

EXPLANATIONS.
A SEQUEL TO THE VESTIGES
OF THE NATURAL HISTORY OF CREATION.

By the Author of that Work. London: Churchill, 1845.

(1846.)

THE treatment encountered by the work entitled “Vestiges of the Natural History of Creation,” has been such as greatly to disappoint calculation. It has been warmly received by the public, and fiercely attacked by the physical philosophers. If an outcry of impiety, infidelity, and atheism, had come from popular quarters, no one would have wondered; but that it should draw on itself a storm of religious, as well as scientific, indignation, from men who have barely escaped similar imputations themselves, this it did not occur to us to anticipate. The public, on the other hand, has done itself much credit. The work was eagerly demanded, as long as it was supposed to contain truth; the sale was suddenly checked, as soon as it was understood that those who ought to know aright, deposed that its statements were erroneous. 5 10

In common with the mass, who are forced to take their scientific knowledge at second-hand, *we* are dependent on the physiologists and physical professors for the facts on which our judgment is to be based: nor have we, consciously, the least desire to shelter the Author of this work from any censure which he may deserve for carelessness or ignorance as to the details on which he has rested his peculiar hypothesis. His work had, to our judgment, obviously weak and untenable chapters,—concerning Phrenology and the Quinary System,—which nevertheless it did not seem to be *our* place to assail, since we desired to preserve a neutrality as to the purely scientific controversies. We confess we feel some satisfaction, that in the “Explanations” now offered, the Author all but abandons the Quinary System, and observes a judicious silence concerning Phrenology. As to other leading points, on which he has met with vituperation almost unmeasured, we have here from 15 20

25 him a temperate and dignified reply, the very tone of which is a severe rebuke
to his Edinburgh reviewer. It is perhaps a mere act of justice, on the part of
those who have read the critique to which we refer, to peruse the Explanations
of the Author. In us it would be a gross impertinence to endeavour to mediate,
30 wherever the question between the combatants is one of fact; nor do we
intend to enter into any of the details. But we cannot help protesting against
the assumption of his critic; nor can we shut our eyes to the extraordinary
mode in which so many eminent men of science have testified their annoyance
at the Author's speculations. The Edinburgh Reviewer appears to hold, that
35 nobody has a right to philosophise about Creation, whose hand is not hard-
ened by the geological hammer. He speaks with contempt of the idea, that one
who has his scientific knowledge "second-hand," should dare to propound
an hypothesis. This is really too absurd. The details of every hypothesis will,
no doubt, be sifted by the men of detail; and from them we shall ultimately
40 get either disproof or verification: but they must not be allowed to monopolise
the functions of thought or philosophy; and much less to be angry, because
suggestions are offered by persons whose knowledge is derived and not inde-
pendent. Nor do we for a moment admit, that practical geologists are to dictate
concerning the Laws of Evidence; as if nobody but they could properly know
45 what "Induction" meant. If the doctrines of the Edinburgh Reviewer were to
prevail, we doubt whether Induction could ever discover fruitful channels for
its own operations: for he so scornfully repudiates Analogy, under the title
of "the philosophy of resemblances," as to deprive Induction of its pioneer.
Everybody knows that Analogy may be unskilfully applied; but every philo-
sopher ought also to know, that when it is best applied, it is at first either only
50 a clue to further investigation, or a provisional result, to be held until disproved.
The Edinburgh critic appears to show spleen, rather than philosophy, when
he most intemperately and dogmatically condemns the Author's use of the ana-
logical argument, in cases where no other argument is, as yet, possible to us.

55 But the conduct of many other men of high scientific name has been such
as to inspire a strong suspicion that other motives than a simple love of truth
has, unconsciously to themselves, actuated them. As if startled by the novel-
ties of the present Author,—who, after all, is not so very novel, considering
the doctrines of French naturalists,—they have suddenly uttered protests
60 against much which was previously looked upon as either certainly established
or highly probable; and they appear to be labouring to get rid of many results,
which the progress of knowledge had been silently working out. It is ten or
twelve years since Conte's philosophy was reviewed in the "Edinburgh" with
high approbation, and with a marked preference over Whewell's similar work.
The Nebular Theory of Herschel and La Place has been propounded again

