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OBJECTIONS TO MR. DARWIN'S THEORY OF THE ORIGIN OF SPECIES.

[The Archbishop of Dublin has received the following remarks, in answer to an inquiry he had made of a friend (eminent in the world of science) on the subject of Darwin's theory of the origin of species.]

Before writing about the transmutation theory, I must give you a skeleton of what the theory is:—

1st. *Species are not permanent; varieties are the beginning of new species.*

2d. *Nature began from the simplest forms—probably from one form—the primordial *monad*, the parent of all organic life.*

3d. *There has been a continual ascent on the organic scale, till organic nature became what it is, by one continued and unbroken stream of onward movement.*

4th. *The organic ascent is secured by a Malthusian principle through nature,—by a battle of life, in which the best in organization (the best varieties of plants and animals) encroach upon and drive off the less perfect. This is called the theory of *natural selection*.*

It is admirably worked up, and contains a great body of important truth; and it is eminently amusing. But it gives no element of strength to the fundamental theory of transmutation; and without specific transmutation *natural selection* can do nothing for the general theory. The flora and fauna of North America are very different from what they were when the Pilgrim Fathers were driven out from old England; but, changed as they are, they do not one jot change the collective fauna and flora of the actual world.\*

5th. *We do not mark any great organic changes now, because they are so slow that even a few thousand years may produce no changes that have fixed the notice of naturalists.*

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I think the foregoing heads give the substance of Darwin's theory; and I think that the great broad facts of geology are directly opposed to it.

Some of these facts I shall presently refer to. But I must in the first place observe that Darwin's theory is not *inductive*,—not based on a series of acknowledged facts pointing to a *general conclusion*,—not a proposition evolved out of the facts, logically, and of course including them. To use an old figure, I look on the theory as a vast pyramid resting on its apex, and that apex a mathematical point. The only facts he pretends to adduce, as true elements of proof, are the *varieties* produced by domestication, or the *known varieties* of cross-breeding. We all admit the varieties, and the very wide limits of variation, among domestic animals. How very unlike are poodles and greyhounds. Yet they are of one species. And how nearly alike are many animals,—allowed to be of distinct species, on any acknowledged views of species. Hence there may have been very many blunders among naturalists, in the discrimination and enumeration of species. But this does not undermine the grand truth of nature, and the continuity of species. Again, the varieties, built upon by Mr. Darwin, are varieties of domestication and human design. Such varieties could have no existence in the old world. Something may be done by cross-breeding; but males are generally sterile, or the progeny (in some rare instances) passes into one of the original crossed forms. The Author of Nature will not permit His work to be spoiled by the wanton curiosity of Man. And in a state of nature (such as that of the old world before Man came upon it) wild animals of different species do not desire to cross and unite.

Species have been constant for thousands of years; and time (so far as I see my way) though multiplied by millions and billions would never change them, so long as the conditions remained constant. Change the conditions, and old species would disappear; and new species *would* have room to come in and flourish. But how, and by what causation? I say by *creation*. But, what do I mean by creation? I reply, the operation of a power quite beyond the powers of a pigeon-fancier, a cross-breeder, or hybridizer; a power I cannot imitate or comprehend; but in which I can believe, by a legitimate conclusion of sound reason drawn from the laws and harmonies of Nature,—proving in all around me a design and purpose, and a mutual adaptation of parts, which I see comprehend,—and which prove that there is exterior to, and above, the mere phenomena of Nature a great prescient and designing cause. Believing this, I have no difficulty in the repetition of new species.

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I proceed now to notice the manner in which Darwin tries to fit his principles to the facts of geology.

I will take for granted that the known series of fossil-bearing rocks or deposits may be divided into the Palaeozoic, the Mesozoic, the Tertiary or Neozoic, and the Modern, the Pene, Delta, &c., &c., with the spoils of the actual flora and fauna of the world, and with wrecks of the works of Man.

To begin then, with the Palaeozoic rocks. Surely we ought on the transmutation theory, to find near their base great deposits with *new but the lowest forms of organic life*. I know of no such deposits. Owen contends that life began with the *infusorial forms*. They are as any rate well fitted for fossil preservation; but we do not find them. Neither do we find beds exclusively of hard corals and other humble organisms, which ought, on the theory, to mark a period of vast duration while the primordial monads were working up into the higher types of life. Our evidence is, no doubt, very scanty; but let not our opponents dare to say that it makes for *them*. So far as it is positive, it seems to me point-blank against them. As we ascend in the great stages of the Palaeozoic series (through Cambrian, Silurian, Devonian, and Carboniferous rocks) we have in each a *characteristic fauna*; we have no wavering of species,—we have the noblest cephalopods and brachiopods that ever existed; and they preserve their typical forms till they disappear. And a few of the types have endured, with specific modifications, through all succeeding ages of the earth. It is during these old periods that we have some of the noblest ichthian forms that ever were created. The same may be said, I think, of the carboniferous flora. As a whole, indeed, it is lower than the living flora of our own period; but many of the old types were grander and of higher organization than the corresponding families of the living flora; and there is no wavering, no wanting of organic definition, in the old type. We have some land reptiles (batrachian), in the highest Palaeozoic periods, but not of a very low type; and the reptiles of the Permian groups (at the very top of the Palaeozoic series) are of a high type. If all this be true, (and I think it is,) it gives but a sturdy grist for the transmutation-mill, and may soon break its cogs.

We know the complicated phenomena of the Mesozoic (or Oolitic) period. It defies the transmutationist at every step. Oh! but the document, says Darwin, is a fragment. I will interpolate long periods to account for all the changes. I say, in reply, if you deny my conclusion grounded on positive evidence, I toss back your conclusions, derived from negative evidence—the inflated cushion on which you try to bolster up the defects of your hypothesis. The reptile fauna of the Mesozoic period is the grandest and highest that has lived. How came they all to die off, or to degenerate? And how came the Dinosaurs to disappear from the face of Nature, and leave no descendants like themselves, or of a corresponding nobility? Did they tire of the land, and become Whales, casting off their hind-legs? And, after they had lasted millions of years as whales, did they tire of the water, and leap out again as Pachyderms? I have heard of both hypotheses; and I cannot put them in words without falling into terms of mockery. This I do affirm, that if the transmutation theory were proved true in the actual world, and we could hatch rats out of the eggs of geese, it would still be difficult to account for the successive forms of organic life in the old world. They appear to me to give the lie to the theory at every turn of the pages of Dame Nature's old book.

And now for a few words upon Darwin's long *interpolated periods* of geological ages. He has in eternity of past time to draw upon, and I am willing to give him ample measure; only let him use it logically, and in some probable accordance with facts and phenomena.

I place the theory against facts viewed collectively. 1st. I see no proofs of enormous gaps of geological time, (I say nothing of years or centuries,) in those cases where there is a sudden change in the ancient fauna and flora. I am willing, out of the stock of past time, to lavish millions or billions upon each epoch, if thereby we can gain rational results from the operation of *true causes*. But time and "natural selection" can do nothing if there be not a *vera causa* working in them. [Note—see remark on Time, in the *Annotations on Bacon's Essays*.] I must confine myself to a few of the collective instances.

2d. Towards the end of the carboniferous period, there was a vast extinction of animal and vegetable life. We can, I think, account for this extinction mechanically. The old crust was broken up. The sea bottom underwent a great change. The old flora and fauna went out; a new flora and fauna appeared, in the ground now called Permian, at the base of the new red sandstone, which overlies the carboniferous. I take the fact as it is, and I have no difficulty. The time in which all this was brought about may have been very long, even upon a geological scale of time. But where do the *interweaving* and connecting types exist, which are to mark the work of *natural selection*? We do not find them. Therefore the step onwards gives no true resting-place to a baseless theory; and is, in fact, a stumbling-block in its way.

