follow us every step. If matter exists, which is evident to our senses, it is subject to change and alterations, equally wonderful. We trace it in the plant, the animal, and man; in every object by which we are surrounded, under all the forms and varieties which engage our attention: but we cannot detect the first element. We approach it by our reasonings, and it instantly disappears. The first particle, the atom, is invisible. If it may be divided without any limits that we can determine, we must allow it to be indefinitely divisible. To affirm, however, that

(2) The heavenly bodies may be very different, to what our senses, unassisted by the imagination, may represent. We all know the sentiments of good Bishop Berkley, and his speculations on matter. I am no disciple of that amiable prelate, but I very much revere his memory, and perceive the force of his arguments. When we separate the qualities of matter, what remains? the conclusion which he attempted to establish is the natural result of Mr. Locke's reasoning.

(3) Reid's Essays, vol. 1. chap. 10.

it is infinitely divisible, is one of the conundrums in philosophy, supported by an abstraction of thought in geometrical demonstration, not applicable to nature, or visible extension, and like all the other mystic names given to matter, equally unintelligible. It is pregnant with absurdities and difficulties, which are monstrous and contradictory (4). But if matter considered abstractedly, is so difficult to comprehend, its mobility is equally incomprehensible, and like its substratum, for ever escapes our penetration. There is something in it yet to be explain-

(4) " Mathematicians are wont to illustrate their thoughts by lines, and their properties; and they sometimes give the name of demonstration to their arguments when they are nothing more than illustrations, or diagrams, which express the mind of the illustrator, but prove nothing. According to the different lights in which a subject is considered, the application of different lines will lead to contrary conclusions. It would be easy enough to shew on such principles, that a given quantity of matter is both finite and infinite; that it may be divided without end, and that there must necessarily be an end of the division. Therefore, it is safe on many occasions to be guided by reason and the nature of things, at least in matters of argumentation, rather than by diagrams, which are applicable to contradictions, and may indeed be accommodated to any thing."

Jones's Physiological Disquisitions, p. 5.

Read the whole discourse on Matter. Also Adams's Lectures, vol. 3, lecture 24; and Bishop Berkley on Human Knowledge. Also Newton's Optics, query 31. When you have read these, you will think very little about the infinite divisibility of matter.

ed. That the primary cause of motion is the power of God, is the doctrine of the holy scripture, and no principle of knowledge is more clear, or more certain. But we perceive an intermediate agency in the methods of Providence, and in the operations of Nature (5). Throughout the whole system, there is a

(5) "*Matter* hath a *capacity of motion*, not an ability to move; neither doth any matter act, but so far as it is acted upon. The trumpet hath a capacity of sounding, but never till it is sounded; of itself it is dead and silent, and would, if left to itself, remain so for ever. To invest matter with any innate powers, call them by what names you please, is as contrary to the real nature of matter, as to suppose that all trumpets are born with lips, and lungs, and breath of their own. A stringed instrument hath the capacity of sending forth all possible harmony; but it must first be acted upon, either by the vibratory motion of the air, or immediately by the hand of the master. Such then is the mobility of matter; it is a capacity of being moved and acted upon, but no mobile faculty of any kind within itself." *Adams' Lectures, vol.* 3, *p.* 16.

From this fertile source of speculation, you may trace most of the errors in antient or modern philosophy—qualities are given to matter which are mysterious and occult. Hobbs supposed that every material atom is endowed with the faculty of sensation, but that for want of memory, each sensation is only momentary. Dr. Priestley derives the materiality of the human soul from sources like these, divesting matter of its solidity, and then reducing it to centres of attraction and repulsion. Dr. Hartley assumes a vibrating power in matter, and then attempts to account for the power of association, from something material. It is easy, from such premises as these, to erect any theory, if men are not guided in their inquiries by the supreme and governing authority of the holy scriptures.

constant action and reaction, a connected chain of secondary causes, moving in beautiful harmony. To contemplate the motion of a single atom, abstracted from the rest, is like examining the motion of a limb divided from the human body (6). Yet this is too

To neglect this source of instruction, upon every thing connected with religion, is to expose the weakness of the human understanding. If you take away this pillar and ground of truth, you must build upon the sand. If you erect a beautiful superstructure, or even a tower like Babel, if its top should reach to heaven, the consequence is certain; it will terminate in confusion. Such is the philosophy of materialism—a most unhappy system. It derives its support from a like source with the atheist; ascribing intellectual power to organized matter, and "smothering the distinction between body and spirit; a system which has always had its advocates, but can recommend itself only to the half learned, inflated with the vanity of false wisdom."

(6) "It answers no purpose to consider the motion of any single body abstractedly, as a thing by itself, if there is in fact no such motion to be discovered. Speculations which carry us out of the world can never teach us how things are conducted in the world. Nature appears to be a system of parts connected and related, and every particular part of it should be considered under this relation; without which, neither the nature, nor the design of it can be understood. Take the leg of a man, and consider it without any regard to the body it belongs to; it will then have no meaning in it; neither can he that examines it, understand any thing more of it than its substance and figure; which is only to know that it has make and form. But if you consider the same member with its relation to the body, then all these wonderful things discover themselves to us at once; first, that its vessels are

much the practice with mathematicians and philosophers; they study motion in a body without mo-

supplied with the animating fluids of blood and spirits, which keep up animal life in it: secondly, that its muscles are connected with the superior parts, from whence they derive their faculty of motion: thirdly, that it is framed with due strength, and exact proportion to the weight of the body, to preserve it in an erect position, and to transport it from place to place: fourthly, that it is enabled to do this effectually by its relation to the eyes, which receive light to direct all the motions of the body to their proper ends. A limb considered under these relations becomes a wonderful subject, well worthy to be admired by the anatomist and the philosopher; but if you take it out of the body and consider it abstractedly, it is dead, motionless, and useless; except to the cannibal, who could make a meal upon it."

Jones's Physiological Disquisitions, p. 30.

"We must argue in the same manner about motion; that a body continues to move, only so long as the natural causes of that motion continue to act upon it; and that rest, which is mechanical death, must inevitably follow, when the causes of motion are no longer present to it. There may be subtile cases, in which it is as hard to trace the cause of motion, as to shew why life remains some time in an animal body under water without respiration; but still the general assertion must be true, that of every effect which is permanent, the cause must be so too. If life were preserved in any human body without air in the lungs, or any remaining vital warmth at the heart to keep up the fluidity of the blood, this would be an absolute miracle, not to be accounted for by any principles of mechanism, nor resolvable into the doctrine of physical causes. And it would be as great a miracle if an inanimate body were to move permanently without any permanent cause; or what is worse, it would rather seem to exclude the possi-

tion; they construct a system of mere abstractions, which are altogether delusive; and though sensible that some difficulties remain to be solved, yet they carry on the delusion by new speculations founded upon former conjectures, amidst doubt and difficulty, darkness and philosophical delusion (7). In

bility of miracles: and I cannot but wonder it was never duly considered by modern philosophers, that neither the power nor the providence of God are necessary to that body, which moves to-day only because it moved yesterday. This principle leads naturally to atheism, and with very little difference, is the principle on which the Greek atheists built their system; they gave to atoms an oblique motion, without any permanent cause; which, together with innate weight, essential to their constitution, carried them through the whole course of their performances in the natural world." *Ibid, p.* 34.

(7) "If, indeed, gravitation were not only known to be universal among material substances, but if all the other causes of motion could be reduced to it, and shown to be modifications of one and the same law, there would be little reason to expect that we should ever carry our inquiries much further; and, though we should not think that there was any impiety in the attempt to do so, we should certainly despair of its success. But our knowledge of gravitation is rather shewn to depend on impulse, not impulse on gravitation. Two laws, very different from one another, direct the motions of the material world; and till these two can be reduced to one, or shewn to depend on the same cause, or till they be demonstrated to arise from different causes, our knowledge of them remains incomplete. Till every possible means of effecting one or other of these purposes has been tried,—till reason and experiment can fairly be said to have done their utmost, philosophy has not reached its utmost object. Some important

all our researches about the properties of matter, there is a line of circumvallation drawn, over which we cannot pass. We may apply geometry to certain appearances of the moving body, but it does not un-

secret may still be within our reach; some new proof of the simplicity of nature, and of the wisdom of its author, may yet remain to be discovered. In the present state of science, we think it cannot be affirmed that the utmost has been done with respect to the object we are treating of; nor are we entitled to say, that the attempts made have been all completely abortive."

Edinburgh Review, vol. 13, *p.* 104.

"It is in vain to say that attraction is only an effect, a law to express something that we cannot comprehend; because it is continually introduced to establish principles so certain and effectual, as to destroy other conjectures and theories far more rational, and agreeable to the appearances in nature, than the one intended to be introduced. I will submit one example; it is from Archdeacon Paley—in the article Astronomy, in his Natural Theology. "Calculations were made a few years ago, of the mean density of the earth, by comparing the force of its attraction with the force of attraction of a rock of granite, the bulk of which could be ascertained; and the upshot of the calculation was, that the earth upon an average, through its whole sphere, has twice the density of granite, or about five times that of water. Therefore it cannot be a hollow shell, as some have formerly supposed; nor can its internal parts be occupied by central fire, or by water. The solid parts must greatly exceed the fluid parts; and the probability is, that it is a solid mass throughout, composed of substances more ponderous the deeper we go." So that this force of attraction given to matter, compared with another force of attraction, is to prove that the earth is not a hollow crust, and filled with water. It all depends, you perceive, upon this said attraction. If you wish to see a more unintelligible account of

fold the mystery. We may detect certain laws, but those laws only exhibit part of the phœnomena. Who can describe the different modulations of the air, " at one and the same instant of time, and from different points of the compass, the music of an organ, the roaring of cannon, the ringing of bells, and the crying of swine?" What mathematical reasoning will account for their being heard as distinctly, and at once, as if they were heard in succession? So many complex motions, in one and the same fluid, from different distances, operating by various causes, and approaching the senses at the same moment, seem to confound our researches, and tell us to proceed no farther.

If matter is a subject of difficult investigation, how intricate are the laws and phœnomena of the human spirit! It is mind, which gives to matter all its beautiful variety; and forms the most engaging and impressive are presented to our notice; and all these objects give us in return, some corresponding

the combined effects of this said attraction, gravitation, and centrifugal force, I would recommend you to read King's Morsels of Criticism, vol. 3, Diss. 13. edit. 1808.

To this mixture of sentiment and imagination, I wish to add another extract, equally unintelligible. " If attraction be what Cotes, with many other Newtonians, thought it to be, a primordial property, it stood indifferent to all laws. If it be the agency of something immaterial, then also for any thing we know of it, it was indifferent to all laws. If the revolution of bodies round a centre depend upon vortices, neither are these limited to one law more than another."

Paley's Natural Theology, chap. 22.

impression, and thus influence the passions, and affect the heart. Our perception of external objects is involved in mystery. Different theories have been invented, but the subject is still intricate. How far intermediate objects combine in their influence, it is not very easy to ascertain (8). If sensible objects are thus involved in mystery, how much more, the nature and properties of the human soul, and a spiritual subsistence, which can only be represented by imagery drawn from the natural creation. The resemblance must be traced by some standard of authority, because the ideas of spiritual things are not immediate. The bible is the only criterion of truth, on subjects like these; it is to that book we must constantly appeal. *There is a spirit in man, and the inspiration of the Almighty giveth him understanding* (9). No satisfaction can be derived from the perusal of all the controversies upon the subject of materi-

(8) "Plato's subterranean cave, and Mr. Locke's dark closet, may be applied with ease to all the systems of perception that have been invented: for they all suppose that we perceive not external objects immediately, and that the immediate objects of perception are only certain shadows of the external objects." *Reid's Essays, vol. 3, chap. 7.*

Let me beg of you to read Bishop Browne's Essay on the proper Limits of the Human Understanding; and Thoughts on Divine Analogy. 1728.

(9) The Hebrew word רוח—*wind or air is motion*, is the most immaterial object in nature. That word affords us, therefore, the best image of mind or spirit. See Parkhurst, under the root רח

alism; it leads the mind into a cave like that of Plato, where all is enveloped in darkness. If the bible will not afford you satisfaction upon points like these, in vain will you seek for it from any other source. From the most ingenious and laboured disquisitions, you will return to the volume of inspiration, and be ready to exclaim—*The entrance of thy word giveth light* (10).

These remarks, have a strong bearing upon the speculations of the modern astronomer and his widely extended notions of the vast creation. He does not extend his views to worlds beyond this scene of matter, for his thoughts are not very spiritual; but every little glittering spark in the heavens is made the center of systems of worlds, the smallest traces of which are not discoverable, except in his own imagination. Did we fairly reason from what we know, some apology might be given, for "such idle dreams;" but our ignorance of the most common and familiar objects in life, ought to check the vanity and presumption of the human mind. The increase

(10) The chief design of Dr. Hartley, in his very ingenious work on Man, is to explain and apply the doctrines of vibration and association. Allow him the first element in his reasoning, and his deductions are accurate. The doctrine of vibration, like the subject of attraction, is borrowed from Sir Isaac Newton. The influence of association over our opinions and affections is clearly seen and felt: but vibration and attraction, are names given to principles, which are alike conjectural.

of these glittering objects, in the canopy of the heavens, as discovered by the telescope, might lead to opposite conclusions, from the one which is generally adopted;—that they are neither so large, nor so distant, as is commonly imagined. That they are of great use and importance in the system of nature, cannot be doubted by any one, who can appreciate the wonders of creation. But to point out their distinct uses, beyond their relation to the globe we inhabit, requires nothing short of a divine revelation. If we find it so difficult to comprehend an atom of matter, which is tangible, and ever open to inspection, and constantly within our reach; let us not be so ready to unveil what God has kindly concealed, and to speculate about things altogether foreign to our situation and circumstances (11). Let it be remembered, that all imaginary speculations on the works of God, are generally very different from truth and reality (12). The history of philosophy

(11) "When in scripture, the sun, the moon, the stars, and all the parts of the creation are called upon to praise God, man is made the instrument. Though void of understanding and reason, they offer means for the exercise of both; "they show the glory of his kingdom, and they talk of his power."

Vince's Confutation of Atheism, p. 81.

(12) If a thousand of the greatest wits that ever the world produced, were, without any previous knowledge of anatomy, to sit down and contrive how, and by what internal organs, the various functions of the human body are carried on; how the blood is made to circulate, and the limbs to move; they

is little more than one false hypothesis, giving way to another (13). What is true and useful, is con-

would not in a thousand years hit upon any thing like the truth. Of all the discoveries that have been made concerning the inward structure of the human body, never one was made by conjecture. Accurate observations of anatomists have brought to light innumerable artifices in the contrivances of this wonderful machine, which we cannot but admire as excellently well adapted to their several purposes. But the most sagacious physiologists never dreamed of them till they were discovered. On the other hand, innumerable conjectures formed in different ages, with regard to the structure of the body, have been confuted by observation, and none ever confirmed." *Adams's Lectures, vol.* 3, *p.* 60.

(13) Conjectures, in philosophy, are termed hypotheses, or theories: the invention of an hypothesis founded on some slight probability, which accounts for many appearances in nature, has too often been considered as the highest attainment of a philosopher. If the hypothesis hangs well together, is embellished with a lively imagination, and serves to account for common appearances, it is considered by many as having all the qualities that should recommend it to our belief, and all that ought to be required in a philosophical system. Men of genius are so prone to invent hypotheses, and others to acquiesce in them as the utmost the human faculties can attain unto in philosophy, that it is of the greatest consequence to the progress of real knowledge, that you should have a clear and distinct understanding of the nature of hypotheses in philosophy, and of the regard that is due to them. Although some conjectures may have a considerable degree of probability, it is evidently in the nature of conjecture to be uncertain. In every case, the assent ought to be proportioned to the evi-

fined to a very small compass, and in every part, more or less connected with the discoveries of the bible. The hypothetical opinions of philosophers who can treat that book with cold indifference, or silent neglect, or who can indulge in conjectures which would apparently militate against its authority, must be received at least with suspicion, and some hesitation, by every real friend to genuine christianity.

If it were possible to examine the influence of such opinions upon the devotional feelings of the heart, some conclusions might be drawn, both interesting and important. That philosophy which is unfavourable to real devotion, and to the exercise of the best feelings, which draws the affections from an attachment to pure and undefiled religion, we may rest assured, must spring from an impure or corrupted source. Keep this maxim always in your remembrance, That sound philosophy is nearly allied to genuine christianity. For my own part, I

dence; for to believe firmly what has but a small degree of probability, is a manifest abuse of our understanding. Now though we may, in many cases, form very probable conjectures concerning the works of man, every conjecture we can form with regard to the works of God, has as little probability as the conjectures of a child with regard to the works of man." *Ibid, vol.* 1, *p.* 59. 1794.