and again in the most current works, with Conte's (alleged) verification of it; and no whisper of dissent from our first astronomers reached the popular ear. Geologists have eagerly discussed the doctrine of the Earth's Central Heat; and all who have been disposed to embrace the belief that the temperature of the interior is very intense, have appealed to its spheroidal form,—many of them also to the astronomical demonstration of the internal regularity of its shells,—in proof that the whole was once fused by heat: and this has been familiarly spoken of as referable to the time when our Solar System was in the nebular state. But new light has dawned, if not on the astronomers, yet certainly on the public, since the "Vestiges" has elicited an oracle from those who in such matters must teach us. Sir John Herschel wholly disowns the calculations of Conte; and those who are *not* astronomers forthwith speak very disparagingly of the ostentatious Frenchman. We are now assured that the Nebular—Hypothesis, not Theory,—is a splendid vision, which may possibly be proved true 500 years hence. As for Conte, his error was not one of computation, but of principle. Sir John Herschel, if he is now right, must have seen the flaw in the argument with a glance of his eye: for, it seems, "everybody is aware" that we are not acquainted even with the laws regulating condensation, on which the whole calculation depended; and Conte most obviously had no data to proceed upon. We cannot but be amazed, that our leading men of science should have uttered no previous protest against the delusion: and it does seem very hard, now to assail the Author of the "Vestiges," as if he were peculiarly to blame for having believed that in which we have all been so long allowed to acquiesce.

Nor is this all. For the last twenty years we have been continually interested and instructed by fresh discoveries concerning the immense duration of geological epochs, the uniformity of system, and the reign of Law and Order,—backwards in time, as well as outwards through space. Violent efforts were made against this doctrine by the champions of catastrophes and convulsions and divine interferences; and many were the imputations of impiety launched by them against the newer geologists. But under such men as Hutton and William Smith, Lyell and Sedgwick, and a host beside, not only has the heterodox opinion established itself as true, but we have learned to believe that it is more honourable to the Deity to work by Law than by Intervention. The first person, as far as we know, who deliberately propounded in print, the statement that the *origination of new species* was "a natural, in contradistinction to a miraculous event,"¹ was Sir John Herschel. But now, the same eminent

1. The Author of the *Vestiges* now, very properly, quotes Sir J. Herschel's own words; and contrasts them with his recent language: p. 141 of the *Explanation*.

personage publicly renounces his own doctrine, without giving any explanation of the grounds of his change, or seeming to be conscious that he has changed at all: and a chorus of scientific men protest that Creation by Law is but a decent name for Atheism. The Author of the Vestiges is attacked as if *he* were responsible for the great ideas, to establish which, the leading members of the British Association have been devoting their whole lives.

To go a little into detail. It was very slowly and unwillingly, that many of us, unscientific people, first received from the great geologists of our times the belief that the Creator did not bring all animated beings into existence in six solar days; but that the act of creation was spread over many ages: moreover, that a progress can be traced from the less to the more perfect animal forms;—that creation began with the humbler types of life, proceeded to fishes, thence to reptiles and birds, to mammalia, and finally to man. No one of any name dares now to deny this wonderful history; yet, strange to say, eminent geologists are endeavouring to obscure or hush it up. They appear to claim, that we will not only believe whatever facts they report to us, but will draw no theological inferences but such as they guarantee. They insist that the order in which animated forms appear, does *not* indicate any Law that regulated Creation, *because* certain “cephalopods” are found in “Protozoic” systems of rock. Without being geologists, we are entitled to reply, that we cannot overlook a primary law, because of its perturbations. A first approximation does much, if it can seize the great outline of truth. He who first enounced that the planets moved in circles, conferred a great benefit on science; and if any observer of that day had had a telescope to ascertain that there were deviations from a true circular orbit, he would have been a mischievous caviller, not an advancer of truth, if, on this ground, he had cried down a theory, which it was his duty to improve upon. What else are those men of science now doing, who denounce as superficial error the doctrine of order and general progress in the great scheme of Creation?