3d. Before we rise through the new red sandstone, we find the muschel-kalk (wanting in England, though its place on the scale is well-known) with an *entirely new fauna*: where have we a proof of any enormous lapse of geological time to account for the change? We have no proof in the deposits themselves: the presumption they offer to our senses is of a contrary kind.

4th. If we rise from the muschel-kalk to the Lias, we find again a new fauna. All the anterior species are gone. Yet the passage through the upper members of the new red sandstone to the Lias is by insensible gradation, and it is no easy matter to fix the physical line of their demarcation. I think it would be a very rash assertion to affirm that a great interval took place between the formation of the upper part of the new red sandstone and the Lias. Physical evidence is against it. To support a baseless theory, Darwin would require a countless lapse of ages

*Ed. Seignior*

20

How do you answer?

How many varieties?

What a number of fossils?

I have written all this

*St. Leger Bay*

of which we have no commensurate physical monuments; and he is unable to supply any of the connecting organic links that ought to bind together the older fauna with that of the las.

I need hardly go on any further with these objections. But I cannot conclude without expressing my detestation of the theory, because of its unfinishing materialism;—because it has deserted the inductive track, the only track that leads to physical truth;—because it utterly repudiates final causes, and thereby indicates a demoralized understanding on the part of its advocates. In some rare instances it shows a wonderful credulity. Darwin seems to believe that a white bear, by being confined to the slope floating in the Polar basin, might be turned into a whale; that a Lemur might easily be turned into a bat; that a three-toed Tapir might be the great grandfather of a horse; or the progeny of a horse may (in America) have gone back to the tapir.

But any startling and (supposed) novel paradox, maintained very boldly and with something of imposing plausibility, produces, in some minds, a kind of pleasing excitement, which predisposes them in its favour; and if they are unused to careful reflection, and averse to the labour of accurate investigation, they will be likely to conclude that what is (apparently) original, must be a production of original genius, and that anything very much opposed to prevailing notions must be a grand discovery,—in short, that whatever comes from "the bottom of a well" must be the "truth" supposed to be hidden there.

#### PUBLICATIONS RECEIVED.

Dr. Amédée Pichot's new work, *THE LIFE AND LABOURS OF SIR CHARLES BELL* makes its appearance in England in the guise of a wretched translation. It is not creditable to our literature that it should have been left to a Frenchman to write the life of an Englishman, the author of the greatest biological discovery that has been made since the days of Harvey, and to an incompetent translator to put the French biography into a Gallo-English jargon.

Sir James Prior has, with his well known diligence, collected materials for a *LIFE OF EDWARD MALONE, EDITOR OF SHAKESPEARE*, and has embodied them in a large volume full of erudition, and slip slop.

It has for some time now been pretty generally recognized that "Physiology, in its application to the preservation of health, should be made a part of general education," but the question remained, how was this to be accomplished? The books in popular use—those of Southwood Smith, A. Combe, Dr. Elliotson, G. H. Lewes, &c., all excellent for educated people, are far too technical, too scientific, and full of long words for use in our common schools; but, in the work before us, Mrs. Bray seems thoroughly to have mastered all difficulties of this kind in her *PHYSIOLOGY FOR COMMON SCHOOLS*, and to have brought the subject quite within the range of ordinary juvenile comprehension. Not only may this book be successfully used in schools, but we agree with its author, that if introduced into the houses of the poor "it may be one means of giving them faith in pure air, soap and water, wholesome diet, and temperate habits." We cordially recommend this cheap book to the many thousands to whom such a book has long been a desideratum.

*LONDON AT A GLANCE* is an exceedingly handy book of a novel character, and is likely, for all ordinary purposes, to supersede the use of the sheet map of the metropolis, which it greatly surpasses in utility and convenience. The streets of London now cover an area of more than fifty square miles. The new guide through this labyrinth is a thin octavo volume, forming an illustrated atlas of thirty-six maps in sections, and a key map of the whole, with indexes of street references, public buildings, places of amusement, &c. It will be invaluable as a vade mecum for visitors to London, and may aspire to be as popular among residents as the Post-Office Directory. The plan of the work is excellent and could hardly be changed for the better, but experience will no doubt suggest improvements of detail. We would suggest for instance, lists, and if possible, diagrams of omnibus routes, as likely to prove very welcome additions.

#### BOOKS

- The Life and Labours of Sir Charles Bell, K.C.H., &c.* By Amédée Pichot, M.D.
- Life of Malone, Editor of Shakespeare, with Selections from his Manuscript Anecdotes.* By Sir James Prior, &c. With a Portrait.
- Perils and Panics of Intemperance in 1796-7-8, 1804-5, and at the Present Time.* By Humphrey Blunt.
- Is it not Written? being the Testimony of Scripture against Romanism.* By Edward S. Pryce, A.B.
- Government upon First Principles, Proved and Illustrated Analogically.* By John Greenleaf.
- Woman's Occupation.* A Novel. Edited by the Hon. Mrs. Ralph Dutton. In three volumes.
- Deafness and Deafness of the Ear.* The Fallacies of the Present Treatment Exposed, and Remedies Suggested. From the Experience of Half a Century. By W. Wright, Esq.
- Four Years in Barbadoes.* By W. H. Marshall, Esq. In two volumes.
- Scotland in the Middle Ages: Sketches of Early Scotch History and Social Progress.* By Cosmo Innes, Professor of History in the University of Edinburgh.
- Narratives of the Embassy of Ray Gonzalez de Clavijo to the Court of Timour, at Samarcand, A.D. 1398-9.* Translated, for the first time, with Notes, a Preface, and an Introductory Life of Timour Beg, by Clements R. Markham, F.R.G.S. (Hakluyt Society.)
- Through the Tyrol to Venice.* By Mrs. Newman Hall.
- London at a Glance.* An Illustrated Atlas of London. Containing thirty-six Maps in sections, a Key Map of the Whole of London, seven thousand Street References, a General Index to the Public Buildings, Hotels, Places of Amusement, &c.
- Lectures on the Mountains; or the Highlands and Highlanders of Strathspye and Badenoch.* Second Series.

#### NEW EDITIONS AND REPRINTS.

- Conquest and Colonization in North Africa; being the substance of a Series of Letters from Algeria published in the Times, with Introduction and supplement containing the most recent French and other information on Morocco.* By George Wingrove Cooke.
- The Culture of Fruits and Vegetables.* By George Glenny, F.H.S.
- The Culture of Flowers and Plants.* By George Glenny, F.H.S.
- Poems and Essays.* By the late William Caldwell Ross. Edited, with a Prefatory Memoir by his Brother-in-law, Richard Holt Hutton. In two volumes.
- The Colloquies of Edward Osborne, Citizen and Clothworker, of London.* By the Author of "Mary Powell." Third Edition.
- Physiology for Common Schools, in twenty-seven easy Lessons.* By Charles Bray.

#### LITERARY NEWS.

"The Posthumous Papers of John Hunter, on Natural History, Physiology, Generation, Psychology, Palæontology, and Comparative Anatomy," edited, with Notes, by Professor Owen, are about to be published by Mr. John Van Voorst, 1, Paternoster Row.

Messrs. Blackwood and Son are reprinting in a separate form, the poem of "St. Stephen's," lately published in *Blackwood's Magazine*, and attributed generally to Sir Edward Bulwer Lytton.