I refer to the date of the edition, because recent editions, with what are called improvements, have some of the most valuable matter omitted.

very much question whether the notions inculcated by Dr. Chalmers in these lectures, are at all favourable to the exercises of devotion. If this subject has, however, occupied his thoughts, I should rather think it would afford him some perplexity. Enlarged views of the creation, which are merely hypothetical, may excite admiration and call forth astonishment;—they may amuse, and afford room for sceptical doubts; but they afford no reflections adapted to the exigencies of the human mind, and nothing to satisfy the anxious desires of the heart. How far they may be serviceable in what is called the study of Natural Theology, is much to be doubted (14). I cannot suppose a merely speculative subject of opinion, has much to do with the affections or the passions of the soul. Intricate controversies and ingenious disquisitions on the origin of evil—on the purposes of the Almighty, and the free agency of man, are not, I think, very favourable to real piety and genuine religion (15). The meta-

(14) Even Paley seems to have some doubts, whether the science of astronomy is the best adapted to prove the agency of Deity. "My opinion of astronomy has always been, that it is not the best medium through which to prove the agency of an intelligent Creator; but that this being proved, it shows, beyond all other sciences, the magnificence of his operations."

Natural Theology, chap. 22.

(15) "Great are the powers of the human mind, but her presumption is still greater. Not content to be employed upon such principles and materials as are provided for her use by

physical obscurity which envelopes the productions of writers of this class, is like a thick cloud intercepting the solar light. By their ingenious labours, religion and science suffer an eclipse; the face of nature is darkened; what is bright becomes obscure, and what is beautiful, is conspicuous only for its deformity (16). Discussions on the nature of the soul, are much of the same description (17),

Providence, and the natural state of things, in a slow and sober exercise, vainly presuming, by an action and operation of her own, to invent others of a superior order, by whose assistance she may soar with a rapid wing into the possession of the sublimest truths; buoyed up into the air by these self-inventions, she attempts unbounded flights into the fertile but delusive regions of imagination. Hence we often see philosophers led by trains of solid reasoning, to the temple of splendid and delusive errors." *Adams's Lectures, vol.* 2, *p.* 112.

(16) Every new writer on the *origin of evil*, generally has the satisfaction of knowing, that after immense toil and labour he has left the subject just in the same state in which he found it.

(17) Des Cartes thought the soul was indivisible, something like a mathematical point. Dr. More said it was indivisible, yet he allowed it some room for expansion—a certain metaphysical amplitude. The Cartesians call it *res cogitans*, or *ipsa cogitatio*, never without actual thought. Mr. Locke, on the contrary, supposed the soul did not always think; at least not in infancy, and under the influence of certain diseases. But who does not perceive that such discussions as these are beyond the proper boundary of the human intellect? Upon this subject consult Doddridge's Lectures, Part 1—the lectures on Pneumatology. I could easily furnish you with a list of books

and may be classed with the ingenious reveries on the planetary system. It is altogether impossible to apply mathematical apparatus to bodies at such an immense distance, independent of a variety of other considerations. Keep then within the limits of useful knowledge, adapted to the condition of man in the present world. If you would

upon subjects of this kind, that would occupy half your life to read. They might exercise thought, and fill the system with wind and flatulence; but the soul would be destitute of instruction. Not a particle of knowledge would be gained. It would be carrying you into a dungeon, and excluding the light of heaven. The works of Dr. Johnson are worth a cart-load of such rubbish. The following extract is a specimen of rational and scriptural metaphysics.

"The soul of man is confined in a material body, and obliged to take all its ideas of the spiritual world from matter; so unless it is well informed of the nature of this material world, it would not be in a capacity to receive the knowledge of the spiritual; and even when thus far capacitated or qualified, it could not obtain the knowledge of spiritnal and immaterial things, unless the Author of both worlds was to point out what objects in the one resembled things in the other, or what were emblems here upon earth, of realities above in heaven. Hence it is, that throughout the whole Bible there is not one immaterial, or mere metaphysical idea, proposed to the apprehension of man; God very well knowing that he could not receive such, however some men may think they can: but all the ideas therein laid down are taken from sensible and material objects; whence also it is plain, that this world, like the Tabernacle of old, was so framed and constituted, as to be the *pattern of heavenly things.*"

Catcott on the Creation, p. 94.

contemplate nature, do not consume your time in particles and atoms and innate virtues; but examine the variegated landscape, and the flowers which adorn the earth (18). View the starry heavens, not to discover what God has concealed, but for the instructions they convey to man in the present state of his existence. Read the book of nature with the bible in your hand, for without this commentary, the brightest scenery will be covered with a blackness and darkness, which all the penetration of science, and the eloquence of infidelity, can never illumine (19).

(18) It is very remarkable, that our blessed Lord never once directed the attention of his disciples to any thing like metaphysical reasoning, or the discussion of any intricate subject of inquiry—to the starry heavens or planetary worlds; and yet he pointed to nature, in a way the most striking and impressive—with a grandeur and dignity, which while it invites, it likewise commands our attention. *Consider the lilies, how they grow; they toil not, they spin not; and yet I say unto you, that Solomon in all his glory was not arrayed like one of these.* "A man may run himself out of breath, with his eyes in the air; the flowers are at his feet."

(19) As a specimen of this kind of illustration of nature, I would mention the 19th Psalm, by the late Bishop Horne; in which you may perceive that persuasive eloquence which awakens the feelings of piety, elevates the devotion of the heart, and at the same time enriches the understanding—sublime, instructive, and in which the christian and the philosopher are equally conspicuous.

"With respect to any direct advancement in the knowledge of our intellectual selves, to be derived from the different sys-

Do not suppose that I would repress further inquiries into the mysteries of Nature, or throw a damp upon the zeal and intelligence of inquiring minds. But I submit to your candour and experience, whether the disposition to dive into subjects merely speculative, and evidently beyond the reach of the human faculties, is not a disposition to be checked rather than encouraged? I ask it of you, because I feel the force, and propriety of the question, and because I am persuaded that experience and age, and reading, and thinking, connected with an enlightened and sound understanding, will confirm the sentiment. Never forget the limits prescribed by the laws of nature and the dictates of revelation. To push beyond these limits is a vulgar intrusion—an approach which is insulting to the majesty of heaven. There is a boundary line drawn by infinite wisdom, upon the most intricate subjects in philosophy, matter, motion, and spirit, over which the human mind cannot pass with impunity; to reach it is the highest skill of human wisdom, but to pass it is daring impiety. Whatever writer goes beyond this boundary, however vigorous his mind or the capabilities of his understanding, or even exalted his piety, he cannot proceed with

tems of pure metaphysics, independently of the bible, it may be doubted whether, if the ploughshare of oblivion were to pass over the whole territory on which its various edifices have been reared, any serious loss would be sustained."

British Review, vol. 5, p. 459.

How have hundreds of millions enjoyed life and happiness, who have never so much as heard of the book?

safety; should he intrude into this unknown region, with the human spirit embodied in flesh, he is not suffered to pass; he must be repulsed with shame and confusion. Though a giant in intellect, and a Sampson in strength, he must return, shorn of his locks, weak as a child, and contemptible as an idiot.

Infidelity is for ever changing its mode of attack, and seldom continues long in one and the same position. Like another Proteus, it assumes different forms and shapes. To-day we pursue it in one corner, and to-morrow it appears in another. It seeks refuge in holes and caverns and secret recesses. Darkness is the aliment upon which it feeds. Sometimes, it is visible and open in its approaches, and at other seasons, it works by a mysterious and unknown agency. It will animadvert upon the mosaic cosmogony, and then seek refuge in fabulous history. It finds pleasure and amusement in the heathen mythology, and a ready credence is given to the Indian and Chinese fables (20). The hypothetical branches

(20) A gentleman, who once filled an official post in India, and who had resided there some years, when he returned to England, seemed to give the preference to the idolatrous customs of the country he had recently left, and even to the Mahometan theology, rather than to Christianity. To the bible he had the most utter aversion. His time, and talents, and learning, were solely occupied in collecting and reading books, which he was very assiduous in obtaining, merely to satisfy his conscience that the bible was not true. It was astonishing to observe the books selected for this purpose—every thing

of astronomy are most convenient subterfuges for the votaries of Infidelity. At the present moment, the science of geology is considered as a dernier ressort. It is acknowledged, that few studies are attended with more difficulty, and none, in which the subject is more complex; and yet this difficult, complex, and uncertain science, is to lay the foundation of atheism and the eternity of matter (21). Obscurity, however, is the region adapted to the constitution of the infidel, and modern philosopher. Rout him from the dark recesses to which he has fixed his abode, and he will immediately take refuge in another, perhaps still more obscure (22). Bring him to the light, and

that could obscure, and darken, and confuse. He never sought for evidence, as I often told him. He took great pains to become an infidel. At one time he promised a long history of his life, with anecdotes of the principal characters in India; but I believe his chief object was, if possible, to convey the [illegible] of his own mind to the minds of others. Providence, however, has frustrated that design, and I suppose [illegible] will remain in its merited oblivion.

(21) Vide Brande's Outlines of Geology, 1817. The writer acknowledges the difficulty and complexity of the science; but he is assiduous in recommending the *theory of Whitehurst:* he does not immediately become the patron of atheistical notions, but he gives you directions how to become an atheist.

(22) If you ask, what material cause is to be assigned for the faculties of the human soul? The Systeme de la Nature tells us, it is the *phlogistic principle of the chemists.* These sceptics immediately find refuge in some obscure retreat, in some principle the most hidden and distant, and altogether inaccessible to the senses. See *Archdeacon Nares, p.* 9.

he will recede like the owl and the bat. He must retire to the midnight darkness. Here he finds safety—here he finds pleasure. Any branch of science, that will admit of different, and opposite conclusions; in which hypothesis may be indulged, and nothing proved, will always gain the admiration of those, who slight and neglect the sacred writings. The bible affords the clearest intelligence upon every mysterious and difficult subject, so far as it is capable of illustration, yet it is rarely consulted; and if consulted, it is not for the sake of instruction, or edification, but to elicit materials, which by an ingenious process, may darken the understanding, and obscure every sentiment which christianity has hitherto imparted. Of such persons we may justly say, that *light is come into the world, but men love darkness rather than light.*

I am, Dear Sir,

Yours, &c.

LETTER VIII.

MATHEMATICAL AND ASTRONOMICAL INFIDELITY.

Devotion! daughter of Astronomy!
An undevout astronomer is mad.

DR. YOUNG.

I have often thought, that the making experiments and calculating proportions, where no farther end is proposed by it, and it produces nothing but a stupid admiration, is a very low and servile employment for a man of genius. It is degrading the philosopher into the mechanic, and that the most useless and unprofitable of all mechanics. The wheelwright who can make a plough, and the husbandman who knows how to use it, deserve infinitely more of mankind than he who spends his time in measuring the tail of a comet, only to surprize and terrify mankind by a formidable range of ciphers. BISHOP HORNE.

DEAR SIR,

It is very extraordinary, to observe the insensibility of the human heart, upon subjects the most important and interesting, and essentially connected with every thing valuable in the present state of our existence—with all our hopes and fears, and prospects of happiness in the world to come. It has

been well observed, that if the "christian religion is any thing, it must be every thing:" it has claims which are preeminent. These claims cannot be abrogated, by any real or supposed attainments whatever. To the man enlightened by science, by an enlarged or extensive acquaintance with the works of creation, the obligation is greatly increased. In proportion to the extent of our knowledge, must be the obligation to a right improvement of that knowledge. *Where much is given, much is required.* He who can trace, by calculation and art, the most difficult and intricate motions, he who can resolve the most ingenious questions in mathematical science, to such a mind, a survey of the divine perfections, ought to be the more impressive, because they are the more distinctly apparent. But the reverse, I believe, is the melancholy fact. Men occupied in the studies of science, in natural history, in anatomy, in mathematics, or the science of astronomy, are seldom impressed with devotional feelings, or offer up a single aspiration to that glorious being, who gave them existence, and who surrounds that existence with light and splendour, and by the constant displays of his unremitting kindness. It must appear extraordinary, and rather paradoxical, that men, possessing the most active powers of mind, and constantly occupied in examining the human frame, who hourly witness the most striking proofs of the existence, the care, and government of the Almighty, should likewise be of all others the most careless and in-

different upon the great subjects of religion, and appear in general to possess an utter aversion to every thing like devotion. They will meditate on Deity, as a subject of abstract speculation; but exhibit to them the grand essential truths and obligations of Christianity—endeavour to impress these truths upon the heart and the affections, and you will excite disgust and abhorrence; there is something repellent, something which seems to say, "We will think of it at a more convenient season. We regard the operations of Nature; admire the combinations of matter; but let us not for a moment think of the world to come." Like the ancient heathen, Matter, independent of Deity, is the sole object of their adoration. It is an awful and melancholy truth, that minds wholly occupied with the arrangements and outward forms of material things, unless the heart is radically impressed with the great truths of Christianity, seldom go beyond them. During every waking moment they are surrounded by multiplied proofs of design and contrivance; yet, through the perverse and depraved condition of human nature, they fall into a kind of mental stupidity, concerning things of a spiritual kind, and sometimes sink into absolute atheism. There is nothing that will arrest the attention of man, or call forth the secret emotions of the heart, but the discoveries of the gospel. Remove these, and the heart, with respect to devotional feeling, becomes cold and inanimate.

To have enlarged views of the creation, I mean as it respects the ideal magnitude around us, neither produces hope, nor confidence in the divine being (1). If I might be permitted to speak from

(1) In the works of La Place, on the possibility of a comet's striking the earth, you have a specimen of that want of dependence on the government of God—that atheistical feeling and insensibility, which too often pervade our works of science. "The fears which the appearance of comets at one time inspired, have been succeeded by an apprehension of another nature; lest among the great number which traverse the planetary system in every direction, one of them should destroy the earth. But he says, they pass so rapidly near us, that the *effect of their attraction* is not to be feared. It is only by actually striking the earth, that they could produce the dreadful effect; but the shock, though possible, is so very improbable in the course of an age—it would require so *extraordinary a chance* for the concurrence of two bodies, so small in respect of the immensity of space in which they move, that no reasonable ground of fear can be maintained on this behalf. Nevertheless, *the small probability of such an event, if it be considered, with respect to a long series of ages, may become very great.* It is easy to imagine the effects of such a shock upon the earth. The axis and rotatory motion being changed, the seas abandon their former position, and rush to the new equator; great part of the men and animals drowned in this universal deluge, or destroyed by the violent shock impressed on the terrestrial globe: entire species annihilated; all the monuments of human industry swept away:—such are the disasters which might ensue from the shock of a comet."

Brewster's Edinburgh Encyclopædia, vol. 2, p. 700.

Can parents wonder that their children become infidels, after imbibing sentiments like these?

what I have seen, it would appear that many eminent mathematicians and skilful astronomers, are devoid of sensibility, even upon the first elements of our holy religion. The discoveries they profess to receive, make no influence upon the heart (2). I do not wish to be considered as making charges unfairly, but I greatly fear that very few can be considered as having that dependence upon God, which is becoming and consistent in a rational and intelligent being. Hence they indulge in wild speculations, altogether inconsistent with the enlightened views of a humble and believing christian. The most illiterate ploughman, who has been taught

(2) "The knowledge of nature hath been reputed a good mean to enlarge the soul and breed in it a contempt of earthly enjoyments. He that hath accustomed himself to consider the vastness of the universe, and the small proportion which the point we live in bears to the rest of the world, may perhaps come to think less of the possession of some acres, or of that fame which can at most spread itself through a small corner of this earth. Whatever be in this, sure I am that the knowledge of God, and the frequent thoughts of heaven, must needs prove far more effectual to elevate and aggrandize the mind. When once the soul, by contemplation, is raised to any right apprehension of the divine perfections, and the foretaste of celestial bliss, how will this world, and all that is in it, vanish and disappear before his eyes! with what holy disdain will he look down upon things, which are the highest objects of other men's ambitious desires! All the splendour of courts, all the pageantry of greatness, will no more dazzle his eyes than the faint lustre of a *glow-worm* will trouble the eagle after it hath been beholding the sun." *Scougal's Sermons, Disc.* 1.

to know something of his bible, possesses far more generous and exalted views of God, of his perfections, and of his providence. If you are acquainted with the works of any of these eminent men, you must perceive doubt, and terror, and darkness. The mind, continually employed upon vain hypotheses, loses sight of God and his government of the universe. The skilful astronomer, in all his ratiocinations and ingenious visions, seems to strike him out of existence, and the whole is left to chance and uncertain destiny. Thus the christian peasant erects his building upon a rock, but the vain philosopher upon a mountain of sand.

That there is some very remarkable coincidence between the study of mathematics, and the science of infidelity, I have not the smallest doubt. To me it is very evident. I have watched its tendency and progress upon the human mind, and know it generally produces a cold and sceptical influence, unless strongly counteracted by the warm and animating beams of sacred truth (3). The mind solely occupied with the higher branches of pure and abstract mathematics, is indifferent to every other

(3) "An eminent mathematician attempted to ascertain by calculation, the ratio in which the evidence of facts must decrease in the course of time; and fixed the period when the evidence of the facts on which christianity is founded, shall become evanescent; and when, in consequence, no faith shall be found on the earth."