This conduct can be compared to nothing but to that which is often to be seen in religionists who wish to unite the reality of independent thought with a reputation for orthodoxy. We once knew a clergyman, notorious for his freedom of speculation, two of whose intimate friends and disciples became at last too heterodox to remain as fellow-clergymen with him any longer. Upon this, he addressed to them much vehement expostulation. One of them replied, that they had merely followed out his teaching to its necessary results. “No!” replied he: “I set up the ladder by which you should have mounted to the top of the walls of Zion; but the devil has thrown you over on the other side.” We would on no account impute the same motive to all who have acted in the same way: but there is too much room to think, that some are desirous of securing

immunity to their own speculations, by a cheap display of eloquent zeal against all who dare to go beyond their measure. However, it concerns us not, to find out *what* is actuating men, if we see that there is some bias or other which is deranging their judgments.

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Another point of much importance in the “Vestiges,” belongs to physiology—the state of the embryo human brain—and on this also the Author’s critics have dealt unjustly with him. He has been treated as meaning what he did not mean,—and what was evidently more than his argument needed,—for the mere sake of contradicting him: and inferences concerning physiological development, which had been for some years before the public in other and highly-esteemed works, are now visited on him, as a peculiar iniquity and absurdity of his own, because he has enlarged the same doctrine by an ingenious, if untenable, hypothesis. In all this, we can see nothing else but the intense prejudice of his critics, who (with a few honourable exceptions) appear far more eager to run him down by invective, and by fastening attention on all his weak points, (of which he has very many,) than to separate what is proved or probable, from what is doubtful or false.

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That he ever committed himself to so much as the suggestion, that the human race was produced out of a *still-existing*² race of inferior creatures, was a great error of judgment; for it was wholly needless to his general argument, and could only give a handle against it and against himself. If the rest of his hypothesis should ever be admitted so far as inferior animals are concerned, no long time would elapse before all would concede that Man also must have been developed out of lower races; and that, though we should be ever so much forced to avow, that no known creatures can be fairly regarded as representatives of what man once was.—The Edinburgh Reviewer does himself much discredit by the coarse mode in which he taxes the Author with “bestializing” man; an imputation which the latter had so well guarded against, when, in terms more delicate than we now employ, he reminds us that no one is ashamed of having been a shapeless embryo in the womb. In truth, there is a cant of purity almost monkish in this same reviewer, who seems to mistake hatred of materialism for spirituality.

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But we must here quote the Author’s reply on an important part of this subject.

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“Most of the large carnivores and pachyderms of the late tertiary formations, very closely resemble existing species; but they are nevertheless determined to be distinct

2. On referring to his work, we cannot alight on any such statement; but his critics allege that he teaches mankind to be descended from the monkeys. We find only, that of existing creatures, the monkey is *nearest* to man.

species by Professor Owen and other eminent authorities, in consideration of certain peculiarities. The peculiarities are, in general, trifling; such as, differences in the tubercles or groovings of the surface of teeth, or greater or less length of body or extremities. There is a *Badger* of the Miocene, which cannot be distinguished from the badger of the present day. Our existing *Meles Taxus* is, therefore, acknowledged by Mr. Owen to be ‘the oldest known species of mammal on the face of the earth.’ It is in like manner impossible to discover any difference between the present *Wild Cat* and that which lived in the bone-caves with the hyæna, rhinoceros and tiger of the ante-drift æra, all of which are said to be extinct species. The learned anatomist takes occasion from these facts, to speak of a survival, by small and weak species, of geological changes, which have been accompanied by the extirpation of larger and more formidable animals of allied species. The inference from the facts and doctrines of this school is, that Divine Power has seen fit to change the species of elephants, rhinoceroses, tigers and bears;—using special miracles to introduce new ones, one with perhaps an additional tooth, another with a new tubercle or cusp on the third molar, and so forth;—while he has seen no occasion for a similar interference with the otter, wild cat and badger, which, accordingly, have been left undisturbed in their obscurity. Such may be the belief of men of science, anxious to support a theory: but assuredly, it will never be received by any ordinary men of fair understanding, who may be able to read and comprehend the works of Mr. Owen.”—P. 153.

It is only a fair deduction from the views of the same school for a philosopher to live in trembling, lest new anatomical observations, or new microscopic discoveries, should force him to turn atheist. Men whose zeal for their own way of discerning the Deity is so importunate, are little aware how unstable and doubtful an affair they make out religion to be.