"The Jacobite Minstrelsy of Scotland," edited, with an introduction and notes, by Dr. Charles Mackay, is announced as forthcoming by Messrs. R. Griffin and Co.

Messrs. A. and C. Black have in the press an "Introduction to the History of English Literature," by Robert Demaus, M.A.; and a "Compendium of English and Scotch Law," by James Paterson, Barrister-at-Law.

Mr. Lumley is reprinting an old English book of some interest in a literary, as well as in a theological point of view. It is "The Fennell Glory; or the Life and Death of our Blessed Lady, the Holy Virgin Mary, God's Own Immaculate Mother, by Andri Stafford, Gent." The work was written with the approval of Archbishop Laud, and published in the year 1635. It was vehemently assailed by the Puritans and is warmly defended by the High Church party.

A translation of the Marquis de Moyes's "Recollections of the Embassy of Baron Gros to China and Japan, in 1857-58," is in course of preparation by Messrs. Richard Griffith and Co.

Among the new works just issued from the American press, are a "History of Georgia, from its first discovery by Europeans to 1798," by the Reverend Dr. Stevens; "South and North, or Impressions received during a Trip to Cuba and the South," by John S. C. Abbott; and "Travel and Study in Italy," by Charles Eliot Norton.

The second and last volume of the "Dictionnaire des Synonymes," by M. Guizot, is announced by Didier and Co., Paris. This work is to form part of the collected works of the author, of which twenty-five volumes have already appeared.

All the French papers contain advertisements of the "Œuvres complètes de Lamartine: édition personnelle, définitive, unique," in forty volumes. It is understood that the holders of the copyright of Lamartine's works, seeing the failure of the subscription lately made on his behalf, have given up their rights in favour of the author, who is now publishing this new edition himself.

The third volume of the "Mémoires de M. Dupin," has just been published by H. Plon, Paris. The book contains the Parliamentary career of the distinguished statesman during the period from 1832 to 1849, all which time he was President of the Chamber of Deputies.

Messrs. Hachette and Co., Paris, have just published a new "Histoire de Jeanne d'Arc," by M. Wallon, of the Institute, Professor of History at the Faculté des Lettres; as also the first three volumes of a new edition of the "Lettres de Madame de Sévigné," edited, with numerous notes and emendations, by M. de Monmerque.

A new work of fiction by M. Victor Hugo, entitled "Les Misérables," and illustrative of the sufferings of the poor, is announced to appear in a *Revue* about to be founded at Paris by MM. Hetzel and Michel Lévy, frères.

The concluding volumes of the "Correspondance de Béranger," have been issued by M. Perrotin, Paris. The work now consists of four books, containing 1200 letters, and a catalogue and abrégé of 1500 others.

A "Histoire des plus célèbres Amateurs, et de leurs Relations avec les Artistes," in five volumes, by M. Jules Duméril, has been published by Dentu, Paris. The work is divided into sections, containing the respective histories of English, Flemish, Dutch, German, Spanish, French, and Italian amateurs.

"Découverte de Paris par une famille Anglaise" is the title of a very amusing work, with a great amount of open and covert persiflage on England, just published by Hachette, Paris. It is from the pen of Signor Ruffini, author of "Docteur Antonio et Lorenzo Benoni."

Two works on and by ladies have just been published at Paris; namely, "Les Femmes Chasseresses," by the Comtesse d'Houdetot; and "L'Amour et la Femme," by the fair feuilletoniste who writes under the nom de plume of Vicomtesse de Dax.

A military and historical work, entitled "Description des Batailles dont la Belgique a été le Théâtre," by Captain Coussemont, of the Royal Belgian Artillery, has been published by N. Flaton, Brussels.

The first volume of the "Voyage de J. Linden, exécuté par ordre du Gouvernement Belge dans les Régions Inter-tropicales de l'Amérique du Sud, pendant les années 1841 à 1845," has appeared at Brussels. The work, which will be complete in three volumes, is published at the expense of the Belgian Government.

Two works, by very notable political personages of the present time, are about to be published, in Italian, at Milan. The first is a "Collection of the Political and Economical Writings of Count Cavour," the second "Considerations upon Central Italy," by Signor Buoncompagni.

The famous Neapolitan improvisatrice, Giannina Milli, extemporized on patriotic subjects at the Academy of Milan, on the 13th of this month. Some of her lyrical improvisations have appeared in the Italian journals, and are very highly spoken of.

Bernadoni of Milan has published a complete "Guide to Milan," "Guida di Milano," which is likely to supersede the old guide-books compiled under Austrian control. "A History of Italian, German, and French Music," by F. Brendel, has appeared at Milan, as well as an historical essay on the contemporaneous drama, "Cenni sul Teatro Drammatico Contemporaneo," by Francesco dal' Ongaro, the celebrated poet.

In Milan also is published a scientific monthly periodical. It is divided into three heads:—"Universal Annals of Medicine," "Universal Annals of Statistics, Public Economy, History, Travels and Commerce," and "Annals of Chemistry applied to Medicine." The editors are said to be men fully competent to deal with their subjects.

A remarkable volume is about to issue from the publishing house of Mr. John Chapman. It is called *Pentateuchism Analyzed*, and it gives, in a very readable form, a review of the first section of the Pentateuch,

the rickety fabric? By no means. The Hapsburg dynasty may share the fate of the Stuarts and the Bourbons; but its fall would be the renovation of the empire. Hungary cherishes no enmity against the other provinces, demands no privileges for herself which she would not gladly see extended to them. "Is she oppressed? then all the other provinces are oppressed also. Is she stirring? then all the others look towards her with hope. And if she becomes free, all the others must necessarily become free with her." If English statesmen still believe that the existence of Austria is a political necessity, they should not be indifferent to the conditions on which her existence depends. To regard her in her actual state as the keystone of the European edifice is an outworn superstition, for "how can you lean upon a power which cannot support itself?"

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I proceed now to notice the manner in which Darwin tries to fit his principles to the facts of geology.

I will take for granted that the known series of fossil-bearing rocks or deposits may be divided into the Palæozoic, the Mesozoic, the Tertiary or Neozoic, and the Modern, the Fens, Deltas, &c., &c., with the spoils of the actual flora and fauna of the world, and with wrecks of the works of Man.

To begin then, with the Palæozoic rocks. Surely we ought on the transmutation theory, to find near their base great deposits with *none but the lowest forms of organic life*. I know of no such deposits. Owen contends that life began with the infusorial forms. They are at any rate well fitted for fossil preservation; but we do not find them. Neither do we find beds exclusively of hard corals and other humble organisms, which ought, on the theory, to mark a period of vast duration while the primæval monads were working up into the higher types of life. Our evidence is, no doubt, very scanty; but let not our opponents dare to say that it makes for *them*. So far as it is positive, it seems to me point-blank against them. As we ascend in the great stages of the Palæozoic series (through Cambrian, Silurian, Devonian, and Carboniferous rocks) we have in each a *characteristic* fauna; we have no wavering of species,—we have the noblest cephalopods and brachiopods that ever existed; and they preserve their typical forms till they disappear. And a few of the types have endured, with specific modifications, through all succeeding ages of the earth. It is during these old periods that we have some of the noblest ichthic forms that ever were created. The same may be said, I think, of the carboniferous flora. As a whole, indeed, it is lower than the living flora of our own period; but many of the old types were grander and of higher organization than the corresponding families of the living flora; and there is no wavering, no wanting of organic definition, in the old type. We have some land reptiles (batrachian), in the higher Palæozoic periods, but not of a very low type; and the reptiles of the permian groups' (at the very top of the Palæozoic rocks,) are of a high type. If all this be true, (and I think it is,) it gives but a sturdy grist for the transmutation-mill, and may soon break its cogs.