Adams's Lectures on Natural Philosophy, vol. 2, p. 113.

pursuit; and the most consummate ignorance is often blended with the profoundest knowledge (4). It is in vain to dissemble; the fact is so clear and explicit, that it must be known to every observer who has been associated with persons of this description. The mathematical astronomer, especially, considers himself very profound and enlightened, and far more intelligent than the rest of the human species. A most striking contrast is observable between his opinions and character. He has mean thoughts of the world we inhabit; it is a mere speck in the creation, an atom which might be blown off with a gentle puff of wind, and fall into the infinitude of space, in which it may wander through an eternity of ages. But this curious and inquisitive being, who lives and moves upon the surface of this atom of matter, amidst an innumerable multitude of other beings like himself, is of some consequence in his own estimation. He feels his importance; a sort of gaseous substance passes through every pore in his constitution, and he is inflated with an ecstasy of feeling—the ebullitions

(4) If the reader will consult M. Laplace's *Exposition du Systeme du Monde*, liv. 5, chap. 6, he will there see his conjectures respecting the formation of the system; exhibiting a melancholy instance of human weakness in a man, whose powers of mind have enabled him to make those discoveries in the physical operations of nature which might have been thought beyond the reach of all calculation."

Vince's Confutation, p. 94.

of pride, and the corruscations of vanity. Pride is the moving spring of action in the soul, and the basis of all the infidelity in the heart of man. He is elated with himself, and not with the grandeur or magnificence of the universe. The world becomes a bubble under his feet, but the bubble is discoverable in the human imagination; here it revolves and swells amidst the depraved affections of the heart, in a chamber of imagery, a system within a system, which he dares not fully explore; a system like the universe, boundless and unfathomable (5). While he can expatiate upon unknown regions, in the ideal space which is infinite, his heart becomes inflated with pride and self-gratulation; pursuing the reveries of a philosophical enthusiasm, he loses all relish for the doctrines of Christianity; he wants that simplicity of mind, and humility of heart, essentially requisite to a right reception of its first principles. Wonder not, therefore, that you often perceive men of extraordinary talents and strong powers of intellect, aided by an immensity of learning, stumble at the very threshold of the gospel. The unlimited benevolence which it unfolds, and the strict purity which it inculcates, are

(5) ——— "The coward flies;
Thinks, but thinks slightly; asks, but fears to know;
Asks, 'What is truth?' with Pilate; and retires;
Dissolves the court, and mingles with the throng:
Asylum sad!—from reason, hope, and heaven."
Dr. Young's Night Thoughts, N. 9.

repulsive to the depraved inclinations of the heart; and the very principles which command our attention, and ought to fill us with adoring gratitude, are the principles of all others, the most neglected and despised, and become the subject of disaffection to the heart of man.

Of the advantages to be derived from the study of mathematics, and especially of geometry, no one is more sensible than myself. I had the happiness of being educated by one of the first mathematicians of the last age, to whose skill and attention I am greatly indebted. I consider the science of geometry as the most excellent system of logic, and calculated to rouse the latent energies and dormant faculties of the human mind (6). When the definitions are clear, the premises correct, and the axioms appropriate, when a regular chain of consequences is presented to the mind, a habit of reasoning is formed, clear, convincing, bold, and decided. The faculties are thus strengthened and improved, and rendered vigilant in exercise, and powerful in argument. But if the mind is wholly occupied in these studies, and more especially if the heart is not impressed with the great truths of christianity, I fear there is a certain

(6) "It is doubtless a great advantage to geometry, that its first principles are so few, its ideas so distinct, and its language so definite. Yet a captious and paradoxical wrangler might, by dint of sophistry, involve the principles even of this science in confusion, provided he thought it worth his while." *Beattie's Essay on Truth, p.* 102, 4to.—1777.

and necessary tendency, between geometry and infidelity. If a young man pursues these studies, and blends them with metaphysical notions, which is very often the case, he becomes altogether indifferent to the powerful and commanding evidence of revealed religion. That evidence is as strongly pressing upon the human mind, as the science of geometry; but it is of a different kind, and is connected with the best feelings of the heart. The bible does not adapt its discoveries to a mathematical or artificial form of evidence, or to a chain of human reasoning. It is of a peculiar kind. It disdains the mechanical arrangements of science, and yet it speaks to the heart, *in demonstration of the spirit and of power; that your faith should not stand in the wisdom of men* (7).

(7) That the Bible does not fully accord with a mathematical form of arrangement, I think is self-evident to those who will make a few reflections upon the subject. It discovers a sort of incidental, or circumstantial evidence, which is far more convincing and satisfactory. You will perceive the force of this remark, if you read some passages in the works of Dr. Lardner, and compare them with those arranged by Dr. Paley in his Evidences of Christianity, and the former will be found much more convincing than the latter. I conceive this to arise from a peculiarity in the sacred writings, of their being immediately adapted to the wants and necessities of the human mind. Dr. Paley arranged some of the materials of Dr. Lardner in a mathematical order, and with much ingenuity; but to those who have time and leisure, the works of the latter will afford abundantly more satisfaction.

Those acquainted with mathematical studies, and the abstract speculations which are sometimes employed in the solution of different theorems, cannot, I think, wonder, at the tendency here stated, between geometry and infidelity. There is no necessary tendency; but the tendency is excited by a peculiar habit and taste, formed under the influence of ingenious and curious disquisitions. The mathematician pushes his inquiries beyond the boundaries of nature, and the limits assigned by the word of God. He becomes fond of paradoxes, which are endless, and curious disputes which he does not understand, and indeed cannot fully unfold. What is salutary and beneficial, to a certain extent, becomes injurious and fatal, when carried into the regions of fancy, and beyond those boundaries or limits to which the human intellect is justly prescribed. He will sometimes admire things which are inconsistent, and with all his skill in logical argument, admit as truth that which is repugnant and absurd (8). The study of mathematics ought, if

(8) What Hume said of Bishop Berkely, may be said of many of the speculations of mathematicians, and particularly of astronomers; and I think, may fairly express the result of Dr. Chalmers' labours in these lectures on astronomy. "All his arguments, though otherwise intended, are in reality merely sceptical; which appears from this—that they *admit of no answer, and produce no conviction.* Their only effect is to cause that momentary amazement and irresolution and confusion, which is the result of scepticism."

Hume's Essays, vol. 2, p. 484. *Ed.* 1777.

possible, to be mingled with other pursuits, and with the different branches of useful knowledge, by which this unhappy tendency is greatly corrected. The mind, continually employed upon these abstract pursuits, imbibes strong prejudices, which are not easy to be eradicated; and it loses that improvement or elastic force, which it might have received from other sources (9). It must, I think, be

(9) "But a penetration into the abstruse difficulties and depths of modern algebra and fluxions, the various methods of quadratures, the mensuration of all manner of curves and their mutual transformation, and twenty other things that some modern mathematicians deal in, are not worth the labour of those who design either of the three learned professions, divinity, law, or physic, as the business of life. This is the sentence of a considerable man, Dr. George Cheyne, who was a very good proficient and writer on these subjects. He affirms, that they are but barren and airy studies for a man entirely to live upon, and that for a man to indulge and riot in these exquisitely bewitching contemplations, is only proper for public professors, or for gentlemen of estates, who have a strong propensity this way, and a genius fit to cultivate them. But, says he, to own a great and grievous truth, though they may quicken and sharpen the invention, strengthen and extend the imagination, improve and refine the reasoning faculty, and are of use both in the necessary and luxurious refinement of mechanical arts; yet having no tendency to rectify the will, to sweeten the temper, or mend the heart, they often leave a stiffness, a positiveness and sufficiency on weak minds, which is much more pernicious to society, and to the interests of the great end of our being, than all their advantages can recompence. He adds further, concerning the launching into the depths of the studies, that they are apt to beget a secret

granted, that tedious calculations in algebra, and more especially in the visionary science of fluxions, are not the best means to be employed for the improvement of the mind. The constant exercise of the mind in these pursuits, is often attended with a debasing and stupifying effect in their influence upon the higher and nobler faculties of the soul, especially upon the feelings and the affections of the heart; producing a narrowness and bigotry, sometimes conspicuous among those who pass for able and skilful mathematicians. Some of them appear to be almost incapacitated by their pursuits for the investigation of moral truths, or for inquiries purely theological. Every thing is measured by the standard of truth which they have erected; and with them nothing is certain, but the science which they study, and the hypothesis which they please to espouse. Whatever goes to establish the credibility of a divine revelation, is of all others the most obnoxious to their feelings. To

and refined pride, an overweaning and overbearing vanity, the most opposite temper to the true spirit of the gospel. This tempts them to presume on a kind of omnipotence in respect to their fellow creatures who have not risen to their elevation: nor are they fit to be trusted in the hands of any but those who have acquired a humble heart, a lowly spirit, and a sober and teachable temper."

Watts's Improvement of the Mind, chap. 20.

Vide Dr. Cheyne's Preface to his Essay on Health and long Life.

the bible, as the source of divine knowledge, the mere mathematician generally revolts. His heart is indisposed to the subject, and until that is renovated, no reasoning will be altogether logical, no arguments completely forcible, and no evidence sufficiently strong. The power of reasoning is employed on that side which pleases, and which adapts itself to his individual taste; the same power exerted in a right direction, is sufficiently strong to remove every objection, and to overcome every doubt. Call up the exercise of the same power in favour of Christianity, and every cloud vanishes, every obstacle is removed, and the beams of a divine light will shine brighter and clearer, until they irradiate every faculty of the mind, and warm and animate every passion of the soul (10).

(10) Only conceive for a moment the force of such a mind as David Hume's, had it been employed on the side of religion. The evidences of Christianity, under the influence of his pen, might have appeared with a force altogether new and irresistible. If he could advocate a bad cause with so much skill and ingenuity, what must have been the effect of his reasoning on the side of revelation! But such was not the design of Providence. His talents were employed in the cause of Infidelity, as an exciting principle, to call up the labours of others, which in the end should prove far more extensively useful, and more generally beneficial to the church and the world.

If the mathematicians of the north are not a very different class of beings from those in the south, I suppose Dr. Chalmers much have seen many instances of mathematical infidelity. Conversing upon this subject a few years since, with an

If such should be the baneful effects of the study of pure mathematics, upon the heart and the affections, what an impression may be expected from the new discoveries in the science of astronomy! Let it never be forgotten, that these discoveries are hypothetical, and that they are founded upon optical illusion, originating in the fancy, and supported by the imagination. You will not elicit them, by applying the rules of the Baconian philosophy; or by looking through a telescope, aided by the science of geometry; but they are invented in the closet, brought to the telescope, and then ushered into the world, as the close result of inductive investigation. Where are the men who dare to examine, and inquire, and think for themselves? Not among the students of astronomy, for they are all led, like the sheep by the sound of the bell (11). It is acknowledged by the

eminent minister of Edinburgh, who has produced some very important literary works, and who is well acquainted with the state of religion and learning in Scotland; he assured me, that "mathematical and metaphysical studies in Scotland, had led the greater part of the clergy in the established church, to adopt infidel principles. Many of them profess the christian religion in appearance, who are privately opposed to it." If this be true, and I am greatly afraid it is, what is to be expected from the laity?

(11) "Few among mankind are able, and perhaps fewer are willing, to take the trouble of preserving with consistency a system of principles purely of their own selection. They separate themselves into large divisions, which, like the flock conducted by the sheep and bell, implicitly tread in the foot-

most sanguine admirers of these eminent astronomers, that they fall into such conjectures as are not to be expected from the decrepitude of old age, or the anxious solicitudes of early youth, and which fully evince their weakness and folly. It is acknowledged, nay who can deny it, that they are generally devoted to the cause of infidelity. In this science, it is the few only who govern the many. What then can be expected, if those few individuals should exercise all their talents, in the success of a cause for which they feel so deeply interested? The very desire to promote it, pushes them forward to fresh discoveries, to novel opinions, and to increased exertions; and every treatise they publish, with a very few exceptions, proves the latent desire ever lurking in the system, a desire to overturn, if possible, the truth and authority of divine revelation (12).

steps of some distinguished leader. Thus is the pain of consulting the judgment in every emergency easily avoided. The road becomes a beaten and a wide one, and each individual knows where to stop, only by seeing the vestige of his predecessor." *Knox's Essays, chap.* 5.

(12) "You seem fond of displaying your skill in philosophy and science; you speak more than once of Euclid; and in censuring St. Paul, you intimate to us, that when the Apostle says—One star differeth from another in glory—he ought to have said—in distance. All men see that one star differeth from another star in glory, or brightness, which arises from their difference in distance; and I beg leave to say, that even you, philosopher as you are, do not know it. You make an assertion which you cannot prove—that the stars are *equal* in

The modern astronomer, in his midnight rambles, loses sight of the grandeur, and infinitely varied beauty and scenery of the earth. His eyes are busily employed upon objects, far beyond the proper boundary of human vision. Occupied about the heavens, he forgets the earth. Novelty has charms to attract our attention. The curiosity inherent in the human mind is ever at work to penetrate the veil, which conceals from our view the invisible world. Under this impression the astronomer proceeds, he ventures abroad into unknown regions, and expatiates on those tracks, which are far beyond the limits of a sober and rational investigation. His imagination takes fire, a few vivid sparks are struck off, and these dazzle and confound the spectators. With these ebullitions, and phantoms of the imagination, Dr. Chalmers appears to be very familiar. This gentleman is undoubtedly possessed of a strong and vigorous imagination, but, "like one of the peat fires in his own country, of more smoke than fire, and of much more fire than heat; and the matter of the fire, moreover, is of such complete earth and rubbish, that the greatest wonder is, how any one could think of kindling such materials." He appears enveloped in all the armoury of gunpowder,

magnitude, and placed at *different* distances from the earth; but you cannot prove that they are not *different* in magnitude, and placed at equal distances, though none of them may be so near to the earth as to have any sensible annual *parallax*."

Watson's Apology for the Bible, p. 325. 1799.

tropes, and figures; and after all this mighty bustle, a great explosion is made, and nothing remains but dust and smoke, confusion and darkness. If you read these lectures very attentively, and let your understanding consider and examine the principles which they contain, the reasoning employed, and the deductions elicited, very little, I am persuaded, will be added to your stock of knowledge. All that is argumentative and useful, might have been compressed into a very small compass; and what is new and original, may be enclosed in a nutshell. The immensity, to which Dr. Chalmers so frequently alludes, is the darling theme of the infidel astronomer. Upon this ideal infinity, all his imaginary powers are employed. It is the idol which he erects as a substitute for Jehovah, the Lord God Omnipotent;—and what are the attributes of this false deity, the object of adoration, and the constant delight of the modern philosopher?—Of him they know nothing, and therefore can produce nothing. All is chance, destiny, uncertainty. Upon these they rest their hopes for the future. Doubt, consternation, and fear, are the principles implanted in their breasts, and these are the substitutes which they impose upon the world, for the christian's hope, confidence, peace, and holy joy.

I am, Dear Sir,

Yours, &c.

LETTER IX.

ON THE PLURALITY OF WORLDS.

To these meditations, humanity is unequal. But yet we may ask, not of our Maker, but of each other, since on the one side of the creation, wherever it stops, it must stop infinitely below infinity, and on the other infinitely above nothing, what necessity there is that it should proceed so far either way, that beings so high or so low should ever have existed. We may ask, but I believe no created wisdom can give an adequate answer. DR. JOHNSON.

We should be between the moon and the earth; this would be the true place for seeing well: we ought in such cases to be simply spectators of the world, and not inhabitants. FONTENELLE.

DEAR SIR,

The progress of modern astronomy, and the conjectures which it proposes, must necessarily direct the attention of inquisitive minds to the subject matter of this letter. The christian is anxious satisfactorily to account for the imaginary worlds, now said to float in the immensity by which he is surrounded. Inquiries naturally press upon the mind, the solution of which is listened to with some

anxiety. What are those bodies which roll on the confines of the visible system? If they are acknowledged to be worlds like the one we inhabit, how can we reconcile the fact with the silence of the scriptures? Or do the scriptures sanction the opinion? If they do, what aspect have these conjectures upon the grand scheme of the christian revelation?

To inquiries like these, numerous answers have already been given, some of them ingenious and amusing, others of them trifling, and all of them speculative and uncertain. The authors who adopt the opinion, of what is called the immensity of creation, are compelled to seek refuge in speculations rather novel and romantic, and suppositions are thus framed without any regard to the authority of the scripture (1). I know perfectly well the endeavours which have been made, by the aid of criticism, to render these discoveries more interesting and satisfactory to the christian philosopher. But I consider every departure from the plain and obvious meaning of revelation, a departure from the only source of light and intelligence. I shall attempt a few remarks upon some of these conjec-

(1) That the scripture is not altogether silent upon this subject, Heb. xi, 3, may be introduced. But Parkhurst, by the word Αἰῶνες understands, and I cannot but think, rightly, "all the various revolutions and grand occurrences which have happened to this created system."

tures, which are immediately connected with those celebrated lectures of Dr. Chalmers.