But the quotation which we have made, comes close upon a point on which most of the Author’s critics exhibit an exceedingly dense, and we are disposed to say, a wilful, ignorance: viz., the worthlessness of those “Inductions” about which they talk so pedantically, to decide concerning the fixed uniformity of Species through remote ages. They confess that the Solar System *may* once have been a Nebula. They know that mere observation of its present regularity proves nothing at all concerning infinite time: and yet, relying on the fact that, during our narrow experience, the species of animals do not transgress certain limits, they magisterially contradict and haughtily rebuke one who ventures to suggest that the organised, as well as the unorganised world, may have changed, in those millions of years, concerning which their Geology teaches,—far more than our limited observation can have noted. This Author holds it to be probable, that, in (we will suppose) fifty thousand years, asses might turn into ponies: can any one disprove this? “Yes,” replies the proud man of science: “it is quite impossible; *for* we have had no experience of so great a change: and the ignoramus who dreams of it does not know what

Induction means.” We are disposed to reply, that the self-conceit which assumes such airs is blind to its own shallowness. To dogmatise on *either* side, is alike unbecoming and absurd; but if possibilities are not to be calmly discussed,—if inquiry is to be nipped in the bud by authoritative denunciations, all progress of science is at an end. We may add; to demand experimental proof of such matters, is a mere weakness of understanding.

On this point the Edinburgh Reviewer is guilty of a misrepresentation so glaring, as to affix a deep stigma even on his good faith. We could scarcely believe our understanding when we read it (p. 166), and turned to the Author’s pages to satisfy ourselves. To illustrate the uselessness of mere observation in deciding concerning the eternal uniformity of a series of natural events, the Author had quoted from Mr. Babbage’s “Ninth Bridgewater Treatise,” where Mr. Babbage himself employs his celebrated calculating machine in illustration of the argument, that *no amount of mere consecutive observation suffices to establish a Law, that can be counted on as eternal*. The substance of the meaning is this:—I can set my machine, so that if any one were to watch it for more than 100 million figures, it would apparently follow a certain very simple law; yet at a stage a little later, this law will fail: now who knows that Nature’s laws may not, as easily, be misread, and as easily delude the man, who assumes that what has been during recent experience, always was and always will be?—It has been justly remarked, that the reference to “my machine” was needlessly egotistical, and that the phenomena of a clock which strikes the hours would have been as instructive, if not so striking, an illustration: but for this the Author of the Vestiges is not responsible. He did but adopt Mr. Babbage’s sentiment, and quoted his very words; deducing the same general conclusion, that laws of nature, apparently ascertained, may nevertheless fail utterly *in long time*. The argument, of course, applies only against those laws which rest on mere *observation*; where *experiment* is scarcely possible, and our means of verification therefore very confined. It is true, that Mr. Babbage used it to show, that certain so-called “miracles,” which philosophers have disbelieved, may yet be true, but may have been really results of a hidden law, and therefore be improperly named miracles or interferences with law: while the Author of the Vestiges applies it, as illustrating, that mere observation of the uniformity of species, in the short space of human experience, does not avail to establish that this is the true and eternal law. But *both* these are legitimately contained in Mr. Babbage’s principle. The Edinburgh Reviewer must know this; but as he wished to darken the subject, he bursts into indignant declamation, hurrying the reader on in a torrent of words, until (after deploring Mr. Babbage’s lot in being thus “dragged forward”) he at last manages by insinuation to leave on the reader’s mind that Mr. Babbage’s argument is thus travestied by the

Author of the *Vestiges*: “If my machine can *calculate*, why may not monkeys
 260 *reason*?” These, assuredly, are not the reviewer’s words; but any one who
 confidently peruses his turbid and stormy page, will bring away this notion,
 or none at all.

But we have written more than enough concerning this able but over-
 bearing critic, whose pretensions to legislate dictatorially in morals, theology
 265 and logic, are not warranted by his undoubtedly high geological attainments.
 The man whom he seeks to trample under foot, however greatly he may have
 reached beyond his own strength in most of the details and in some large parts
 of his subject, has done much to excite inquiry, and help on the advance of
 unbiassed philosophical thought; and even if his special hypothesis of devel-
 270 opment of species out of species should be abandoned as a dream, he will not
 have written in vain: philosophy will be freer in research, and more fertile, for
 his having written. Geologists will not be allowed to assign the limits to human
 thought. If they continue to lead onward, as they have hitherto nobly done,
 in the path of free inquiry, they will receive double honour: but if they rudely
 275 thrust aside, whether from mean jealousy, theological bigotry, or any other
 unworthy motive, those who dare to outstep them, they will degenerate into
 the mere purveyors of science,—hewers of wood and drawers of water, for
 the service of those who cultivate genuine philosophy.