We know the complicated organic phenomena of the Mesozoic (or Oolitic) period. It defies the transmutationist at every step. Oh! but the document, says Darwin, is a fragment. I will interpolate long periods to account for all the changes. I say, in reply, if you deny my conclusion grounded on positive evidence, I toss back your conclusions, derived from negative evidence—the inflated cushion on which you try to bolster up the defects of your hypothesis. The reptile fauna of the Mesozoic period is the grandest and highest that has lived. How came they all to die off, or to degenerate? And how came the Dinosaures to disappear from the face of Nature, and leave no descendants like themselves, or of a corresponding nobility? Did they tire of the land, and become Whales, casting off their hind-legs? And, after they had lasted millions of years as whales, did they tire of the water, and leap out again as Pachydemics? I have heard of both hypotheses; and I cannot put them in words without falling into terms of mockery. This I do affirm, that if the transmutation theory were proved true in the actual world, and we could hatch rats out of the eggs of geese, it would still be difficult to account for the successive forms of organic life in the old world. They appear to me to give the lie to the theory at every turn of the pages of Dame Nature's old book.

And now for a few words upon Darwin's long *interpolated periods* of geological ages. He has an eternity of past time to draw upon; and I am willing to give him ample measure; only let him use it logically, and in some probable accordance with facts and phenomena.

I place the theory against facts viewed collectively. 1st. I see no proofs of enormous *gaps* of geological time, (I say nothing of years or centuries,) in those cases where there is a sudden change in the ancient fauna and flora. I am willing, out of the stock of past time, to lavish millions or billions upon each epoch, if thereby we can gain rational results from the operation of *true causes*. But time and "natural selection" can do nothing if there be not a *vera causa* working in them. [Note—see remark on *Time*, in the *Annotations on Bacon's Essays*.] I must confine myself to a few of the collective instances.

2d. Towards the end of the carboniferous period, there was a vast extinction of animal and vegetable life. We can, I think, account for this extinction mechanically. The old crust was broken up. The sea bottom underwent a great change. The old flora and fauna went out; a new flora and fauna appeared, in the ground now called Permian, at the base of the new red sandstone, which overlies the carboniferous. I take the fact as it is, and I have no difficulty. The time in which all this was brought about *may* have been very long, even upon a geological scale of time. But where do the *intervening* and connecting types exist, which are to mark the *work of natural selection*? We do *not* find them. Therefore the step onwards gives no true resting-place to a baseless theory; and is, in fact, a stumbling-block in its way.

3d. Before we rise through the new red sandstone, we find the muschel-kalk (wanting in England, though its place on the scale is well-known) with an *entirely new* fauna: where have we a proof of any enormous lapse of geological time to account for the change? We have no proof in the deposits themselves: the presumption they offer to our senses is of a contrary kind.

4th. If we rise from the muschel-kalk to the Lias, we find again a new fauna. All the anterior species are gone. Yet the passage through the upper members of the new red sandstone to the Lias is by insensible gradation, and it is no easy matter to fix the physical line of their demarcation. I think it would be a very rash assertion to affirm that a great interval took place between the formation of the upper part of the new red sandstone and the Lias. Physical evidence is against it. To support a baseless theory, Darwin would require a countless lapse of ages

of which we have no commensurate physical monuments; and he is unable to supply any of the connecting organic links that ought to bind together the older fauna with that of the lias.

I need hardly go on any further with these objections. But I cannot conclude without expressing my detestation of the theory, because of its unflinching materialism;—because it has deserted the inductive track, the only track that leads to physical truth;—because it utterly repudiates final causes, and thereby indicates a demoralized understanding on the part of its advocates. In some rare instances it shows a wonderful credulity. Darwin seems to believe that a white bear, by being confined to the slops floating in the Polar basin, might be turned into a whale; that a Lemur might easily be turned into a bat; that a three-toed Tapir might be the great grandfather of a horse! or the progeny of a horse may (in America) have gone back to the tapir.

But any startling and (supposed) novel paradox, maintained very boldly and with something of imposing plausibility, produces, in some minds, a kind of pleasing excitement, which predisposes them in its favour; and if they are unused to careful reflection, and averse to the labour of accurate investigation, they will be likely to conclude that what is (apparently) original, must be a production of original genius, and that anything very much opposed to prevailing notions must be a grand discovery,—in short, that whatever comes from “the bottom of a well” must be the “truth” supposed to be hidden there.

#### PUBLICATIONS RECEIVED.

Dr. Amédée Pichot's new work, *THE LIFE AND LABOURS OF SIR CHARLES BELL* makes its appearance in England in the guise of a wretched translation. It is not creditable to our literature that it should have been left to a Frenchman to write the life of an Englishman, the author of the greatest biological discovery that has been made since the days of Harvey, and to an incompetent translator to put the French biography into a Gallo-Anglican jargon.

Sir James Prior has, with his well known diligence, collected materials for a *LIFE OF EDWARD MALONE, EDITOR OF SHAKESPEARE*, and has embodied them in a large volume full of crudities, and slip slop.

It has for some time now been pretty generally recognized that “Physiology, in its application to the preservation of health, should be made a part of general education,” but the question remained, how was this to be accomplished? The books in popular use—those of Southwood Smith, A. Combe, Dr. Elliotson, G. H. Lewes, &c., all excellent for educated people, are far too technical, too scientific, and full of long words for use in our common schools; but, in the work before us, Mrs. Bray seems thoroughly to have mastered all difficulties of this kind in her *PHYSIOLOGY FOR COMMON SCHOOLS*, and to have brought the subject quite within the range of ordinary juvenile comprehension. Not only may this book be successfully used in schools, but we agree with its author, that if introduced into the houses of the poor “it may be one means of giving them faith in pure air, soap and water, wholesome diet, and temperate habits.” We cordially recommend this cheap book to the many thousands to whom such a book has long been a desideratum.

*LONDON AT A GLANCE* is an exceedingly handy book of a novel character, and is likely, for all ordinary purposes, to supersede the use of the sheet map of the metropolis, which it greatly surpasses in utility and convenience. The streets of London now cover an area of more than fifty square miles. The new guide through this labyrinth is a thin octavo volume, forming an illustrated atlas of thirty-six maps in sections, and a key map of the whole, with indexes of street references, public buildings, places of amusement, &c. It will be invaluable as a vade mecum for visitors to London, and may aspire to be as popular among residents as the Post-Office Directory. The plan of the work is excellent and could hardly be changed for the better, but experience will no doubt suggest improvements of detail. We would suggest for instance, lists, and if possible, diagrams of omnibus routes, as likely to prove very welcome additions.

#### BOOKS.

*The Life and Labours of Sir Charles Bell, K.C.H., &c.* By Amédée Pichot, M.D.

*Life of Malone, Editor of Shakespeare, with Selections from his Manuscript Anecdotes.* By Sir James Prior, &c. With a Portrait.

*Perils and Panics of Inoculation in 1796-7-8, 1804-5, and at the Present Time.* By Humphrey Blunt.

*Is it not Written? being the Testimony of Scripture against Romanism.* By Edward S. Pryce, A.B.

*Government upon First Principles, Proved and Illustrated Analogically.* By John Grosvenor.

*Woman's Temptation.* A Novel. Edited by the Hon. Mrs. Ralph Dutton. In three volumes.