I must confess, that I was rather surprised he did not condescend to notice some of the writers, to whom I think he must be a little indebted. I cannot suppose his reading to be so confined, as not to have seen them. Dr. Beattie, his countryman, felt the force of the objection against the scheme of human redemption, arising from these modern speculations, and endeavours to obviate it, by supposing, that our fall and recovery may be of use and importance to the other orders of creation (2). To this opinion, there is some sanction in the holy scriptures; but very little, however, to satisfy needless or presumptuous curiosity. Many

(2) Dr Beattie says, in his Evidences of the Christian Religion, "It is not absurd to imagine, that our fall and recovery may be useful to them as an example, and that the divine grace manifested in our redemption, may raise their admiration and gratitude into brighter raptures, and quicken their ardour to inquire, with even new delight, into the dispensations of infinite wisdom. This is not mere conjecture; it derives plausibility from many analogies in nature, as well as from holy writ, which represents the mystery of our redemption as an object of curiosity to superior beings, and our repentance as an occasion of their joy. Every new discovery in the visible universe, ought to give elevation and a new impulse to the pious affections. And the further we see that the works of God extend, the more let us be overwhelmed with devout astonishment in the contemplation of his *infinite, eternal, and universal* BEING."

learned men have pursued the study of this subject; and every difficulty is now supposed to be removed, by an application of the mediatorial scheme to other systems and other worlds. Bishop Porteus sanctions this opinion; but it is easy to see that the conjecture is formed in consequence of discoveries, real or imaginary; and the reasoning he employs is entirely analogical (3). Some of the most ingenious

(3) "It is, I believe, generally taken for granted, that it was for the human race alone that Christ suffered and died; and we are then asked with an air of triumph, whether it be conceivable, or in any degree credible, that the Eternal Son of God should submit to so much indignity and so much misery, for the fallen, the wicked, the wretched inhabitants of this small globe of earth, which is as a grain of sand to a mountain, a mere speck in the universe, when compared with that immensity of worlds, and systems of worlds, which the sagacity of a great modern astronomer* has discovered in the boundless regions of space. But on what grounds is it concluded that the benefits of Christ's death extend no farther than to ourselves? As well might we suppose that the sun was placed in the firmament merely to illuminate and to warm this earth that we inhabit. To the vulgar and the illiterate, this actually appears to be the case: but philosophy teaches us better things. It enlarges our contracted views of divine beneficence, and brings us acquainted with other planets and other worlds, which share with us the cheering influence and vivifying warmth of that glorious luminary. Is it not a fair analogy then to conclude, that the great *Spiritual Light of the World*, the fountain of life, and health, and joy to the soul, does not

* Dr. Herschel—now Sir William Herschel.

speculations of this kind, were introduced by Mr. Andrew Fuller(4), in his answer to Paine, and which

scatter his blessings over the creation with a more sparing hand, and that the Sun of Righteousness rises with healing in his wings to other orders of beings besides ourselves? Nor does this conclusion rest on analogy alone. It is evident from Scripture itself, that we are by no means the only creatures in the universe interested in the sacrifice of our Redeemer. (See Ephesians i, 10. Colossians i, 16—20.) From intimations such as these, it is highly probable, that in the great work of Redemption, as well as of Creation, there is a vast stupendous plan of wisdom, of which we cannot at present so much as conceive the whole compass and extent. And if we could improve and assist the mental, as we can the corporeal sight; if we could magnify and bring nearer to us, by the help of instruments, the great component parts of the spiritual, as we do the vast bodies of the natural world; there can be no doubt, that the resemblance and analogy would hold between them in this as it does in many other well known instances; and that a scene of wonders would burst in upon us from the one, at least equal, if not superior to those, which the united powers of astronomy and of optics disclose to us in the other. If this train of reasoning be just, (and who is there that will undertake to say, much more to prove, that it is not so?) if the redemption wrought by Christ extended to other worlds, perhaps many others besides our own; if its virtues penetrate even into heaven itself; if it gather together *all things* in Christ; who will then say, that the dignity of the agent was disproportioned to the magnitude of the work; and that it was not a scene sufficiently splendid for the Son of God himself to appear upon, and to display the riches of his love, not only to the race of man, but to many other orders of intelligent beings?" *Porteus' Works, vol.* 3, *p.* 70.

(4) Mr. Andrew Fuller, in his work "The Gospel its own

Dr. Chalmers I suppose must have read, for he

witness," has some very ingenious remarks upon this subject, which I cannot omit. "Let creation be as extensive as it may, and the number of worlds be multiplied to the utmost boundary to which imagination can reach, there is no proof that any of them, except men and angels, have apostatized from God. If our world be only a small province, so to speak, of God's vast empire, there is reason to hope that it is the only part of it where sin has entered, except among the fallen angels; and that the endless myriads of intelligent beings in other worlds are all the hearty friends of virtue, of order, and of God. There is nothing inconsistent with reason in supposing that some one particular part of it should be chosen out of the rest, as a theatre on which the great author of all things would perform his most glorious works. Every empire that has been founded in this world, has had some one particular spot where those actions were performed from whence its glory has arisen. The glory of the Cæsars was founded on the event of a battle fought near a very inconsiderable city: and why not this world, though less than "twenty-five thousand miles in circumference," be chosen as the theatre on which God would bring about events that should fill his whole empire with glory and joy? It would be as reasonable to plead the insignificance of Actium, or Agincourt, as an objection to the competency of the victories there obtained, (supposing them to have been on the side of righteousness,) to fill the respective empires of Rome and Britain with glory, as that of our world to fill the whole empire of God with matter of joy and everlasting praise. The truth is, the comparative dimension of our world is of no account. If it be large enough for the accomplishment of events which are sufficient to occupy the minds of all intelligences, that is all that is required."

Gospel its own Witness, p. 211.

treads closely in the same steps. To these authors we may add Mr. Edward King, and Archdeacon

Mr. Fuller, I apprehend, had but little knowledge of science; but he had a large and capacious mind. The above note is a sufficient proof of his striking originality of thought. Few such men appear in a century.

"And, just as we often read of the eyes of all Europe being turned to one spot, where some affair of eventful importance is going on, there might be the eyes of a whole universe turned to the one world where rebellion against the majesty of heaven had planted its standard; and for the readmission of which within the circle of his fellowship, God, whose justice was inflexible, but whose mercy higher, by some plan of mysterious wisdom, made to rejoice over it, was putting forth all the might and travailing in all the greatness of the attributes which belonged to him." *Lectures*, *p.* 137.

"The extent of the field upon which this question was decided, has no more influence on the question itself, than the figure or the dimensions of that field of combat on which some great political question was fought, has on the importance or on the moral principles of the controversy that gave rise to it. This objection about the narrowness of the theatre, carries along with it the grossness of materialism. To the eye of spiritual and intelligent beings, it is nothing. In this view, the redemption of a sinful world derives its chief interest from the display it gives of the mind and purposes of the Deity: and, should that world be but a single speck in the immensity of the works of God, the only way in which this affects their estimate of him, is to magnify his loving kindness; who, rather than lose one solitary world, of the myriads he has formed, would lavish all the riches of his beneficence and of his wisdom on the recovery of its guilty population."

Lectures, *p.* 144.

The same idea is repeatedly amplified by Dr. Chalmers, and

Nares, whose opinions nearly coincide. The supposed discoveries of Dr. Herschel seem to have laid the foundation of much ingenious criticism and disquisition. Even the different colours of the stars are pregnant with new mysteries, under which are concealed important information (5). Mr. King is

given under various forms and imagery, which appears to be the peculiar habit of his style.

It is true, we know, that "creation has its districts and its provinces, and we read of thrones and dominions and principalities and powers;"—but in what part of the book is it said, that these celestial orders are among the planetary regions, or that they inhabit the stars? What avails all this fine declamation?—You cannot proceed a step in the pursuit without the light of revelation—and that is wholly silent upon the subject. According to Swedenborg, heaven is not a place, but a state; locality, as applied to it, is considered by his admirers to involve injurious consequences. Heaven and Hell regard the interior of man, and we may be in that state now as much as we ever shall be. When we die, we change our residence, but probably for one of the planets. Dr. Chalmers, perhaps, may think so too. But what saith the scripture—*Eye hath not seen, nor ear heard, nor hath it entered into the heart of man to conceive.* In fact, it is a state altogether different from this scene of matter—*for flesh and blood cannot enter into the kingdom of God.*

(5) "Dr. Herschel has observed, that the stars, when accurately examined by the highest magnifiers we have yet been able to procure, are of different colours. Some blueish, some reddish; of very different shades; some pink; some white, and dusky of different shades." The inferences drawn are as follows. "And now from the preceding circumstances put

a great admirer of Dr. Herschel's speculations; he supposes the philosophical passages in the old testa-

together, we may surely venture to conclude, that as in the most glorious of all the visions that have been vouchsafed to mankind, the objects have appeared with such resplendent colours of *emitted light;* and as from philosophical principles, we have reason to be persuaded, that the exterior surface of the sun must abound with objects, emitting all the beautiful colours of which sun-beams at least are composed; so it must follow, that the sun itself is really a most glorious habitation; adorned with exquisite beauty, in the most brilliant manner, and one of the heavens. The various bodies which abide on its surface, and with which it is adorned, shining there in the most vivid manner, with those different sorts of beautiful colours, at their very first emission, which are afterwards produced on the earth, where a ray of the sun's light is subdivided into its primæval colours by a prism."

Morsels of Criticism, vol. 1, *p.* 74.

To this power of philosophical divination, through the medium of different colours, Dr. Chalmers also bears his testimony. "We can see of one, that its surface rises into inequalities; that it swells into mountains, and stretches into vallies: of another, that it is surrounded by an atmosphere which may support the respiration of animals: of a third, that clouds are formed and suspended over it, which may minister to it all the bloom and luxuriance of vegetation: and of a fourth, that *a white colour* spreads over its northern regions as its winter advances, and that on the approach of summer this whiteness is dissipated; giving room to suppose, that the element of water abounds in it, that it rises by evaporation into its atmosphere, that it freezes upon the application of cold, that it is precipitated in the form of snow, that it covers the ground with a fleecy mantle, which melts away from the heat of a more vertical sun; and that other worlds bear a resem-

ment to be written prospectively, with respect to modern and future discoveries, and particularly of the doctrine of the plurality of worlds (6). He confounds two things, which ought to be kept clear and distinct; the material heavens which we see, with the invisible heavens, which we do not see. According to these discoveries, instead of the soul, after death, being introduced to a spiritual state of existence, it is to be conveyed to one of the stars; which star, being like the earth we inhabit, our souls must consequently be again clothed with some new vehicle, and the enjoyments of heaven be similar to the enjoyments on earth. To these sentiments of Mr. King, Archdeacon Nares pays considerable deference, and the consonance (7) between

blance to our own, in the same yearly round of beneficent and interesting changes." *Lectures*, *p.* 31.

(6) It is very extraordinary, that this writer should wholly disregard the Hebrew text, and derive all his conjectures from the septuagint version. Surely there is some perversion, or prejudice, in the understanding, or judgment, in preferring the stream to the fountain, which cannot be accounted for upon any rational principles. For a true estimate of the importance and real value of the septuagint, I refer to Letters on the Septuagint, by Robert Spearman, Esq. The book is anonymous. 1755.

(7) I observe that Archdeacon Nares, in common with Mr. King, takes it for granted, that the notions generally adopted about the plurality of worlds, are perfectly correct. The critical powers are thus employed, upon the words תבל—שמים—Οικουμενη—Ουρανος—Κοσμος—Mundus, Orbis, &c. and these words are made to refer to a universe of worlds—by what

them, in many particulars, is very evident. He cannot limit the mediatorial scheme to this our system,

train of evidence, I must refer you to the work itself. Etymology is considered often as very uncertain evidence; but if it is to be collected in support of any favourite notions, it is easily admitted. These words admit of a great latitude of interpretation: but if it should be found that our globe is the only part inhabited by intelligent beings in the material creation, and if this opinion is the uniform sentiment of the sacred writings; all this laboured criticism can be of no avail. Upon the word שטים, I beg leave to say, that in rejecting the interpretation of Mr. Hutchinson, I conceive this respectable writer has given up the most natural meaning of the word, and substituted only vague and uncertain definitions. There is a peculiarity in the language of Moses, which appears to me to overturn the criticisms of Archdeacon Nares and of Mr. King, upon the word Heaven—ויקרא אלהים לרקיע שמים—And God called the expansion, heavens. It is applied to a substance which has elasticity, or expansive force.

Dr. Geddes, who did not possess that nice discrimination that could be wished, I mean with respect to the authority of the sacred writings, observes, that the "word heaven has in scripture three different acceptations: 1, It signifies the air around us, where the birds fly, and where the clouds are gathered; 2, The whole of the visible sky, including the sun, moon, and stars; 3, The invisible supposed residence of the Divinity, in the heaven of heavens."

I do not wish to advocate all the sentiments of Mr. Hutchinson; but I must say, that great injustice is done to him, by many little dabblers in philosophy and divinity, who often pour contempt upon what they are unable, or at least unwilling, to comprehend. His criticisms, especially upon those words which are applied by him to the physical parts of the

much less to the inhabitants of the earth. He enters fully into the said discoveries of Dr. Herschel, and receives them with little limitation. By this ingenious author the words of St. Paul, *for he hath put all things under his feet*, signify, "not only this pitiful globe of ours, but all the plurality of worlds, and variety of beings that infinite space can contain." He considers the mediation of Christ to have several mysteries, or unknown aspects, a sort of universal mediation and redemption, for beings in general who form one general universe. But the subject is treated with much ability, considerable learning, and with that modesty, which proves a mind well acquainted with the difficulties in which it is involved; and the whole is illustrated, by quotations and interesting passages from writers of various opi-

mundane system, are often much deprecated. The worthy Archdeacon unites his voice in the general clamour: but let him review the etymological evidence, in support of his own system, and compare it with the same kind of evidence in Mr. Parkhurst'sHebrew Lexicon, as borrowed from Mr. Hutchinson, and I cannot but think the latter far outweighs the former. I know the force of prejudice, especially if the sentiment is unfashionable. But let a candid examination be made of those words, by the only proper standard of evidence, by running the eye down the roots in the Hebrew Concordance. Observe the nice selection of illustration which he often adopted; and above all, the preservation of the radical idea, through every passage of the bible. While not indifferent to the authority of lexicographers, he has made the Hebrew explain the Hebrew, and Scripture the best interpreter of Scripture.

nions (8). It is easy to see that the reverend Archdeacon brought his discoveries to the bible, and then endeavours, like many others, by etymology and critical sagacity, to educe light from sources hitherto concealed in obscurity. Thus the bible is

(8) Indeed it is acknowledged by Archdeacon Nares, that he did not find the sentiment in the Scriptures; but having adopted the opinion, he endeavoured to find a sanction for it. "When I first turned to the Scriptures, I had it not so much in view, to seek for the general notion of a plurality of worlds, as, supposing this notion to be just, to examine whether the MEDIATORIAL DISPENSATION could be, in any manner, and with any propriety, so extended by analogy, as to be brought to correspond with such enlarged notions of the visible creation."

P. 172.

"And, though in the first pages of this work, I have declared that I originally entered into these researches, for the express purpose of enabling myself to combat certain objections raised against the Scriptures, on this particular ground; yet I should desire nothing more (if the objectors themselves would agree to it,) than to leave the question exactly where it was; that is, as much incapable of being fully resolved from Scripture, as any other question merely philosophical."

P. 170.

"I hope I shall not appear to have made it a question of theology unguardedly; for no man can be more persuaded than myself, that it must, in fact, for ever remain a question of philosophical speculation and conjecture; revelation not having spoken out upon the subject, any more than upon many other points of great physical importance; revelation itself being now also closed, and our natural faculties wholly incompetent to the discovery and demonstration of the truth."

P. 75.

made to speak all opinions, whether philosophical or religious. The road to truth lies open before us, but the path is so *strait and narrow, that few there be that find it.* Philosophy must submit to the authority of divine revelation; until the mind is willing to make this book the standard of truth, and the fountain of knowledge, it will find no rest amidst the wanderings of the imagination, the ebullitions of vanity, and the fluctuations of sentiment.

It may not be unworthy your notice, that these opinions approximate very near to those of Emanuel Swedenborg, by removing the doctrine of the atonement, and giving a new meaning to the death and sacrifice of Christ, very different to the plain and unsophisticated language of the holy scriptures (9). When you attempt to make these senti-

(9) The atonement made for man, we are told by Archdeacon Nares, may be for *the creation generally.* So says Swedenborg. Redemption is the "restoration of the worlds to order." Dr. Chalmers drops into the same notion. "It is not merely asserted, what in our last discourse has been already done, that, for any thing we can know by reason, the plan of redemption may have its influences and its bearings on those creatures of God, who people other regions and occupy other fields in the immensity of his dominions; that to argue, therefore, on this plan being instituted for the single benefit of the world we live in, and of the species to which we belong, is a mere presumption of the infidel himself; and that the objection he rears on it must fall to the ground, when the vanity of the presumption is exposed."