The name of Sir John Herschel has always commanded our unfeigned
 280 veneration. His unaffected modesty and simplicity have been extolled by all,
 as equalled only by his various attainments, and it was with much regret that
 we saw his influence on this occasion so decidedly exerted to silence inquiries
 which are very proper to be made, and crush errors which were sure to die a
 natural death.

The Author of the *Vestiges*, thus assailed, has replied by a short and
 285 gently-worded retort, which falls upon Sir John Herschel with severe effect.
 He reminds us of what we had either scarcely observed or nearly forgotten,
 that Sir John values science, chiefly, if not solely, *for its material results!*

“Perhaps a more lively illustration of deficiency in the life and soul of Nature-
 290 seeking could not be presented, than in the view which Sir John Herschel gives of the
 uses of science, in a treatise reputed as one of the most philosophical ever produced in
 our country. These uses, according to the learned knight, are strictly material—it might
 even be said, sordid—namely, ‘to show us how to avoid attempting impossibilities . .
 . . . to enable us to accomplish our ends in the easiest, shortest, most economical, and
 295 effectual manner—to induce us to attempt and enable us to accomplish objects which,
 but for such knowledge, we should never have thought of undertaking.’ Such results, it
 will be felt, may occasionally be important in saving a country gentleman from a hope-
 less mining speculation, [but] when the awakened and craving mind asks,
 what science can do for us in explaining the great ends of the Author of Nature, and

our relations to him, the man of science is mute Can we say, that where such views of the uses of 'divine philosophy' are entertained, there could be any right preparation of mind to receive with candour or treat with justice, a plan of Nature like that presented in the Vestiges of Creation?"—P. 177. 300

The industrial uses of science have in the long run immense moral effects. We do not mean to doubt the influence of cheap food, cheap clothes, healthy abodes, rapid and sure conveyance, cheap luxuries, and cheap literature, on the highest interests of man. But a writer must either have very mean notions of the true scope of philosophy, or be writing for a profoundly materialized public, who could lay *sole* stress on the economic applications of science and the practical power which it imparts, as the argument for cultivating it. Forsooth, astronomy is to be valued, only as assisting navigation; chemistry, as that which bleaches or dyes our calico, disinfects our house, provides medicines, and ascertains the amount of aliment in articles of food; geology, as directing mining operations; electricity, for its lightning conductor, electrottype and telegraph. We cannot believe that either Sir John Herschel, or any of the great geologists, are infected with this degrading notion; we are forced to infer that they nevertheless live in contact with hundreds who thus measure the claims of science. 305 310 315

The religion of the day countenances the same view, by stripping the universe of everything divine, in order to concentrate all that is supernatural and spiritual within the pages of a book: and it becomes the interest of men of science as much as possible to obscure the fact, that there is any abstract of conceivable possibility of Natural Philosophy being opposed to the Scripture. Of course, if the two have the same field of contemplation, a collision is possible: hence perhaps the current opinion, that philosophy has *no right* to teach us anything concerning the past dealings of Deity, or, at least, that this would be anything but a *recommendation* of it. But we have made much progress, as a nation, since Sir John Herschel wrote his celebrated Discourse. The very reception of the Vestiges of Creation by the public, proves that a new spirit is already powerful among us; and we may confidently expect that the next Discourse on Philosophy which shall enjoy an equal popularity, will be concerned with the topics which Sir John Herschel prudently threw into the background, and which the Author of the Vestiges has rightly made prominent. We shall, in conclusion, quote his statement of the intention of his work. 320 325 330

"It was with the design of *giving a direction to inquiry*, and leading to views of nature previously little thought of, but unexpectedly grander than those commonly entertained, that, too eager for truth to regard my own imperfections, I ventured upon my late speculation. When an ordinary reader judges of it, let him remember that the question lies, not between two philosophical theories, but between one philosophical 335

- 340 theory, and a view of nature which does not even profess to look to nature as a basis. As a system, moreover, which finds none of the previous labours of science shaped or directed in favour of its elucidation; but all in the contrary way, it obviously calls for every reasonable allowance being made for its defects.”—P. 181.