*Deafness and Diseases of the Ear.* The Fallacies of the Present Treatment Exposed, and Remedies Suggested. From the Experience of Half a Century. By W. Wright, Esq.

*Four Years in Burmah.* By W. H. Marshall, Esq. In two volumes.

*Scotland in the Middle Ages: Sketches of Early Scotch History and Social Progress.* By Cosmo Innes, Professor of History in the University of Edinburgh.

*Narrative of the Embassy of Rui Gonçales de Clavijo to the Court of Timour, at Samarcand, A.D. 1403-6.* Translated, for the first time, with Notes, a Preface, and an Introductory Life of Timour Beg, by Clements R. Markham, F.R.G.S. (Hakluyt Society.)

*Through the Tyrol to Venice.* By Mrs. Newman Hall.

*London at a Glance.* An Illustrated Atlas of London. Containing thirty-six Maps in sections, a Key Map of the Whole of London, seven thousand Street References, a General Index to the Public Buildings, Hotels, Places of Amusement, &c.

*Lectures on the Mountains; or the Highlands and Highlanders of Strathpey and Badenoch.* Second Series.

#### NEW EDITIONS AND REPRINTS.

*Conquest and Colonisation in North Africa; being the substance of a Series of Letters from Algeria published in the Times, with Introduction and Supplement containing the most recent French and other information on Morocco.* By George Wingrove Cooke.

*The Culture of Fruits and Vegetables.* By George Glenny, F.H.S.

*The Culture of Flowers and Plants.* By George Glenny, F.H.S.

*Poems and Essays.* By the late William Caldwell Roscoe. Edited, with a Prefatory Memoir by his Brother-in-Law, Richard Holt Hatton. In two volumes.

*The Colloquies of Edward Osborne, Officer and Clothworker, of London.* By the Author of “Mary Powell.” Third Edition.

*Physiology for Common Schools, in twenty-seven easy Lessons.* By Charles Bray.

#### LITERARY NEWS.

“The Posthumous Papers of John Hunter, on Natural History, Physiology, Generation, Psychology, Palaeontology, and Comparative Anatomy,” edited, with Notes, by Professor Owen, are about to be published by Mr. John Van Voorst, 1, Paternoster Row.

Messrs. Blackwood and Son are reprinting in a separate form, the poem of “St. Stephen’s,” lately published in *Blackwood’s Magazine*, and attributed generally to Sir Edward Bulwer Lytton.

“The Jacobite Minstrelsy of Scotland,” edited, with an introduction and notes, by Dr. Charles Mackay, is announced as forthcoming by Messrs. R. Griffin and Co.

Messrs. A. and C. Black have in the press an “Introduction to the History of English Literature,” by Robert Demaus, M.A.; and a “Compendium of English and Scotch Law,” by James Paterson, Barrister-at-Law.

Mr. Lumley is reprinting an old English book of some interest in a literary, as well as in a theological point of view. It is “The Femall Glory; or the Life and Death of our Blessed Lady, the Holy Virgin Mary, God’s Owne Immaculate Mother, by Anth: Stafford, Gent.” The work was written with the approval of Archbishop Laud, and published in the year 1635. It was vehemently assailed by the Puritans and as warmly defended by the High Church party.

A translation of the Marquis de Moyes’s “Recollections of the Embassy of Baron Gros to China and Japan, in 1857-58,” is in course of preparation by Messrs. Richard Griffith and Co.

Among the new works just issued from the American press, are a “History of Georgia, from its first discovery by Europeans to 1798,” by the Reverend Dr. Stevens; “South and North, or Impressions received during a Trip to Cuba and the South,” by John S. C. Abbott; and “Travel and Study in Italy,” by Charles Eliot Norton.

The second and last volume of the “Dictionnaire des Synonymes,” by M. Guizot, is announced by Didier and Co., Paris. This work is to form part of the collected works of the author, of which twenty-five volumes have already appeared.

All the French papers contain advertisements of the “Œuvres complètes de Lamartine: édition personnelle, définitive, unique,” in forty volumes. It is understood that the holders of the copyright of Lamartine’s works, seeing the failure of the subscription lately made on his behalf, have given up their rights in favour of the author, who is now publishing this new edition himself.

The third volume of the “Mémoires de M. Dupin,” has just been published by H. Plon, Paris. The book contains the Parliamentary career of the distinguished statesman during the period from 1832 to 1840, all which time he was President of the Chamber of Deputies.

Messrs. Hachette and Co., Paris, have just published a new “Histoire de Jeanne d’Arc,” by M. Wallon, of the Institute, Professor of History at the Faculté des Lettres; as also the first three volumes of a new edition of the “Lettres de Madame de Sevigné,” edited, with numerous notes and emendations, by M. de Monmerque.

A new work of fiction by M. Victor Hugo, entitled “Les Misérables,” and illustrative of the sufferings of the poor, is announced to appear in a *Revue* about to be founded at Paris by MM. Hetzel and Michel Lévy, frères.

The concluding volumes of the “Correspondance de Béranger,” have been issued by M. Perrotin, Paris. The work now consists of four books, containing 1200 letters, and a catalogue and abrégé of 1500 others.

A “Histoire des plus célèbres Amateurs, et de leurs Relations avec les Artistes,” in five volumes, by M. Jules Dumernil, has been published by Dentu, Paris. The work is divided into sections, containing the respective histories of English, Flemish, Dutch, German, Spanish, French, and Italian amateurs.

“Découverte de Paris par une famille Anglaise” is the title of a very amusing work, with a great amount of open and covert perisiflage on England, just published by Hachette, Paris. It is from the pen of Signor Ruffini, author of “Docteur Antonio et Lorenzo Benoni.”

Two works on and by ladies have just been published at Paris; namely, “Les Femmes Chasseresses,” by the Comtesse d’Houdetot; and “L’Amour et la Femme,” by the fair feuilletoniste who writes under the nom de plume of Vicomtesse de Dax.

A military and historical work, entitled “Description des Batailles dont la Belgique a été le Théâtre,” by Captain Coussement, of the Royal Belgian Artillery, has been published by M. Flatau, Brussels.

The first volume of the “Voyage de J. Linden, exécuté par ordre du Gouvernement Belge dans les Régions Inter-tropicales de l’Amérique du Sud, pendant les années 1841 à 1845,” has appeared at Brussels. The work, which will be complete in three volumes, is published at the expense of the Belgian Government.

Two works, by very notable political personages of the present time, are about to be published, in Italian, at Milan. The first is a “Collection of the Political and Economical Writings of Count Cavour,” the second “Considerations upon Central Italy,” by Signor Buoncompagni.

The famous Neapolitan improvisatrice, Giannina Milli, extemporized on patriotic subjects at the Academy of Milan, on the 13th of this month. Some of her lyrical improvisations have appeared in the Italian journals, and are very highly spoken of.

Bernadoni of Milan has published a complete “Guide to Milan,” “Guida di Milano,” which is likely to supersede the old guide-books compiled under Austrian control. “A History of Italian, German, and French Music,” by F. Brendel, has appeared at Milan, as well as an historical essay on the contemporaneous drama, “Cenni sul Teatro Drammatico Contemporaneo,” by Francesco dall’ Ongaro, the celebrated poet.

In Milan also is published a scientific monthly periodical. It is divided into three heads:—“Universal Annals of Medicine,” “Universal Annals of Statistics, Public Economy, History, Travels and Commerce,” and “Annals of Chemistry applied to Medicine.” The editors are said to be men fully competent to deal with their subjects.