Lectures, p. 123.

ments coalesce with the grand touchstone of knowledge and sacred truth, a discrepancy becomes visible. It is like applying *a new piece of cloth to an old garment; for that which is put in to fill it up, taketh from the garment, and the rent is made worse.* We ought never to forget, that what we think grand and sublime, may appear little and mean in the eyes of infinite wisdom. To pursue fanciful speculations, which have no foundation but in conjecture and hypothesis, must be absurd and ridiculous. Reasoning by analogy from such imaginary objects, when laid in the balance, will be found *lighter than vanity.*

Dr. Chalmers now follows the above writers, with a more splendid and dazzling series of declamations, and gives a new colour and brilliancy to former arguments. He cannot, perhaps, be said to follow ex-

Something like this was the opinion of Whiston, as quoted by Archdeacon Nares. "How do we know but that, through our peculiar infirmities, sin may have made the greatest havoc here; and that we, of all the members of Christ's spiritual body, have been those that most eminently 'lacked.' On this account, perhaps, this globe was especially made the scene of Christ's triumph over Satan. Here, perhaps, on that very account, he paid the price of the whole world's redemption: 'not taking on him the nature of angels,' or any superior beings, but 'taking to him, in preference, the seed of Abraham.' In this, therefore, we have certainly received more abundant honour, of all the rational beings of the creation, that Christ should have condescended to take our particular nature upon him." *Archdeacon Nares, p.* 268.

actly the same course; yet there is a similarity of sentiment, which proves some accordancy. He considers it as possible, nay, probable, that the effect of human redemption may be extended to other worlds, and that the bible speaks decisively, as to the knowledge of its being disseminated among the higher orders of created intelligence. These conjectures are thrown out to overwhelm the conjectures of the infidel. While the speculative infidel attempts to "burst across the confines of this world's habitation in space"—he makes a similar attempt "to burst across the confines of this world's history in time, and out of the futurity which lies beyond it, gathers that which is to blow the argument to pieces, or stamp upon it all the narrowness of a partial and mistaken calculation (10)." But the difficulty remains the same, and the argument is involved in its original obscurity. To what end or purpose does it apply? Who and what are these orders of celestial intelligences? Are they the angels who surround the throne of God? Do these angels inhabit the planetary regions? If not, this splendid piece of machinery is dissolved. Without the discoveries of the telescope, the plain unlettered christian has been taught, from the days of the apostle, *that these things the angels desire to look into, and that there is joy in heaven over one sinner that repenteth;* and what more real knowledge is now gain-

(10) Lectures, p. 158.

ed upon the subject by all this mighty amplification of the sentiment? To such useless speculations we may reply, in the words of Dr. Johnson to Soame Jenyns. "We may ask, but I believe no created wisdom can give an adequate answer (11)?"

The philosophical deist takes offence, that man should consider himself of any importance in the scale of creation, when compared with the imaginary worlds by which he is surrounded. His own system, though visionary and problematic, never excites a single doubt or a moment's hesitation. Every speculation is certainty. Every hypothesis is demonstration. Enough, I think, has been already said, to raise some doubts about these conjectures. But you will say, it is very unfashionable to question them, because these conjectures are almost univer-

(11) The admirers of Dr. Chalmers, who are delighted with the visionary system of a plurality of worlds, may find amusement in reading another work, written much upon the same principles, "Concerning the Earths in our Solar System, which are called Planets, by Baron Swedenborg." The points of coincidence are remarkable. In my opinion, the professors of christianity who adopt this philosophical theory, are in the direct road, if they knew it, of receiving all the visions of Swedenborg. The writer of the preface to the above work quotes Huygens and Fontenelle as authorities, and says, "the reader will rejoice to find the uncertainty of former conjectures in regard to the population of the planets, superseded in the present relation, by the more substantial and experimental evidence of so respectable an authority as that of Baron Swedenborg." *Preface, p.* 2.

sally received. Undoubtedly this must be the case in the very nature of things. Few persons are capable of examining the subject fairly and impartially for themselves. How few are astronomers. How few are practically acquainted with that branch of astronomy which relates to experiment—How few can take the angle of parallax and the measure of a planet! Of those who can, how few perform the operation! Among those who are able to make the experiment, how few are able or willing to reason upon it! The subject necessarily lies in the hands of a few, and these few are mostly speculative deists. Some of these, you will say, profess christianity; but were these to hazard a doubt, they would lose all reputation for science, and not be admired and courted by the ignorant and giddy multitude. If you seek truth, you must be content sometimes to retire from the crowd, and to find her in the lonely shade. Had the opinion of the plurality of worlds, been at all favourable to the discoveries of revelation, I am inclined to believe, it would have been expunged long ere this, from the system of modern astronomy. You are not to suppose, however, that no men of science and literary reputation have sanctioned the opposite sentiment. During the past century it met with considerable opposition from many persons of inquiry and diligent research, and some of these were persons of more than ordinary attainments. Among these I would mention Mr. Thomas Baker, as a man of universal know-

ledge and deep erudition (12). His reflections on religion and learning were more read and admired than almost any book of that age, and is now only superseded by works of inferior merit. Those persons who were followers of the celebrated Mr. Hutchinson, gave no countenance to the doctrine of a plurality of worlds; and for a very obvious reason—because they adhered closely to the language of the scriptures (13). Among the disciples of Mr.

(12) "These world-mongers are always objecting the improbability of God's framing so many vast and glorious bodies, only for the sake of this earth, so inconsiderable a portion of the whole. Among the rest, *Hugenius*, who in one place makes this objection, in another part of his book, as if he had forgot himself, thinks it enough to say, that God raised this mighty frame of things, that he might delight himself thereby; and were there no other reason, we ought to acquiesce in this. But they that argue thus, seem to measure things by their bulk, which is a false way of reasoning. There is more beauty and contrivance in the structure of a human body, than there is in the glorious body of the sun; and more perfection in one rational immaterial soul, than in the whole mass of matter, be it never so bulky. There cannot then be any absurdity in saying, that all things were created for this inferior world, and the inhabitants thereof; and they that have such mean thoughts of it, seem not to have considered who it was that died to redeem it. Let them measure the world by that standard, and they cannot undervalue it any longer, without some reproach to infinite wisdom."

Baker's Reflections on Learning, p. 114.

(13) The following remarks, addressed to the Bishop of Clogher, may be considered as the sentiments of the disciples

Hutchinson, you will find men of science and emi-

of Mr. Hutchinson. Some few among them, I believe, consider the planets as inhabited, but this is not generally the case. "His Lordship has two other arguments on this head, which, as they are of a religious nature, ought by no means to be omitted. They are founded upon the supposition, that the universe is of prodigious extent and immensity. He imagines that the fixed stars and planets are inhabited: allowing these two modest postulata, we are told, 'the consideration of these things may be of great use, in abating our pride and exalting our notions of the great Creator of all things.' I must own, I should never have thought of this argument to abate man's pride, which has been the very means of fostering and exalting it, by giving room to the wildest genius to indulge his extravagant fancy in acting the god, and making (out of his own little head) an *infinity of worlds*. And why our author should have recourse to this far-fetched argument for what he allows 'the little contemptible particles of dust which we daily tread under our feet,' sufficiently evince, I know not. And if the supposition of an infinity or plurality of worlds may serve to enlarge our idea of the power of God, or 'exalt our notions of the great Creator of all things,' it must be remembered, that it will proportionably tend in weak minds, to lessen the idea of his goodness and concern for man, and so introduce infidelity and atheism in the world. And I am sorry to say it, that several of our modern philosophers have been these weak men, and have argued against Christianity from this very circumstance. Whereas, contracting the universe to its real bounds, and supposing all to have been created for man, will raise in man (if he has any sense of gratitude) the highest degree of acknowledgment and praise; and yet ample room will be left for adoring the power, the omnipotence of God. And if we are to stretch beyond all reason and religion, the almighty power or greatness, on pur-

nent learning, which is candidly acknowledged by

pose to exalt our notions of it, I can stretch it, perhaps, far beyond what any modern philosophers ever imagined. All greatness, then, I would observe, is comparative: what is great to man may not be so in the sight of an angel; and what is great to both these, is nothing in respect of God. And I conceive that God, if he so pleases, can create a world in every atom of matter, or form creatures so small, that every atom of matter may appear to them as large as the universe at present does to man. The ingenious reader, if he is conversant with Mr. Leuwenhock's microscopical experiments, (which prove, as it is said, 'that there are animals in this world so extremely minute, that a million of them might be supposed not to exceed the bigness of a grain of sand;') or if he allows the Newtonian hypothesis, 'that all the matter in the known universe may be reduced into a globe of *one inch* only in diameter,*' will not be backward in granting the above supposition *possible;* and as it enlarges the idea of God's magnificent power, he will readily believe it probable; and then every atom in this world may be *justly supposed* to contain another world; nay for aught we know, (to carry *human* probabilities further) *this world* itself may be but as an atom to another *infinitely larger*, in which it is tossed about much in the same manner as a particle of dust is in this, though with as little surprize to our knowledge of its inhabitants, as the movement of an old cheese to the living world within it."

Catcott on the Creation, p. 33.

To this note I wish to give the following ingenious query, of which I can gain no rational solution from the admirers of the Newtonian Philosophy.

"If a small quantity of air in a bladder, when the pressure of the external air is taken off, expands itself, so as to burst the bladder; what hinders our atmosphere from expanding itself

* Pemberton's View of Newton's philosophers.

some of their opponents (14). But in all our in-

into the empty space above it? Sir Isaac tells us, that a cubical inch of air is, by expansion, sufficient to fill all the orbits between us and Saturn. The expansive quality of the air is proved, by the experiment of the bladder above. Our atmosphere is, as they say, forty five, or fifty miles high, and above and beyond it is nothing but empty space, or fine ether void of all resistance, such as remains in the receiver, when they have made what they call a vacuum. Is not then our atmosphere exactly in the same condition and circumstances as the bladder in the exhausted receiver? What therefore hinders this vast sphere of air from expanding itself into, and filling their imaginary regions of space, which are void of all sensible resistance, so can give none to prevent it?"

Spearman's Inquiry after Philosophy and Theology, p. 110.

(14) "He justly observes, that the Copernican system leads to the doctrine of a plurality of worlds; and this has been the occasion of so many reproaches being thrown on the Newtonians for entertaining such opinions, especially in our own country, by some of that class of learned men, distinguished on account of their agreement in many particulars with the celebrated Mr. Hutchinson—*Hutchinsonians*. So many men of profound learning and distinguished eminence; so many strenuous defenders of our holy religion, and examples in their lives of its purest principles, have been known to adopt, or at least been suspected of inclining towards the sentiments of the singular writer I have mentioned, that on this account, as well as because I by no means feel competent to enter into all the questions such a discussion would lead to, I should be strongly disposed to suppress my own objections to their system of philosophy; but that it so immediately affects the subject of our present inquiries; more particularly in respect to a work I should otherwise have consulted with continual delight and pleasure. I speak of the very learned

see Note P22

quiries, truth ought to be the leading aim of our pursuit, without respect either to name or party; and if we are guided by the sacred volume, we may most assuredly attain it (15). I humbly apprehend

Mr. Parkhurst's *Hebrew and English Lexicon*. That learned author seems to admit, without reserve, in many articles, the physical principles of the Hutchinsonians, as set forth at large in the writings of Mr. Hutchinson himself, Mr. Bates, Catcott, &c., and with as little reserve treats the Newtonians, who are inclined to believe in a plurality of worlds, as *visionaries*."

Archdeacon Nares, ibid. p. 84.

To this note, I beg leave to add, that Mr. Parkhurst always spoke from a conviction of truth, in every sentiment he adopted. Of what is called Hutchinsonian sentiments, he was certainly a great admirer. They gave a peculiar impulse to his researches and inquiries, upon the different subjects connected with the two Lexicons which he published. His illustrations of the sacred writings will go far to convey these sentiments to the next generation. The Lexicons are read as much for the peculiar sentiments they contain, as for an improvement in the languages of which they treat. For my own part, I consider his Greek and Hebrew Lexicons as the best commentary on the bible, and the perusal of them as calculated very much to fortify the mind against all the attacks of the Infidel philosophy of the present age. I do not wish to prognosticate, but I cannot help thinking differently from the very reverend Archdeacon above quoted—that so far from sinking into oblivion, this system is increasing, must increase, and will continue to increase, so long as the writings of Horne, Jones, and Parkhurst, are read and admired.

(15) With respect to the writings of Mr. Hutchinson, I do not recommend that you should become an implicit follower of all his opinions. Some of them I think wild and extrava-

that the bible alone is the criterion of what is true or false, either in philosophy or theology, and was given for this important purpose. Whatever opinions are indulged, which militate against its authority and excellence, must be dangerous in their nature and destructive in their consequences. If the bible is the word of God, it must be in harmony with the works of creation, and the laws which now govern the natural world. There is no supposed discovery in modern science, which can possibly overthrow the revelation of Him, who *holds the universe in the hollow of his hand,* whose purposes are certain, whose understanding is infinite, and whose ways are *past finding out. His counsel must stand, and he will do all his pleasure* (16).

I am, Dear Sir,

Yours, &c.

gant, and others perhaps incomprehensible. Yet you may find many valuable materials in his works, which will be of great advantage to you in the prosecution of theological learning. What has been said of Bishop Horne, may be said of many others.—" That he owed the beginning of his extensive knowledge to him; for such a beginning as he made, placed him on a new spot of high ground; from which he took all his prospects of religion and learning, and saw that whole road lying before him which he afterwards pursued with so much pleasure to himself, and benefit to the world."

Jones' new preface to the Life of Bishop Horne, p. 8.

(16) "That the stars are at immense distances, we have

from an authority, far greater than the calculations of astronomers. *Behold the height of the stars, how high they are**. But more expressly of the heaven itself—*The heaven for height is unsearchable*†. *Thus saith the Lord. If the heaven above can be measured, then will I cast off all the seed of Israel*‡. Nay, the infinite mercy of God to fallen man is compared to the height of heaven. *As the heaven is high,* (meaning *according* to the height of heaven) *above the earth; so great is his mercy towards them that fear him*§. Or, what is more, his almighty power and infinite perfections are pointed out by this similitude; *Canst thou by searching find out God? Canst thou find out the Almighty unto perfection? It is as high as heaven—What canst thou do? Deeper than Hell—what canst thou know?* Will any modern philosopher presume to speak in sublimer terms of the height of heaven? If he does, or rather if he can, he must so far exceed the truth."

Catcott on the Creation, p. 16.

* Job xxii, 12. † Prov. xxv. 3. ‡ Jerem. xxxi, 37.
§ Psalm ciii, 11. ‖ Job xi, 7.

LETTER X.

ON SCRIPTURE PHILOSOPHY.

For, though it was commonly reported, that I had bestowed too many words upon a cause which neither required nor deserved them, one of the wisest men of this age, who is an host of himself, wished I had said more; it being a cause of which the world* heard *much, but* knew *little, and* wanted *to know more.*

JONES.

DEAR SIR,

You feel some doubts as to the validity of my assertion, that the bible is the only standard of true philosophy. You admit that it contains the revealed will of God to man; but the subjects on which it treats you consider "as far more important and interesting," and solely directed to things which are more "immediately connected with the great scheme of human redemption." But you must admit, that the bible has some reference to the works of creation, and that the allusions to nature are very frequent, exceedingly beautiful, and absolutely correct. Little sanction to this opinion

* Suspected by some to be Bishop Horsley.

can be expected from those who deny the plenary inspiration of the holy scripture, because it must be in direct opposition to the peculiar sentiments which they indulge, and all the associations which they have cherished from their earliest years. Yet it would seem, I think, incumbent upon those who express a regard for divine revelation, patiently to examine, and diligently to inquire into the force and evidence by which this opinion has been, and continues to be maintained. If you turn your attention to these inquiries, it may appear that there is much more evidence in favour of this opinion than can be produced against it (1).

(1) The arguments in favour of this philosophy are thus urged by Mr. Pike—and they are unanswerable. "1. To suppose the Divine Being to conform himself in his word to bare outward appearances, or to the false apprehensions of the vulgar, is such a supposition as we will not admit in any other case. The allusions and references of scripture to history, or geography, and the like, we maintain to be just, and exactly true; and look upon ourselves as bound to believe and maintain the history as well as the *theology* of revelation; and why then should we not for the same reason account ourselves obliged to maintain that there is no mistake or misrepresentation in its descriptions of, and references to, natural things. 2. There are many philosophical passages that cannot be regularly explained, as conformed to outward appearance, or the opinions of men. Witness the Mosaic account of the creation and formation of all things. Can any one affirm that the first chapter of the bible is built upon a false hypothesis, or accommodated to vulgar apprehensions? And if it be not true, either in appearance or in reality, I see not how it can be

That the bible was not designed to teach philosophy, is the hackneyed objection which has been repeatedly urged, and as often refuted. It is acknowledged that it does not teach us natural philosophy in a systematic form, neither does it teach divinity systematically; yet the state of the world and its present economy may be clearly and accurately traced. The necessity for this discovery will appear to be intimately blended with the interests of religion;—highly necessary in past ages, and equally important in the present. It was necessary

true in any respect. 3. If God had thought fit to have made a revelation only of divine truths, then, indeed, we need not have expected any philosophy in his word. But as he has in innumerable places spoken either expressly or allusively of philosophical matters, we have surely the highest reason to look for true philosophy in his word. Again—4. There is a necessary connection between the knowledge of natural and spiritual things; since scripture constantly, or at least very frequently, refers our thoughts to natural ideas, in order to illustrate spiritual truths. And for this reason it appears to be of some considerable importance, that the natural ideas referred to be strictly just and true, in order to be a proper foundation for a right conception and representation of divine matters. To conclude.—5. We must not suppose the word of God to speak false in any case whatsoever. Its history, its chronology, and its philosophy, must be in fact as true as its theology. If we suppose any part of the divine word to be erroneous, this so far shakes the authority of all the rest. And as God knows all things perfectly, we must believe him the fittest to give us an account of his *works*, as well as of his *nature*." *Pike's Philosophia Sacra, p.* 136.

that the Hebrews, to whom pertained *the glory and the covenants*, should possess a correct history of the formation and constitution of the world, to guard them against the profane doctrines and idolatrous customs of the heathen nations, "who conspired universally to deify nature; to confound the Creator with his works; and to give to the world that adoration which is due only to the Maker of it. It therefore asserts and sets forth the power of the true God, the Maker of heaven and earth, and describes the natural dominion of the elements as dependent on the power of the Creator," and points out their agency in a wide and extended economy.

In the present age, indeed in every age, it is requisite, to prevent wild and senseless speculations, which lead the mind into the vortex of infidelity; to preserve just sentiments of the works of God, and suitable conceptions of the world to come. A right view of this sound philosophy is calculated "to open the understanding, and enlarge the conceptions of the mind, by giving it a prospect of both worlds, of the one from the other, of the invisible from the visible (2)." A conviction of the harmony

(2) "That in both testaments divine things are explained and confirmed to the understandings of men by allusions to the natural creation. I say confirmed; because the scripture is so constant and uniform in the use it makes of natural objects, that such an analogy appears between the sensible and spiritual world, as carries with it *sensible evidence* to the truth of revelation; and they think, that where this evidence

subsisting between the works of nature and the word of God, and of a spiritual state, will render the study of philosophy not only pleasing, but likewise instructive. It will yield a satisfaction and pleasure which is pure and refined, and afford that comprehensive view of the holy scriptures, which is delightfully impressive. It will give additional proofs of the evidence, as likewise of the excellence of the divine testimony. Whenever the mind is fully convinced that the bible contains the elements of all real knowledge, human and divine, it will be received more cordially, and its decisions will awaken in our breasts the liveliest zeal, and the

is once apprehended by the mind, no other will be wanted. They are therefore persuaded it may have great effect towards making men christians in this last age of the world; now the original evidence of miracles is remote, and almost forgotten."

Jones's Preface to the 2d edition of the Life of Bishop Horne, p. 16.

"In order to instruct us, the sacred scripture always places some natural object before the eye of the understanding; and as the visible word is throughout a pattern of the invisible, the figures of the sacred writers, built upon the images of nature, are as extensive as the world itself. The world being thus an image or shadow of heavenly things, *natural philosophy*, when employed in unfolding the works of creation, and applying them to their true end, is a *school* in which God is the teacher; and all the objects of sense in heaven and earth, and under the earth, are the letters of an universal language, in which you and all mankind have a common interest."

Adams's Lectures, vol. 2, p. 148.

most ardent devotion. For this purpose, the works of nature are illustrated in the word of God, to give us an enlightened view of the divine perfections, to call up the latent powers of the soul to love, to adoration, and gratitude. The bible will be found to convey the sublimest ideas of God, and of the operations of his hands. Other philosophy may amuse and excite ingenious speculation; but this will warm and animate the heart. It throws a lustre around the scheme of human redemption, to which all nature bears a lively testimony. That scheme is illustrated and enforced by all that is grand and beautiful in the imagery of nature. The bible, therefore, has the preeminence above all other books in its authority, in the mind of the christian philosopher. With him "every thing will be wise or foolish, true or false, good or bad, in proportion as it promotes or hinders the belief of christianity." I know of no method so strong and effective to remove the doubts of the infidel, as to convince and persuade him that the bible contains the only true and sound philosophy.

For this purpose, I would recommend a close and serious attention to the study of the Hebrew language. It has been a stigma upon our modern divines, that so few of them have paid any attention to the genius and philosophy of this sacred language. That odium is perhaps gradually wearing away, and the study of oriental literature is now greatly upon the increase. It must be a disgrace

to any minister of religion, that he can read and admire the loose and licentious works of Horace, and of other heathen poets, and yet not be able to read a line of Hebrew; and more especially as the knowledge of it may be so easily acquired. A mind that is constantly turning over the pages of the Hebrew Lexicon, and which has a taste for the sublime and beautiful in the works of nature, will have the finest opportunities afforded of having that taste amply gratified, and in a way that will give increasing evidence of the grandeur and divinity of the sacred volume (3). Another advantage resulting from this study, and which is not sufficiently

(3) "I recommend the Hebrew chiefly on this consideration, because the language is *in itself* instructive: its words give us light into things, in a manner different from those of any other language in the world: and this, beyond all other arguments, convinces me of its divine original. I will give you some examples.—The word *clothe*, in Latin *vestio*, in Greek ενδυω, gives us no instruction; but the Hebrew לבש LeBeSH, *to clothe*, comprehends the idea of בש BeSH, *shame*, (whence the English *bashful* and *abash*,) and, with the ל prefixed, it is *for*, or on account of, *shame*; so the term not only stands for the *thing*, as in other languages, but gives us the *reason* of the thing; it refers us to the *moral* history and origin of clothing; and all this in three letters. The English word *hail*, in Latin *grando*, in Greek χαλαξα, gives us no information about the nature of the thing: but if we take the word ברד BeReD in Hebrew, as we took LeBeSH, it resolves itself into ב—רד, which signifies *in descensu*, and so describes to us the physiological formation of hail: which, as philosophers

attended to, is, that very few persons who are well grounded in this language become the votaries of infidelity (4). To preserve the mind from speculative doubts—to enlarge its views of the harmony of sacred truth, and to afford satisfaction and delight in connection with all the important discoveries of divine revelation, are some of the advantages attendant even upon a partial acquaintance with this language. The more enlarged the knowledge, the greater evidence will be afforded of the truth and inspiration of the word of God. This undoubtedly must be connected with the disposition: for men of the greatest minds, and of the most enlarged

agree, is first formed into drops of rain, and, *as it falls*, is frozen into hail."

Jones's Letter on the Use of the Hebrew Language; annexed to Bishop Horne's Works, Vol. 1.

(4) I know it may be said, that Dr. Geddes is an evidence to the contrary. There is no general rule without some exception. I have read his life, by Mr. Good, and was sorry to observe the greatest talents that could adorn human nature so badly directed. I am afraid he had no proper sense either of the truth or the importance of real religion. I have heard it said, from good authority, that, with a number of other literary characters, he was often invited to the table of an amiable and eminent prelate, who is the pattern of all that is excellent; and that his conversation became so corrupt and depraved, and his behaviour so violent and indecent, that he was compelled to prevent his future visits. Minds so deeply rooted in scepticism as that of Dr. Geddes, I consider as almost irrecoverable.

acquaintance with human knowledge, must read the bible to be taught, and not as teachers. To its authority we must submit, otherwise the finest intellect will not gain that accession of knowledge which we observe to be the general result of an acquaintance with the Hebrew language.

Consider, I pray you, not only the peculiar excellencies of the Hebrew language, but also the philosophy of the bible. Upon this subject I am greatly interested, because I know and feel its many advantages. Examine it carefully for yourself: it will open a new and beautiful scene, that will much contribute to your future satisfaction and delight (5). To make a fair and candid trial of the merits of this philosophy, I would advise you to begin with the earth. To be acquainted with the globe we inhabit is certainly one of the most important branches of human knowledge; and I venture to predict, that you will seek in vain for any thing so clear, and full, and explicit, as you may

(5) "The powers of nature are symbolical of the powers of the Deity; and are applied in that capacity in numberless passages of the sacred writings. Their operations are explanatory of the benefits we derive from him: and he who studies nature with a view to this particular use of it, and wishes to excel in theology, will find a treasure opened to him which cannot easily be exhausted, and which, after long and frequent meditation, is to my mind one of the most valuable secrets in divine literature." *Jones's Physiological Disquisitions.*

draw from the language of scripture. From none of the theories, whether ancient or modern, will you find any thing so satisfactory as is to be obtained from this source. A right knowledge of the earth, its physical geography, as connected with its natural history, I consider to be the first step in the attainment of real and philosophical learning. Begin with the earth you inhabit (6). By an investigation of this kind you will derive new pleasure, from sources altogether unexpected; you will be taught a most important and invaluable lesson, that the book of nature, rightly understood, is in

(6) The author who has best illustrated the scripture theory of the earth, is Catcott, in his Treatise on the Deluge, 2d edit. 1768. Some additional proofs will be found in Jones's Physiological Disquisitions. If you read Burnet, Keil, Whiston, and a host of writers upon the same subject, you will observe a wide and important difference. Catcott adheres closely to scripture, and draws his materials from the plain and unequivocal meaning of the Hebrew words; but the others indulge fancy, imagination, and hypothesis. In him the argument is well supported, confirmed by heathen testimony, and the natural state of the earth. Some peculiar advantages arise from the perusal of this book: you will gain additional knowledge; you will perceive its operation in the illustration of many difficult passages of scripture; have a more comprehensive view of the appearances of nature; and be able easily to detect the infidel notions and absurdities which abound in Buffon, Hutton, Playfair, and many of the French writers upon the same subject. A very good view of the different opinions upon the cosmogony, you may obtain by a perusal of the first volume of the Ancient Universal History, 1747.

harmony with the book of God, and that the one illustrates, confirms, and substantiates the other, not only in divinity, but likewise in philosophy.

If you proceed in your inquiries, much important and satisfactory information will be gained, especially in chronology and history, and also in astronomy. You have heard it perhaps repeatedly said, that the bible does not teach us astronomy; but the persons who make such remarks overlook the connection existing between chronology and astronomy; and that the chronology of the bible is the only history founded upon astronomical principles. I venture to assert, that the most easy and familiar mode of calculating the motions of the sun and moon is to be derived from this book. The calculation of an eclipse, without equations and anomalies, must appear very singular to some astronomers; but it may be performed, with great ease, upon the very motions of the sun and moon, as given in the Mosaic writings. This is easily ascertained by those who are willing to try the experiment (7).

(7) That this has been done, I need only refer you to Penrose's Letters on Philosophy, in correspondence with John Heaviside, Esq. 1794. By a careful perusal of this book you will discover that astronomers have not yet settled the length of the year; and that the only method to restore the calendar to perfect accuracy, is simply to follow the Mosaic plan of chronology, which is founded upon the most correct astronomical principles. "The only ancient people whose history

Suppose then, Sir, that the descriptions which can be confirmed by astronomy, were the Israelites, whose years were formed by the sun and moon jointly; that is, the moon, by intersecting the earth's orbit, prevented the beginning of the solar year going from the appointed season. Their year always ended at thefirst full moon which happened either upon, or the first which succeeded after, the autumnal equinox. In imitation of this were formed the Olympiads of the Greeks, who followed the posterity of Abraham in this particular, viz. by governing the seasons of the solar year by the moon's intersections of the annual orbit of the earth. Indeed they differed from them in ending their solar year at the summer solstice; whereas the Israelites finished theirs at the autumnal equinox. Thus the chronology of years was truly recorded by the olympic games, which were celebrated every four years, on the first full moon which happened upon or after the summer solstice. By this means they kept the beginning of their years at the true seasons; and this no other nation has been able to do, notwithstanding the great improvements which have been made in optics, and other sciences; neither will it be done now by the Gregorian calendar, which will vary more than an hour in one hundred years."

Penrose's Letters, p. 15.

In these letters you will find the most easy and simple methods for calculating the place of the sun and moon, and eclipses, drawn from the cycles of the sun and moon, as taken from the festivals of the Israelites. The calculations were laid before the most eminent astronomers, and acknowledged to be correct; and the papers would have been read before the Royal Society, had it not involved the subject of religion; to have discussions upon which is contrary to the rules of that society. The strongest objection to this theory is, that the materials are drawn from the bible.

the bible gives us of the works of creation be just and rational, and calculated to enlarge the mind, and to resolve many difficulties which are far above the reach of human wisdom. Suppose it not only rational, but extremely simple and easy of apprehension, and much more agreeable to fact, and observation, and experience. Suppose it adapted to all the modern discoveries in chemistry, and natural philosophy, by which the general economy of nature is governed, and to afford likewise many additional illustrations, which are pleasing to contemplate, and which are highly satisfactory to an ingenious and inquiring mind. If upon diligent examination it should be found that there is not a single passage of scripture which has a relation to the system of nature, but what is in harmony with the most enlightened views of science—is it not then deserving your serious examination? is it not a subject altogether curious and interesting? is it not deserving the attention of every friend to divine revelation who is capable of investigating the subject? Rest assured, that these are not imaginary statements; they are the result of much inquiry, and patient trial. If you will examine the passages of scripture which have reference to the works of nature, you will find a consistency, and harmony, and beauty throughout, which give the strongest confirmation to the accuracy of these remarks. I know well the common-place objections that are made by those who have neither time, nor patience,

nor even skill, fairly and impartially to examine the system which they are so ready to condemn (8). Many persons inquire only for what is popular, and agreeable to the taste of the majority. They feel delight in a crowd. The objections of such persons have very little weight with me ;—if they are of any weight, they must give additional support to that cause which they affect to despise. But though it may not be generally received, you are not to suppose that it is altogether neglected. Several learned and eminent men, even in the present age, are strongly persuaded of its value. I know that this system is studied and admired, at the present moment, by men of solid learning, of much inquiry, and of deep research. I am persuaded that there is enough already written and printed upon this branch of knowledge to prevent the subject from

(8) To form an opinion merely from the writings of Mr. Hutchinson, is not the way to obtain satisfaction. The same truths appear different in another form. Bishop Horne says, "I had much rather the name of Hutchinson were dropped, and the useful things in him recommended to the world, with their evidence, in another manner than they have been. Mankind are tired and sick (I am sure I am for one) with the fruitless squabbles and altercations about etymologies and particularities. In the mean time, the great plan of philosophy and theology, that must instruct and edify, lies dormant." There are some of the readers of Mr. Hutchinson who have much injured his reputation by their superficial acquirements, and by stretching a system, good in itself, beyond the limits of scripture authority.

being totally extinguished (9); and I am persuaded also, that very few persons make the examination, with a desire of being convinced, without being finally led to this interesting result—that the bible contains true and sound philosophy (10).

I am, Dear Sir,

Yours, &c.

(9) The following select list of books I recommend to any who may wish to examine what may be said in favour of the philosophy of the bible. The works of Julius Bate, particularly his Mosaic Philosophy Defended, and Hebrew Lexicon, 4to. 1760; Catcott on the Creation, in Answer to the Bishop of Clogher, 1756; Catcott on the Deluge, 2d edition, 1768; Digby's Lectures, 1787; Forbes's Works, 2 vols. 17—; Horne's Works, 6 vols. 1805; Hutchinson's Works, 12 vols. 1748; Jones's Works, 12 vols. 1800; Kennedy's Scripture Chronology, 4to. 1762; Penrose's Letters on Philosophical Subjects, 1794; Pike's Philosophia Sacra, 1753; Spearman's Inquiry after True Philosophy and Theology, 1755. To which I would add, Veteris et Veræ Philosophia Principia, 1738. This pamphlet, with some curious plates relative to the planetary motions, was written in Latin by Mr. Catcott, and afterwards submitted to Mr. Hutchinson, who approved of it. The author of this book has a translation, which he has no objection to publish, upon receiving the names of 150 subscribers. He has a few names at present, and his bookseller will receive the names of any additional subscribers who may wish to sanction the publication.