A remarkable volume is about to issue from the publishing house of Mr. John Chapman. It is called *Pentateuchism Analyzed*, and it gives, in a very readable form, a review of the first section of the Pentateuch,

Not only was Wycliffe the earliest of the Reformers, and in all respects worthy to rank with the best of that illustrious brotherhood, but in one grand excellence he stood alone, the best and wisest of them all. His mind was the first to conceive, his tongue and his pen were the first to maintain unceasingly the principle of universal freedom for religious belief. Through five centuries of hideous blundering, the world has been slowly learning the holy truth which his genius discerned and his charity embraced in an age of universal intolerance, and scarcely yet has the practice of it been completely and unassailably established even among the most enlightened communities. England should be as proud of the author of this great discovery in morals, as she is of Bacon and Newton. Wycliffe is known to us only by his deeds and by his writings, and they contain not a single allusion which could help to render less abstract and more concrete the mental image which we try to associate with his name. Personally, he is as little known to us as Shakspeare:—

"But can we not gather some knowledge of this man from the very absence of all ordinary information? Must he not have been a singularly self-oblivious man, singularly absorbed by and intent upon his work, singularly thoughtless about who was doing it,—who has not left the slightest image or impress of himself on anything he wrote and did? He appears before us the least egotistical and the most faultless of all our Reformers. For a quarter of a century, he lived in the stormy atmosphere of controversy. In his invectives, he was violent and unrestrained; he lashed, with unrelenting severity, the ambition, the luxury, the worldliness, the selfishness of friars, prelates, priests. But he never, so far as I am aware, was involved in a personal quarrel; he never stooped to personal abuse. No individual friar, priest, or prelate, is ever selected to suffer beneath his lash. And though all the vocabulary of abuse was exhausted upon him in return by his irritated adversaries, they have not named a single instance in which he spoke a word that he had to retract, or did a deed for which he had to apologize. The truth is, Wycliffe's vehemence is altogether different from that of Luther or of Knox. It had not a touch or tinge in it of arrogance or resentment; it was the vehemence, not of passion, but of the moral sense. It was the moral nature that, set on fire, glowed with all the heat but with none of the virulence of passion. There is not a trace of the proudful, the vindictive, or of the malign emotions in his rudest assault.

"It would have been a pleasing task to have spoken of the deep personal piety of this great and good man, but the occasion is not suitable for such a theme. I have but to say a word in conclusion, as to the unique position which, as a public man, he occupies in the history of the Reformation. Princes and States, whose wealth had been wasted, whose liberties had been imperilled, had stood up before his time, to resist the ambitious encroachments of the Papacy. Good and holy men within the bosom of the Church had mourned over the corruptions and abuses that prevailed, and single doctrines, touching even vital matters of the faith, had been questioned or denied, and whole communities in the valleys of the Alps and in the plains of Languedoc stood aloof from her communion altogether, professed a purer faith, and practised a simpler worship. But Wycliffe was the first, after that great sacerdotal system of Rome had attained its maturity and strength, who stood up in the high places of the field, and, as the friend at once of reason and of Scripture, addressing himself to the scholar and the divine as well as to the peasant, denounced that system out and out as unscriptural, unreasonable, deceiving, enlaving, degrading the human spirit, and who held up in its stead the simple doctrine of the Redeemer, and the simple institute of the Church as set forth in Holy Writ.

"Had he at that early age in which he lived seen but half the length he saw,—had he done but half of what he did,—had he attacked but one or two of the chief strengths of the enemy, and brought into action but one or two of the great engines of war,—our eye had fixed on him as the foremost pioneer of that great host led on by Luther, who, far in advance of all the rest, alone in the thickest of the enemy, had first lifted the war-cry of the Reformation, and commenced the battle. But, a century and a half before the ranks mustered under their great German leader, to see this solitary English soldier fighting that battle as he did, taking up every position that was afterwards taken up, using every instrument of war that afterwards was used, assaulting every stronghold that was afterwards assaulted—nay, more, advancing in more than one direction farther than ever Luther led—alone, deserted, pressing on to the last, not a jot of heart or hope abated, his last strokes his strongest, till he fell, but fell all confident that he left victory in store for those who followed; what annalist of the great campaign shall describe to us the place and part in it that such a warrior filled, or who shall weave for us the crown that we would like to plant upon his pale and palsied brow?"

#### OBJECTIONS TO MR. DARWIN'S THEORY OF THE ORIGIN OF SPECIES.

REVISED AND CORRECTED BY THE AUTHOR.

The remarks on Darwin's Theory of Species (sent to our office by the Archbishop of Dublin), are reprinted, word for word, as they were returned to us by their author. In justice to him we adopt this course, as in consequence of his absence from his usual place of residence, our proof sheets did not reach him in time for our previous publication.

Before writing about the transmutation theory, I must give you a skeleton of what the theory is:—

1st. *Species are not permanent; varieties are the beginning of new species.*

2d. Nature began from the simplest forms—probably from one form—the primeval monad, the parent of all organic life.

3d. There has been a continual ascent on the organic scale, till organic nature became what it is, by one continued and unbroken stream of onward movement.

4th. The organic ascent is secured by a Malthusian principle through nature,—by a battle of life, in which the best in organization (the best varieties of plants and animals) encroach upon and drive off the less perfect. This is called the theory of *natural selection*.

It is admirably worked up, and contains a great body of important truth; and it is eminently amusing. But it gives no element of strength to the fundamental theory of transmutation; and without specific transmutations natural selection can do nothing for the general theory.\* The

\* It is worth remarking that though no species of the *horse* genus was found in America when discovered, two or three *fossil* species have been found there. Now, if these horses had (through some influence of climate) been transmuted into tapirs or buffaloes, one might expect to see the *tendency* at least towards such a change in the numerous herds of wild horses—the descendants of those brought from Europe—which are now found in both South and North America.

flora and fauna of North America are very different from what they were when the Pilgrim Fathers were driven out from old England; but, changed as they are, they do not one jot change the collective fauna and flora of the actual world.

5th. We do not mark any great organic changes *now*, because they are so slow that even a few thousand years may produce no changes that have fixed the notice of naturalists.

6th. But *time is the agent*, and we can mark the effects of time by the organic changes on the great geological scale. And on every part of that scale, where the organic changes are great in two contiguous deposits of the scale, there must have been a corresponding lapse of time between the periods of their deposition—perhaps millions of years.

I think the foregoing heads give the substance of Darwin's theory; and I think that the great broad facts of geology are directly opposed to it.

Some of these facts I shall presently refer to. But I must in the first place observe that Darwin's theory is not *inductive*,—not based on a series of acknowledged facts pointing to a *general conclusion*,—not a proposition evolved out of the facts, logically, and of course including them. To use an old figure, I look on the theory as a vast pyramid resting on its apex, and that apex a mathematical point. The only facts he pretends to adduce, as true elements of proof, are the *varieties* produced by domestication, or the *human artifices* of cross-breeding. We all admit the varieties, and the very wide limits of variation, among *domestic animals*. How very unlike are poodles and greyhounds! Yet they are of one species. And how nearly alike are many animals,—allowed to be of distinct species, on any acknowledged views of species. Hence there may have been very many blunders among naturalists, in the discrimination and enumeration of species. But this does not undermine the grand truth of nature, and the continuity of true species. Again, the *varieties*, built upon by Mr. Darwin, are varieties of domestication and *human design*. Such varieties could have no existence in the old world. Something may be done by cross-breeding; but mules are generally sterile, or the progeny (in some rare instances) passes into one of the original crossed forms. The Author of Nature will not permit His work to be spoiled by the wanton curiosity of Man. And in a state of nature (such as that of the old world before Man came upon it) wild animals of different species do not desire to cross and unite.