(10) But of all these writers I prefer the philosophical works of the late Rev. W. Jones, as deserving more particular attention. He took his own ground, and had a mind peculiarly

formed for investigations of this nature. His writings are calculated to enlarge the mind with the most correct views of the works of creation, and in strict conformity with the best experiments in natural philosophy. Posterity, I am sure, will do justice to his writings, for they contain a fund of knowledge, independent of the peculiarities of his system. Of his attachment to the scripture philosophy, and his ability to defend it, I need only request you to read, and think for yourself. At the conclusion of the introduction to his Physiological Disquisitions, he expresses a singular conviction of its influence with posterity. "I know that every author must commit his works to the times in which he writes, whether they are favourable or adverse to his undertaking; and when he has launched his vessel, he must leave it to the chance of the wind and weather. My mind, however, suggests to me, that this book will not be totally thrown aside and forgotten. That natural agency of the elements for which I have pleaded, and which I hope to carry farther, (however imperfectly) is so reasonable, so striking, so intimately interwoven with the most agreeable and interesting parts of literature, that it must, when it comes to be better understood, find friends and favourers either in this country or some other: with abilities to defend what shall have been rightly done in this great subject, and to improve it by their own more successful labours."

LETTER XI.

ORIGIN OF PHILOSOPHY.

I am inclined to believe that all the most antient nations derived some rudiments, both of natural knowledge and religion, from the sons of Noah; but with some of them that philosophical learning failed sooner than with others; and even sometimes without any one observing it, by reason of the length of time, so that not any memory or footsteps have remained of it.

DR. THOMAS BURNET.

DEAR SIR,

That the sacred scriptures contain the original elements of knowledge, cannot appear strange to any person, who is fully convinced of their divine authority; and that the more they are studied and circulated, the greater is the diffusion of general knowledge. Literature and science are more indebted to the influence of revealed religion, than to any other source whatever; although its individual professors often treat it with the greatest contempt. It has been the practice of some persons, who have been unfriendly to the sacred volume, not to attack it immediately, or avowedly; but in an indirect or covert

form. They unsettle the public mind, and assault the faith and hope of the christian, by stratagem, by gradually undermining the facts and principles which it presents to our view. Such has been the practice of modern politicians and philosophers, who have speculated on the original condition of man, the nature of the human mind, the origin of language, and the progress of science. You may peruse a great variety of authors upon these subjects, without adding any thing to your real improvement; and after exhausting much time and expense, you must return to the Pentateuch of Moses, in order to find any thing like soberness and truth (1). In vain will you seek for better, or more substantial information,

(1) "And we may generally observe this of the antients, that their learning or philosophy consisted more in conclusions, than in demonstrations; they had many truths among them, whereof they did not know themselves the premises or the proofs; which is an argument to me, that the knowledge they had was not a thing of their own invention, or which they came to by fair reasoning and observations upon nature, but was delivered to them from others by tradition and ancient fame, sometimes more publick, sometimes more secret: these conclusions they kept in mind and communicated to those of their school, or sect, or posterity, without knowing for the most part the just ground and reasons of them."

Burnett's Theory, vol. 1. *p.* 4.

In this celebrated theory of the earth, the writer took reason for his first guide; and when that failed, he had recourse to the sacred writings. Had he taken an opposite course, and made scripture the standard of authority, and reason only

or more rational and consistent knowledge, than what the scriptures afford. Language, when cultivated, is intimately blended with the progress of useful knowledge; and the divine origin of one, naturally leads to the divine origin of the other.

Many attempts have been made, to prove that man might possibly acquire the knowledge of language without instruction; but I think it may now be said, that all such attempts have proved abortive. Language is not intuitive, but evidently acquired by imitation and instruction (2). If it was

subservient to its discoveries, his mind might have been preserved from those vain conjectures, by which his work is so much characterized.

(2) That language is not innate, or natural to man without the aid of instruction, will appear evident from a singular account published some few years since by Bonnature, Professor of Natural History in France, concerning the savage of Aveyron. The pamphlet contains various details relative to a child found in the woods, and possessing all the characteristics of a savage animal; feeding on acorns, roots, &c. He was incapable of articulating a single sound. Although taken several times from the forest and brought into society, this child always found means to escape; constantly preferring a vagrant and erratic life. As to his faculties of sensation, they approximated to the brute creation—the smell occupied the first rank—the taste the second—but the sight, the hearing, and touch, were far from being perfect. He was not wholly deaf, but could hear a very shrill voice. His sole pleasure was repose, and his most prominent desire, that of independence. For several years he had lived in a forest, at a distance from mankind.

intuitive, we should all speak one language, without any variation of dialects; and those who are born deaf, would not be dumb. The first father of mankind had no speakers to imitate, and no language to study (3). But all this is consistent with what is said in the bible, and because it is consistent, it does not please the modern philosopher; he must invent some other theory, more agreeable to his taste, and more congenial to the feelings of a corrupted heart. The infant is taught to speak by example, or imitation; the progress is gradual and difficult, and when advanced in life, he acquires the knowledge of other languages by reading, and under proper instructors. But the question naturally returns, how did our first parents acquire the knowledge of language, seeing they had no speakers to instruct, and no grammar to study? The bible solves the question; but man is dissatisfied with the account. He wanders far and near, and all his speculations terminate in darkness and visionary infidelity.

Language is requisite for all the purposes of hu-

(3) Dr. Beattie, in his Essay on Language, observes:—"Speech, if invented at all, must have been invented either by children, incapable of invention, or by men, who from the rigidity of their organs were incapable of speech; in either case, an impossibility. And therefore, reason, as well as history, intimates that mankind in all ages must have been speaking animals—the young having acquired this art by imitating those who were elder; and we may warrantably suppose that our first parents must have used it by immediate inspiration."

man life, connected with the exercise of reason and religion, and essential to the happiness of social life. We cannot think without words (4). From the bible it appears, that man was not ushered into the world in the rude, or savage, or barbarous state, but with a mind cultivated and refined, endowed with the capacity of reason, the powers of language, and with a competent degree of useful knowledge (5).

(4) The Greeks expressed reason and words by one and the same term, λογος, probably from a conviction that they are inseparably united.

(5) Dr. Delany fully proves, that revelation was necessary to man, even on the supposition of his being formed in the utmost perfection to which his nature is capable; and he comes to this obvious conclusion, the most reasonable and satisfactory, after an investigation of the almost endless variety of opinions on the subject. "The consequence from all which is, that the perfection and felicity of man, and the wisdom and goodness of God, necessarily required that Adam should be supernaturally endowed with the knowledge and use of language. And therefore, as certain as it can be, that man was made perfect and happy, and that God is wise and good: so certain is it, that when Adam and Eve were formed, they were immediately enabled by God to converse and communicate their thoughts in all the perfection of language, necessary to all the ends of their creation."

Revelation examined with Candour, vol. 1, *p.* 39.

For a review of the different opinions of the origin of speech, and the original language, you may consult the Antient Universal History, vol. 1, p. 340. After all that has been said upon the subject, I believe that the Hebrew has the greatest claim to being the first and original language. Infidels do not

He was qualified to become the father of mankind, and to lay the foundation of a superstructure which should afterwards be erected. How far he was instructed, we are not precisely informed; but enough is said to prove that his knowledge was neither superficial nor unimportant (6).

But perhaps you are convinced, and willing to concede, the truth of the Mosaic account of the origin of language, and admit that it proceeded from

wish it to be so, and they strongly oppose it; and too many christians give sanction to their sentiments.

(6) "Our first father differed from all his descendants in this particular, that he was not to attain the use of his understanding by a gradual process from infancy, but came into being in full stature and vigour of mind as well as body. He found creation likewise in its prime. It was morning with man and the world. We are not certain with regard to the time allowed him to make his observations upon the different objects with which he found himself surrounded; but it should seem either that sufficient time was allowed him for that end, or that he was enabled in some extraordinary manner to pervade their essences and discover their properties. For we are informed, that God brought the creatures to him, that he might impose upon them suitable names; a work, which in the opinion of Plato must be ascribed to God himself. The use and intent of names, is to express the natures of the things named; and in the knowledge of these natures, at the beginning, God, who made them, must have been man's instructor. It is not likely, that without such an instructor, men could ever have formed a language at all; since it is a task which requires much thought; and the great masters of reason seem to be agreed, that without language, we cannot think to any

the Almighty (7). But what has this opinion to do

purpose. However that may be, from the original imposition of names by our first parent, we cannot but infer that his knowledge of things natural must have been very eminent and extensive; not inferior, we may suppose, to that of his descendant, king Solomon, who "*spake of trees, from the cedar to the hyssop, and of beasts, and fowl, and creeping things, and fishes.*" It is therefore probable, that Plato asserted no more than the truth, from the traditions he had gleaned up in Egypt and the East;—that the first man was of all men Φιλοσοφκτατος, the greatest philosopher."

Horne's Sermons, Disc. 2.

(8) "Upon the divine origin of language, I need only refer you to Dr. Magee on the Atonement, No. 53 of the Explanatory Illustrations, in which the subject is ably discussed, and the argument maintained with an acuteness of mind, and extent of learning, rarely equalled. The same opinion is sanctioned by Drs. Beattie, Blair, Delany, Ellis, Johnson, Stanhope, Smith, and Warburton, with many others. I give the following as a specimen.

"We see by scripture, that God instructed the first man in religion. And can we believe he would not at the same time teach him language, so necessary to support the intercourse between man and his maker?"

Warburton's Works by Hurd, vol. 4, *p.* 391.

"Now we have reason to suppose, that Adam, during his state of innocence, held constant communication with the Deity, from whom he received information of things, and was directed in the use of them."

Law's Theory of Religion, p. 44, 1755.

"We may then conclude, with great probability, that language was nearly coeval with thinking, by the power and will of God. The first man was taught language by revelation."

Winder's History of Knowledge, p. 11.

with the origin of philosophy, and with the importance of those principles said to be discoverable in the Hebrew scriptures? How does this prove the truth of the scripture philosophy? I say, it strongly corroborates and sanctions the opinions which we endeavour to maintain. If the knowledge of language was communicated to the first man, the materials of knowledge were given at the same time. It is allowed, perhaps, that some religious knowledge was necessary; but we maintain, and who can disprove it, that religion and true philosophy are closely allied. Language is necessarily clothed in natural imagery, borrowed from all the forms and varieties in the creation. If the Almighty condescended to instruct our first parent in language, either immediately or not, the imagery borrowed, we say, was perfect, and agreeable to fact and experience. There is nothing to oppose this theory, that is really worthy the attention of any real and well disposed believer in divine revelation. A knowledge of the works of creation was necessarily conveyed in the gift of language; and the argument will appear irresistible, when it is recollected that the author of nature condescended to be the willing instructor of our progenitor, either immediately or by a supernatural agency (8).

(8) What is there irrational in the assertion of Gale, or what more consistent with reason or sound philosophy? His sentiments are well supported by the testimony of ancient writers. "The first created divine *institutor* of all philosophy,

If Adam was taught language, and so instructed

was Adam, who without all peradventure, was the greatest amongst mere mortals, that ever the world possessed; concerning whom the scripture tells us, Gen. ii, 19, 20,—That *he gave names to every living thing, &c.;* which argues his great sagacitie and philosophick penetration into their natures. For like as our conceptions, if true, so also names, if proper, should be so as we may presume at first were no other than εἰωνες τ̃ πραγματων, images of all things. So both Aristotle and Plato cal names, μιμηματα, imitations of things. Adam could by his profound philosophie, anatomize and exactly prie into the very natures of things, and then contemplate those glorious ideas and characters of created light and order, which the increased light and Divine Wisdom had impressed thereon; and thence he could by the quickness of his apprehension, immediately collect, and forme the same into a complete systeme or bodie of philosophie; as also most methodically branch forth the same into particular sciences, &c.; whereas all philosophers since Adam, having lost, by his fall, this philosophick sagacitie of prying into the natures of things, they can only make some poor conjectures (in comparison) from some common accidents, and the external superficies, or effects of things; and therefore cannot receive conceptions, or give names exactly suited to the natures of things, as Adam before them did." *Gale's Court of the Gentiles, part* 2, *p.* 7.

The argument in the above note is used with peculiar force by Dr. Magee, on the Divine Origin of Language; but I see no reason or propriety in separating the opinion of Gale, and applying it merely to language. Names and things are intimately connected. With proper names a right knowledge of things was communicated. The argument appears with equal strength in favour of scripture philosophy. Objections to it are merely arbitrary, and generally very speculative. It will not accord, it is true, with the imaginary picture of the

as to give suitable names to the different tribes of animated being, and that with the accuracy of a philosopher, according to their peculiar natures, what is there unreasonable in the supposition that he was taught the true system of the universe? What is there improper in supposing that he was taught a right knowledge of time by the motions of the heavenly bodies? or that he was taught the elements of astronomy, in reference to chronology and history, and all this for the advantage of future generations? What is there mysterious in the supposition, that he understood that the sun and moon, *and even the stars also*, were made for *signs and seasons, for days and for years?* I know not that there is in this supposition any difficulty or misconception, any thing contrary to sound reason, or the knowledge we possess of antiquity, or the discoveries of modern science, or the plain unvarnished letter of the sacred scriptures (9). You will find nothing to contradict

origin of society, as drawn by a few Scotch philosophers, whose views appear directly opposed to the authority of the scriptures. That man existed in the ruder and savage state, previous to the deluge, and for a long time after, is contrary to reason and sound philosophy. These sentiments are circulating in Cyclopœdias, and through other channels, to the detriment of religion, and to the no small delight of the enemies of the bible.

(9) "It appears to me that the Patriarchs and Chaldeans had more knowledge in astronomy than is generally attributed to them. Nay, it appears, by what I observed in my last let-

this statement, but what comes directly or indirectly from those who are opposed to revelation in all its forms; who are desirous of setting up the idol of their own imaginations, to gain the admiration of the ignorant and the profane; who are ready to welcome every speculative opinion that is calculated to sooth their corrupted passions, and to stifle the convictions of an inquiring conscience.

If Adam was instructed in the elements of science, and the real economy of nature, it must be clear that he communicated that knowledge to his

ter, on the lunar motions, that they knew very well how to calculate the return of an eclipse. It is allowed by all, that we received the cycle of 18 years, for the calculation of the return of eclipses, from them; which is called the *Chaldean Cycle* to this time. We also received the lunar cycle of 19 years from them; for we are certain that *Meto*, the *Athenian* astronomer, made use of it more than 430 years before Christ. Now, Sir, take away these two cycles from astronomers, and they will find themselves at a great loss, notwithstanding the astonishing improvements in arts and sciences, particularly in optics. For my part I do freely acknowledge, (notwithstanding it is so unpopular to do it, in an age when all speculations which aggrandize the dignity of reason are so eagerly received,) that I cannot conceive how Adam, just after he was created, could have knowledge and understanding sufficient to give *ideal* names to all animals, unless that power was given from God. If God gave him a power to speak and understand language, is it unreasonable to suppose that he had instructions from the same original how to calculate and know when the seasons were which God had commanded him to keep holy?"

Penrose's Letters, p. 384.

children, and these again to their posterity. I see no inconsistency in supposing him not only the first, but the greatest of philosophers. He had his knowledge from a pure and uncontaminated source; and what we know of ancient times, from revelation and profane history, and the fragments of learning and science yet remaining, give confirmation to the opinion; so that it comes home to the mind with all the force of demonstration. It is a favourite sentiment with a class of modern philosophers, to represent the earliest ages, and especially the Jewish nation, as wandering in a state of comparative darkness, both as to philosophy and religion; and that their ignorance was so great, that the whole of their ceremonies and institutions may be considered "as children's toys" (10), when compared with the enlightened age in which we live. I have heard such things repeated, from those who would be thought, and even profess themselves to be, the friends of divine revelation. I must confess that I very much doubt, when I listen to such assertions, the sincerity of their attachment to the christian cause, which they apparently profess to venerate. The natural tendency of such opinions, is to eradi-

(10) I heard of a young preacher lately, who had the audacity to vent such trash before a christian auditory. He might perhaps get his lesson from Warburton, or from Dr. Priestley, or Mr. Belsham, or Voltaire; but one thing is evident—that he did not get it from the bible. The antient philosophers would have taught him better divinity.

cate from the mind all due regard to the institutions recorded in the bible, and to lead us away from the clear and beautiful harmony existing between the Jewish and Christian Dispensations: for, however diversified as to outward rite and ceremony, they are essentially but one and the same religion.

Those persons who have been accustomed to view revelation as opening new sources of natural as well as spiritual knowledge, have a field for investigation, extensive and useful, and which presents the mind with fresh evidence of its value in every step of its progress. They form more correct notions of antiquity, and possess a key which will unlock hidden treasures, which lie concealed from superficial readers, and that in the most interesting and edifying way. The different religions of Heathen and Mahometan superstition will appear to have borrowed their materials from divine revelation, and remain as a striking witness to confirm its authority. Opinions in philosophy may likewise be traced to one common origin, which were at first pure and uncontaminated. Many passages in the classic authors, which refer to the physical principles in nature, may be explained in such a way as to give testimony to this sentiment; the resemblance is easy of apprehension, and confirmatory of the sacred writings (11). The rapid progress of

(11) "The articles of wine, flour, cakes, oil, honey, incense, salt, were all used by heathens, as in the law of Moses;

infidelity upon the continent of Europe, and the complete demoralization of its inhabitants, through the baneful influence of metaphysical science, astronomical fable, and visionary speculations, in all probability will continue to operate upon the cause of truth and revealed religion. The professors of christianity will be compelled to examine more closely the foundation of their principles, especially in this country, as these opinions will be circulated, by means of the press, in every direction. I know of no method so likely to meet the evil, in all its magnitude and extent, as the evidence arising from the philosophy of revelation, which has so many claims upon the public attention, and which, when properly understood, and clearly explained, will appear the most powerful weapon that can be employed to silence the adversaries of truth, and to repel the artful sophistry of modern infidelity.