Species have been constant for thousands of years; and time (so far as I see my way) though multiplied by millions and billions would never change them, so long as the conditions remained constant. Change the conditions, and old species would disappear; and new species *might* have room to come in and flourish. But how, and by what causation? I say by *creation*. But, what do I mean by creation? I reply, the operation of a power quite beyond the powers of a pigeon-fancier, a cross-breeder, or hybridizer; a power I cannot imitate or comprehend; but in which I can believe, by a legitimate conclusion of sound reason drawn from the laws and harmonies of Nature. For I can see in all around me a *design* and purpose, and a mutual adaptation of parts, which I *can* comprehend,—and which prove that there is exterior to, and above, the mere phenomena of Nature a great prescient and designing cause. Believing this, I have no difficulty in the repetition of new species during successive epochs in the history of the earth.

But Darwin would say I am introducing a *miracle* by the supposition. In one sense, I am; in another, I am not. The hypothesis does not *suspend* or *interrupt* an established law of Nature. It does suppose the introduction of a new phenomenon unaccounted for by the operation of any *known* law of Nature; and it appeals to a power above established laws, and yet acting in harmony and conformity with them.

The pretended physical philosophy of modern days strips Man of all his moral attributes, or holds them of no account in the estimate of his origin and place in the created world. A cold atheistical materialism is the tendency of the so-called material philosophy of the present day. Not that I believe that Darwin is an atheist; though I cannot but regard his materialism as atheistical; because it ignores all rational conception of a final cause. I think it untrue, because opposed to the obvious course of Nature, and the very opposite of inductive truth. I therefore think it intensely mischievous.

Let no one say that it is held together by a *cumulative* argument. Each series of facts is laced together by a series of assumptions, which are mere repetitions of the one false principle. You cannot make a good rope out of a string of air-bubbles.

I proceed now to notice the manner in which Darwin tries to fit his principles to the facts of geology.

I will take for granted that the known series of fossil-bearing rocks or deposits may be divided into the Palæozoic; the Mesozoic; the Tertiary or Neozoic; and the Modern—the Fens, Deltas, &c., &c., with the spoils of the actual flora and fauna of the world, and with wrecks of the works of Man.

To begin then, with the Palæozoic rocks. Surely we ought on the transmutation theory, to find near their base great deposits with *none but the lowest forms of organic life*. I know of no such deposits. Oken contends that life began with the infusorial forms. They are at any rate well fitted for fossil preservation; but we do not find them. Neither do we find beds exclusively of hard corals and other humble organisms, which ought, on the theory, to mark a period of vast duration while the primeval monads were working up into the higher types of life. Our evidence is, no doubt, very scanty; but let not our opponents dare to say that it makes for *them*. So far as it is positive, it seems to me point-blank *against them*. If we build upon imperfect evidence, they commence without any evidence whatsoever, and against the evidence of actual nature. As we ascend in the great stages of the Palæozoic series (through Cambrian, Silurian, Devonian, and Carboniferous rocks) we have in each a *characteristic* fauna; we have no wavering of species,—we have the noblest cephalopods and brachiopods that ever existed; and they preserve their typical forms till they disappear. And a few of the types have endured, with specific modifications, through all succeeding ages of the earth. It is during these old periods that we have some of the noblest ichthyic forms that ever were created. The same may be said, I think, of the carboniferous flora. As a whole, indeed, it is lower than the living flora of our own period; but many of the old types were grander and of higher organization than the corresponding families of the living flora; and there is no wavering, no wanting of organic definition, in the old types. We have some land reptiles (batrachians), in the higher Palæozoic periods, but not of a very low type; and the reptiles of the

permian groups (at the very top of the Palaeozoic rocks,) are of a high type. If all this be true, (and I think it is,) it gives but a sturdy grist for the transmutation-mill, and may soon break its cogs.†

We know the complicated organic phenomena of the Mesozoic (or Oolitic) period. It defies the transmutationist at every step. Oh! but the document, says Darwin, is a fragment. I will interpolate long periods to account for all the changes. I say, in reply, if you deny my conclusion grounded on positive evidence, I toss back your conclusions, derived from negative evidence—the inflated cushion on which you try to bolster up the defects of your hypothesis. The reptile fauna of the Mesozoic period is the grandest and highest that ever lived. How came these reptiles to die off, or to degenerate? And how came the Dinosaurs to disappear from the face of Nature, and leave no descendants like themselves, or of a corresponding nobility? By what process of *natural selection* did they disappear? Did they tire of the land, and become Whales, casting off their hind-legs? And, after they had lasted millions of years as whales, did they tire of the water, and leap out again as Pachyderms? I have heard of both hypotheses; and I cannot put them into words without seeming to use the terms of mockery. This I do affirm, that if the transmutation theory were proved true in the actual world, and we could hatch rats out of the eggs of geese, it would still be difficult to account for the successive forms of organic life in the old world. They appear to me to give the lie to the theory of transmutation at every turn of the pages of Dame Nature's old book.

The limits of this letter compel me to omit any long discussion of the Tertiary Mammals, of course including man at their head. On physical grounds, the transmutation theory is untrue, if we reason (as we ought to do) from the known to the unknown. To this rule, the Tertiary Mammals offer us no exception. Nor is there any proof, either ethnographical or physical, of the bestial origin of man.

And now for a few words upon Darwin's long interpolated periods of geological ages. He has an eternity of past time to draw upon; and I am willing to give him ample measure; only let him use it logically, and in some probable accordance with facts and phenomena.

1st. I place the theory against facts viewed collectively. I see no proofs of enormous gaps of geological time, (I say nothing of years or centuries,) in those cases where there is a sudden change in the ancient fauna and flora. I am willing, out of the stock of past time, to lavish millions or billions upon each epoch, if thereby we can gain rational results from the operation of *true causes*. But time and "natural selection" can do nothing if there be not a *vera causa* working with them.‡ I must confine myself to a very small number of the collective instances.

2d. Towards the end of the carboniferous period, there was a vast extinction of animal and vegetable life. We can, I think, account for this extinction mechanically. The old crust was broken up. The sea bottom underwent a great change. The old flora and fauna went out; and a new flora and fauna appeared, in the ground, now called permian, at the base of the new red sandstone, which overlies the carboniferous rocks. I take the fact as it is, and I have no difficulty. The time in which all this was brought about may have been very long, even upon a geological scale of time. But where do the *intervening* and connecting types exist, which are to mark the *work of natural selection*? We do not find them. Therefore, the step onwards gives no true resting-place to a baseless theory; and is, in fact, a stumbling-block in its way.

3d. Before we rise through the new red sandstone, we find the muschel-kalk (wanting in England, though its place on the scale is well-known) with an *entirely new* fauna: where have we a proof of any enormous lapse of geological time to account for the change? We have no proof in the deposits themselves: the presumption they offer to our senses is of a contrary kind.

4th. If we rise from the muschel-kalk to the lias, we find again a new fauna. All the anterior species are gone. Yet the passage through the upper members of the new red sandstone to the Lias is by insensible gradations, and it is no easy matter to fix the physical line of their demarcation. I think it would be a very rash assertion to affirm that a great geological interval took place between the formation of the upper part of the new red sandstone and the lias. Physical evidence is against it. To support a baseless theory, Darwin would require a countless lapse of ages of which we have no commensurate physical monuments; and he is unable to supply any of the connecting organic links that ought to bind together the older fauna with that of the lias.

I cannot go on any further with these objections. But I will not conclude without expressing my deep aversion to the theory; because of its unflinching materialism;—because it has deserted the inductive track,—the only track that leads to physical truth;—because it utterly repudiates final causes, and thereby indicates a demoralized understanding on the part of its advocates. By the word, demoralized, I mean a want of capacity for comprehending the force of moral evidence, which is dependent on the highest faculties of our nature. What is it that gives us the sense of right and wrong, of law, of duty, of cause and effect? What is it that enables us to construct true theories on good inductive evidence? Theories which enable us, whether in the material or the moral world, to link together the past and the present. What is it that enables us to anticipate the future, to act wisely with reference to future good, to believe in a future state, to acknowledge the being of a God? These faculties, and many others of like kind, are a part of ourselves; quite as much so as our organs of sense. All nature is subordinate to law. Every organ of every sentient being has its purpose bound up in the very law of its existence. Are the highest conceptions of man, to which he is led by the necessities of his moral nature, to have no counterpart or fruition? Are they all a cheat and a mockery, and therefore out of harmony with nature? I say no, to all such questions; and fearlessly affirm that we cannot speculate on man's position in the actual world of nature, on his destinies, or on his origin, while we keep his highest faculties out of our sight. Strip him of these faculties, and he becomes entirely bestial; and he may well be (under such a false and narrow view) nothing better than the natural progeny of a beast, which has to live, to beget its likeness, and then die for ever.

† I forbear to mention the *Stagonolepis*, a very highly organized reptile, the remains of which were found, by Sir B. I. Murchison, in a rock near Elgin, supposed to belong to the old red sandstone. Some doubts have been expressed about the age of the deposit. Should the first opinion prove true (and I think it will), we shall then have one of the oldest reptiles of the world exhibiting, not a very low, but a very high organic type.

‡ See reference on *Time*, in the *Annotations on Bacon's Essays*.

By gazing only on material nature, a man may easily have his very senses bewildered (like one under the cheater of an electro-biologist): he may become so frozen up, by a too long continued and exclusively material study, as to lose his reliab for moral truth, and his vivacity in apprehending it. I think I can see traces of this effect, both in the origin and in the details of certain portions of Darwin's theory; and, in confirmation of what I now write, I would appeal to all that he states about those marvellous structures,—the comb of a common honey-bee, and the eye of a mammal. His explanations make demands on our credulity, that are utterly beyond endurance, and do not give us one true natural step towards an explanation of the phenomena—viz., the perfection of the structures, and their adaptation to their office. There is a light by which a man may see and comprehend facts and truths such as these. But Darwin wilfully shuts it out from our senses; either because he does not apprehend its power, or because he disbelieves in its existence. This is the grand blemish of his work. Separated from his sterile and contracted theory, it contains very admirable details and beautiful views of nature,—especially in those chapters which relate to the battle of life, the variations of species, and their diffusion through wide regions of the earth.

In some rare instances, Darwin shows a wonderful credulity. He seems to believe that a white bear, by being confined to the alops floating in the Polar basin, might in time be turned into a whale; that a lemur might easily be turned into a bat; that a three-toed tapir might be the great grandfather of a horse; or that the progeny of a horse may (in America) have gone back into the tapir.

But any startling and (supposed) novel paradox—maintained very boldly and with an imposing plausibility, derived from a great array of facts all interpreted hypothetically—produces, in some minds, a kind of pleasing excitement, which predisposes them in its favour: and if they are unused to careful reflection, and averse to the labour of accurate investigation, they will be likely to conclude that what is (apparently) original, must be a production of original genius, and that anything very much opposed to prevailing notions must be a grand discovery,—in short, that whatever comes from "the bottom of a well" must be the "truth" which has been long hidden there.

#### PUBLICATIONS RECEIVED.

The new number of the EDINBURGH REVIEW opens with a survey of the "Commercial Relations of England and France," in the first paragraph of which are these remarkable words, said to have been uttered by Napoleon I. at St. Helena in condemnation of the restrictive or protective system of commercial policy, as applied to the French nation:—"We must fall back on the free navigation of the sea, and the entire freedom of universal interchange." The writer of the article waves aside all the objections that have been made to the recent Treaty on this side of the Channel, as having been answered in the proper place; declares that the bases on which it rests are broad and secure; and is content "to stake the future relations of England and France, upon which the peace and welfare of the whole world largely depend, upon this great trial." But this opinion is reconsidered in the last page of the number, with a large abatement of confidence, the annexation of Savoy, contrary to the guaranteed rights of Switzerland, being declared to be an act of evil augury for the future, and one which can have but a temporary impunity. Among the literary articles in this number, not to mention sundry reviews of books, there are three in which all readers will be more than commonly interested. The first in our esteem is an essay on "English Local Nomenclature," being the complement of an ingenious paper on "English Surnames," published five years ago in the same journal. The next is a long examination, able and candid, of Mr. Darwin's theory of the Origin of Species, which the writer holds to be not proven.—"The alleged Shakspeare Forgeries," is the subject of the third paper. The writer is severe upon Mr. Collier's opponents, and inclines to acquit that gentleman of the charges insinuated against him on the plea of incapacity; for how could a man of his "loose, forgetful, imperfect, wandering kind of understanding" be "the perpetrator of a singularly curious and elaborate system of forgeries, of surprisingly vigorous execution?" The reviewer, however, can make out no case in favour of Mr. Collier with respect to the interpolation in the Alleyne letter; but admits that, "if Mr. Netherclift junior's facsimile is correct, the name of Shakspeare not only is not there, but would not have been there"; and his general conclusion is that "there is a mystery, and an obscurity hanging over the Corrected Folio, and some of the Shakspeare documents, which we cannot pretend to remove."

RIGHTS OF NATIONS, OR THE NEW LAW OF EUROPEAN STATES APPLIED TO THE AFFAIRS OF ITALY, is a translation of a work published about four months ago at Turin, by Count Mamiani, a distinguished member of the Sardinian Cabinet, and is dedicated by permission to Lord John Russell. The work is not as might be—too hastily inferred from its English title—merely a bulky pamphlet, pertinent only to the present phase of Italian politics. It is a scientific treatise of a high order, strict in method but popular in style; applicable throughout to current affairs, but by no means limited to that application; and its purpose is to consolidate under the form of a logical theory, the ideas that are now tending to establish the rule of non-intervention.

SCOTLAND IN THE MIDDLE AGES, by Mr. Cosmo Innes, Professor of History in the University of Edinburgh, is a series of sketches of the early social life and progress of Scotland, originally read in the shape of lectures to a class. One lesson, the author is of opinion he has succeeded in conveying, namely, "that true history is best to be learned from the study of its genuine materials, and not from the twice-told tale of the historians of the bookshelves." Prefixed to the sketches are maps that are intended to illustrate the author's notions of old Scotland and its progress; accompanied by explanatory notes and lists of places, and other topographical apparatus. The first two chapters of the volume, which are introductory, trace the origin and development of modern political society, commencing with the era of Charlemagne. As a clear, vivid picture, in little, of the person, the doings, and times of the founder of the great European republic, we may commend the historical exhibition contained in the initial chapter. The growth of the feudal system, the Roman civilization in Britain, the Saxon domination, and the Norman conquest, are all well described and fairly estimated in the second chapter. The earliest historical times of Scotland are treated in the second chapter. The fourth chapter delineates the Scotland of David I., with