I remain, Dear Sir,

Yours, &c.

insomuch, that I heard it once observed by a learned man, to whom I looked up for much information when I was young, that even Homer alone, in the circumstantials of sacrifice, would nearly furnish us with the particulars of the Levitical ritual."

Jones's Letter to Dr. Vincent, p. 12.

LETTER XII.

ON BEAUTY AND SUBLIMITY OF STYLE.

False eloquence, like the prismatic glass,
Its gaudy colours spreads on every place.
The face of nature we no more survey,
All glares alike, without distinction gay.
But true expression, like th' unchanging sun,
Clears and improves whate'er it shines upon;
It gilds all objects, but it alters none.

POPE.

DEAR SIR,

Allowing for the speculative tendency of Dr. Chalmers' Lectures, you suppose that I must feel "greatly delighted with the beauty of the imagery and sublimity of the language." You conceive the production, abstractedly considered, must at least afford "high gratification and mental enjoyment." Your surprize will increase when I tell you, that even in this respect I am not satisfied (1).

(1) The writer in the British Review seems to have exceeded the general tone of acclamation. "It appears, indeed, to be the habit of this writer to exhaust his subject before he

I have read some of the lofty and extravagant encomiums which have been written, and heard the general shout of acclamation, and read the book attentively and repeatedly, and cannot find any passages so wonderful or extraordinary as to command this notoriety and public applause. There are some paragraphs, indeed, which I admire (2),

relinquishes it. As long as in the permutations of language a power remains of shifting, expanding, or re-casting his leading idea, his mind remains engaged in its service. With Cicero's powers of amplification, he has found in the vastness of his theme, and in the play and pliancy of his perfect, but more copious idiom, advantages from which Cicero and the ancients were shut out; and perhaps, in sparkling vigour of expression, opulence and control of diction, and a profound feeling of his subject in all its capabilities and aspects, scarcely any writer, ancient or modern, can stand a comparison with the author of these discourses." *No.* 19, *p.* 19.

(2) "Though we cannot say that Dr. Chalmers has presented us with any thing very new in argument, or even in the matter of his descriptions, nor that we have any anxious fears for christianity on the side on which he has thrown up an additional rampart; yet, for elevating views of the Majesty on high, for apt illustrations of the providential care of the Creator, for reconciling the extremes of glory and condescension, for combining the perfections of Jehovah Jesus in the blessed fruits of righteousness and grace, and especially for the lines and characteristics of correct religious feeling, drawn with such precision in the last discourse, we cannot testify to Dr. Chalmers, in terms above his merit, the sense we entertain of his labours. These properties of his work are now in operation; the first glance of beauty has been shot; the brilliance,

and which do great credit to the talents of the author; but there is nothing so wonderful as to make it the miracle of the age. I would apply the same remark to his talents as a preacher. He is a good preacher, but not so profound, or correct, or astonishingly great. I have listened to many fine things that have been said, or reported to have been said, by men of taste, knowledge, and piety, with mingled emotions of pity and astonishment. Report generally exaggerates. One had received "a shock of holy electricity;" another had been "sublimated in the crucible of this spiritual chemist;" another had been "carried to the third heaven;" and a fourth had been so attracted, that "he could have sat for ever under the droppings of the skies." Much of this is mere enthusiasm, and the result of popular effervescence. The admiration of the multitude is often caught by that which is eccentric, novel, or strange (3). If it

which at first was almost *nimium lubricus aspici*, is improved into a steadier lustre; our pleasure becomes more profound, and our heart more permanently engaged. This is a true test of the merit of the performance, a sure earnest of its lasting celebrity; and on this experience we found our opinion, that Dr. Chalmers is no meteor, but a fixed star in that firmament of science, which he has taught to shine with the radiance of the gospel." *British Review, No.* 19, *p.* 9.

(3) "Verum hi pronunciatione quoque famam dicendi fortius quærunt. Nam et clamant ubique, et omnia *levata* (ut ipsi vocant) *manu* emugiunt, multo discursu, anhelitu, jactatione,

is true that some wise, or learned, or good men have thus spoken, it must be remembered that men of genius sometimes talk in hyperbole. Confined to the closet, they are too little acquainted with human nature; or their feelings speak, rather than their judgment. Let us return, however, to these Lectures on Astronomy.

Suffer me, then, to state, freely and candidly, my opinion on this subject. The design and tendency of a work is much connected with the style of its execution. Intended to remove the doubts of the infidel astronomer and mathematician, I expected to see some display of the rational powers; something like reasoning, discussion, and argument. But in this book I see nothing of this nature. All is splendid declamation: the imagination is in one perpetual blaze; and the fire ultimately terminates in smoke. When I was a school-boy, and taught the science of geometry, my tutor was not satisfied unless in every theorem I clearly and simply discussed the proposition, arranged my ideas, formed some general conclusions, and then added the usual corollaries. In every oration, I have been taught, there should

gestu, motu, capitis furentes. Jam, collidere manus; terræ pedem incuteræ; femur, pectus, frontem cædere; mire ad pullatum circulum facit: cum ille eruditus, ut in oratione multa submittere, variare, disponere, ita etiam in pronuntiando suum cuique, eorum quæ dicet, colori accommodare actum sciat; et, si quid sit perpetua observatione dignum, modestus et esse et videri malit." *Quintiliani, lib. 2. cap.* 13.

be a beginning, a middle, and an end. But in these Lectures all is luxuriant and wild—a jumble of declamatory paragraphs. You acknowledge there is some defect in the arrangement—a want of that lucid order, which contributes so much to the pleasure and satisfaction of the reader (4); but then you say, "there is nature, nature in all her lovely pride, and nature from the mountains of Scotland." I am not, as you well know, an advocate for the religion, or the law of nature, separated from original instruction and divine revelation; and yet I am much delighted with the beauties of nature, and with the works of creation. No one feels greater pleasure in the sublime and elevated scenery of a beautiful landscape. I do not admire human nature, wild and uncultivated; and I am far from thinking that Dr. Chalmers is so much the child of nature as you are willing to suppose. There appear marks of high-wrought culture, considerable labour, and mental finish, in some passages of this performance. But let us be guided, if you please, by the language and imagery of nature.

I observe, then, that nature loves simplicity. She is not gaudy—her aspect is lovely in the eye of the peasant as well as of the philosopher. She possesses charms to excite universal admiration. A beautiful female is not enriched by being encum-

(4) "Jam primum ORDO est *geometriæ* necessarius: nonne et *eloquentiæ?* *Quintiliani, lib.* 1, *cap.* 9.

bered with a weight of ornaments. Here plainness, neatness, and simple attire, give new attractions to the most beautiful forms (5). But these Lectures are destitute of that simplicity which is so apparent in the scenery of nature. The clown is dazzled with the glare of light, and the philosopher detects the finery of art. The fop is not a fine gentleman: there is something awkward and disgusting in his appearance, especially to a correct and elegant taste. He wants simplicity, and those nice and delicate proportions which are becoming and ornamental. I consider these Lectures altogether destitute of the simplicity of nature, and dressed up according to the fashion and taste of the author, in mere tinsel, foppery—or, if you please, finery (6).

Again.—Nature loves variety, which has a great

(5) "True eloquence does not consist, as the rhetoricians assure us, in saying great things in a sublime style, but in a simple style; for there is, properly speaking, no such thing as a sublime style: the sublimity lies only in the things; and when they are not so, the language may be turgid, affected, metaphorical, but not affecting."

Goldsmith's Miscellaneous Works, vol. 4, *p.* 258.

(6) "After a regard to the purity of our language, the next quality of a just style is its plainness and perspicuity. This is the greatest commendation we can give an author, and the best argument that he is master of the language he writes in, and the subject he writes upon, when we understand him, and see into the scope and tendency of his thoughts, as we read him." *Felton on the Classics.*

share in producing beauty (7). Walk into a well-stocked garden, and view the different forms and colours of flowers, and plants, and leaves; range the fields—observe the variegated paintings on the wings of butterflies—look at the face of creation; the whole is decorated with a pleasing, an instructive variety (8). Examine a single object; the tree is not all root, or trunk, or leaves, or fruit: variety is impressed upon every object. By a glance at the varied objects in nature, the eye becomes interested, and the heart enjoys a mental repast. But in these Lectures I observe a striking contrast, a perpetual sameness of language and imagery, a reiteration of thought, altogether different from the rich verdure of nature. Variety is wanting; without which the

(7) "It is variety which gives such grace and force to the action of an orator, and made Demosthenes far excel all others." *Fenelon.*

"All the senses delight in it, and equally are averse to sameness. The ear is as much offended with one even continued note, as the eye is with being fixed to a point, or to the view of a dead wall." *Hogarth's Analysis of Beauty.*

(8) "Variety is apparent in the elegant, but serpentine disposition of the vallies, occasioned originally by the descent of water, constituting the chief beauty of a prospect. We see it productive of "that line of beauty," which is so much admired in the natural windings of a river; and which art, if it would please the eye, must be careful to imitate, but still with a proper mixture of variety: for nature never yet made two vallies alike." *Jones's Physiological Disquisitions, p.* 474.

heart is not dilated by " the loveliness of song (9)." Nature is harmonious: uniformity, symmetry, and proportion, must be joined to simplicity and variety. When contrasts succeed each other, we feel the transitions, and the several parts have the beauties of musical imitation. If you strike but one key of a musical instrument, it does not give a pleasing sound; a chord is necessary to yield harmony. In the scenes of nature you observe quantity and proportion. In a beautiful painting the perspective is accurate, the figures natural—nothing *outré* or extravagant: all improper excesses become inelegant (10). But in these Lectures I find a want of natural harmony; an amplification, but not a growing energy of thought, which some persons may admire, but I cannot. To me it appears like a

(9) " A sweet or luscious taste quickly satiates and cloys of itself; but is rendered agreeably delicious when tempered by pungency, acidity, or bitterness. In like manner, beauty becomes far more engaging by a certain intermixture of the irritating qualities, as roughness, abrupt variation, intricacy, and disorder."

Essays on the Sources of Pleasure in Literary Composition, p. 297.

(10) " In architecture and painting, order, beauty, and proportion fill and relieve the eye. A just disposition gives us a clear view of the whole at once; and the due symmetry and proportion of every part of itself, and of all together, leave no vacancy in our thoughts or eyes; nothing is wanting—every thing is complete, and we are satisfied in beholding."

Felton on the Classics.

vitiated taste (11). The figures and proportions may suit the speculations to which they are applied, because they are thrown into an endless vacuum, where the imagination plays with forms and varieties, dark, mysterious, and unknown.

I could easily proceed to point out particular figures and sentences which are unnatural and extravagant; some very extraordinary phrases, of Scottish prolixity and exuberance: but this I consider as unnecessary. Apply these general remarks in your next perusal of these lectures. I may be mistaken in my judgment, and perhaps cannot form a right estimate, or else have a deficiency of taste, in not following the general tide of admiration. If it is so, I am willing to confess my fault, provided you will prove to me that these remarks are groundless.

You direct my particular attention to the two last lectures, as "strikingly grand, and eminently beautiful:" but here I perceive no accordancy between the style, the imagery, and the subject. What is the design of Dr. Chalmers in the last lecture? To shew the dangers resulting from the exercise of taste in matters of religion. The design is good, and very important. But how has he executed the task? By endeavouring to gratify the

(11) "Birds of a weak flight move always in a line; but the eagle, wonderful in his soarings, shows in his very stoops the power of his wing." *Webb's Remarks on Poetry*, p. 13.

man of mere taste, with the dazzling pictures which he presents to our notice. With the one hand he builds, with the other he pulls down. There is an evident attempt at display; a sort of embellishment, which is artificial, and directly opposed to the nature of his subject(10). You perceive in it a great want of scriptural accuracy of sentiment, and very little to affect the heart. It is not that rich and powerful eloquence alternately freezing and burning, embodied by the word of life, which carries conviction to the conscience and touches every feeling and passion of the soul(11.) In scripture illustration he is

(10) " Au milieu de si grandes verités, un predicateur est-il excusable de ne s'occuper qu'à faire un vain etalage d'elocution, à chercher des pensées brillantes, à arrondir des periodes, à entasser de vaines figures? Que deviennent cependant cette douleur et cette tristesse dont il doit etre penetré en parlant de tels sujets, et qui devroient ne faire de tout son discours qu'un continuel gemissement? N'auroit-on pas lieu de s'indigner s'il se mettoit en peine de montrer de l'esprit, et s'il avoit le loisir de songer à faire le beau parleur, dans un tems où il ne faut que tonner, foudroier, et emploier les mouvemens les plus vifs et les plus animés?"

Rollin, Belles Lettres, tom. 2, *p.* 376.

(11) " The sublime majesty and royal magnificence of the scripture poems, are above the reach, and beyond the power of all mortal wit. Take the best and liveliest poems of antiquity, and read them as we do the scriptures, in a prose translation, and they are flat and poor. Horace, and Virgil, and Homer, lose their spirit and strength in the transfusion to that degree, that we have hardly patience to read them. But the sacred

extremely defective—a defect which cannot be too strongly reprobated in any preacher. A skilful arrangement of texts of scripture, interwoven in any discourse, will make more impression upon the heart than the amplified eloquence of Cicero, aided by the fire and grandeur of Demosthenes.

I acknowledge, that there are passages in these lectures which possess sublimity. We sometimes observe a grandeur and boldness of thought, and elevation of feeling, which is captivating and impressive. These constitute the charm of the book, and operate like magic upon the majority of its readers; but it wants other qualities—a mixture of the beautiful, drawn from nature, to render it a production of lasting fame. I compare it not to the starry heavens, for there all is beautiful, and the eye is never satiated with the varied aspects and imagery which it presents; but I would compare it to a brilliant illumination, and an evening transparency, by which a mob is attracted, and the charms of nature in a beautiful sky are entirely eclipsed. But the effect is momentary. The scene passes away, and the whole is obliterated by the splendours of the rising sun. I would compare it to something more familiar, but perhaps more appropriate; it is like gilt gingerbread; the gilding

writings, even in our translation, preserve their majesty and their glory, and very far surpass the brightest and noblest compositions of Greece and Rome." *Felton on the Classics.*

is fine and attractive, and the taste insipid; boys it may please, but it does not suit the palate of men (12).

Is this then to be considered as a sample of Scottish eloquence? I hope not. How different from the purity, and delicacy, and sublimity of the English style! There are some persons, who may prefer the howling winds of the north, to the gentle and refreshing breezes of the south; the moss and the peat, to the solid oak; or the barren heaths of Kilmany, to the richness and luxuriance of the Surrey Hills. But such preference would not be generally admired. With as much propriety may you prefer the eloquence in Dr. Chalmers' Lectures to that of writers with whom you are daily conversant. It is not that kind of eloquence which agrees with the proper standards of excellence;—very different from Longinus and Quintilian, or Fenelon, or Claude. The cultivation of such rhapsodical sentences, in this island, would soon leave us in a retrograde position, and extinguish all taste for the best writers we possess. In vain should we

(12) "Perhaps, as a general remark, we shall not be far from the truth, if we say, that the whole composition is tōo rhetorical. It is covered over with one crimson flush. A few intermissions of vivacity would have improved, upon the whole, the tone of the colouring: but the mind of the writer, full of sap and living juices, under the glowing influence of the radiant heaven he has described, has kept nothing back, but has burst at once into total efflorescence." *British Review*, p. 28. No. 19.

read the works of Addison, Atterbury, and Barrow; of Dryden, Jeremy Taylor, and Tillotson, or the most eminent writers of the last century, if such florid works as these are to rivet the public attention and direct the popular taste (13). But I feel persuaded that the effect is artificial and momentary. Like a comet this meteor burst upon our horizon; and like a comet it will return. Its path is mysterious and unknown, and its effect is speculation and uncertainty (14).

I am, dear Sir,

Yours, &c.

(13) "The reputation of a writer makes even his errors fashionable: we naturally imitate those whom we admire; and when we cannot assume their graces, we adopt their foibles." *Webb's Remarks, p.* 30.

(14) I can hardly suppose that the glaring puffs which appeared in some of the London newspapers were written under the inspection of Dr. Chalmers, or even with his permission. Undoubtedly they have contributed much to the sale of the Lectures, but very little to the credit of the author.

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