

£32 0s. 4d. The subscriptions for the year amounted to £155 8s., and the Provincial Government made a grant to the Society of £100 for the purchase of books and museum objects. The amount of £79 12s. 3d. has been expended in books, and £73 3s. on objects for the Museum.

ELECTION OF OFFICERS FOR 1872. — President, T. Heale; *Council*— J. L. Campbell, M.D., T. B. Gillies, Rev. A. G. Purchas, M.R.C.S.E., Hon. Col. Haultain, T. Russell, T. Kirk, F.L.S., J. Stewart, C.E., H. H. Lusk, T. F. S. Tinne, J. M. Clark, Rev. J. Kinder, M.A.

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SECOND MEETING. 24th June, 1872.

T. Heale, President, in the chair.

*New members.*—T. L. White, S. P. Smith, N. Kelly, R. J. Pearce, E. Perkins.

The list of donations to the Library and Museum was read by the Secretary.

The President delivered the following anniversary

A D D R E S S.

I propose, in opening this session, to take a slight and cursory review of some of the leading subjects which are agitating scientific opinion at home, and the familiarizing of which by discussion here should, in my opinion, form one of the leading objects of this Society, in due subordination, of course, to its proper function of investigating, discussing, and recording the natural phenomena around us.

The difficulty of keeping the mind at all on a level with current knowledge and advancement on the larger subjects of investigation, is one of the disadvantages incident to a colonial life. This disadvantage our Society has striven to lessen by obtaining, as far as its slender means have afforded, a nucleus of a scientific library, to which we hope to make continual additions, and which is freely open to the public. I propose to make an attempt to utilize these books, or at all events to draw attention to them, by one of those slight and conversational papers which I have before recommended, and which though not suitable for publication in our *Transactions*, inasmuch as it is not scientific, nor based on original investigation, may serve to stimulate attention and perhaps to elicit replies, and so to make our monthly meeting more interesting to those members not devoted to natural history.

I think I am safe in assuming that by far the leading place in scientific, or indeed in intelligent unscientific thought, is occupied in our day by the discussions arising out of the great and fertile theory of the development of species, propounded by Mr. Darwin; a theory which Prof. Huxley has happily

termed the *Novum organon* of biologists. It is true that the leading principles of Darwinism, that clear and luminous law of constant variation in the individual offspring of all creatures, and the survival of the fittest, have well nigh passed out of the pale of discussion, and have become almost universally received as an "established scientific truth.\*"

But the value and importance of this theory is that it is not a simple discovery which once made has but to be accepted and registered in the records of science, but that it is the enunciation of a principle—a law—the operations of which have yet to be traced backwards into the remotest past, to the very origins of life, and forward to possible developments of it, perhaps yet undreamt of;—a principle which has stirred to its depth every branch of science and thought, which has given them a fresh impulse and new aims, and has elevated what were before but collections of isolated facts into fertile elements of inductive reasoning, and evidences of an universal sequence of cause and effect leading continually onwards and upwards, from the humblest beginnings of life, to a future of which no limits can be discerned.

That such a theory should, in its larger developments, excite opposition was not only natural but desirable. Discussion, the conflict of opposite opinion, seems to be the sole means given to man for the certain discovery of recondite truth; and the fertility of a new principle may perhaps be measured by the amount of opposition and controversy it meets with on its promulgation.

But the chief objections taken to Darwinism are not to the theory in itself or in its nearer or more familiar results, but rather to some of the larger deductions which may be more or less hypothetically drawn from it—to some of its special applications, as the descent of man—and especially to its sufficiency as the one law by which all the developments into which life has branched can be accounted for.

The views of the leading opponents, or rather modifiers of the theory, remaining in the field in our own language, and I do not profess to go further, are I imagine fairly represented.

1. By the Duke of Argyll in his well known book "The Reign of Law."
2. By Mr. St. George Mivart in "The Genesis of Species"; and
3. By Mr. Wallace, the co-discoverer of the law, and its most able and successful supporter, but who has suggested some limitations to it with far more effect, as it appears to me, than any of its avowed opponents.

Now the positions of the Duke of Argyll, as I understand them, are:—

1. He admits that the existing and past conditions of the world—that which we comprise in the idea of creation—have been brought about by the "use of means working to an end;" by the operation of that uniform, orderly, and invariable sequence of phenomena which we call a law; that this

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\* "Reign of Law," p. 219.

law is still in operation, and that branches of it, if not the whole, lie within the power of the intellect of man to trace, and therefore it must be man's duty to investigate and discover them.\*

2. He recognizes the facts of natural selection, variation of offspring, the struggle for existence and the survival of the fittest—to a certain extent at all events—as a part of this law; or, as he prefers to put it, as “accounting for the success and establishment and spread of new forms when they have arisen.”

3. But he opposes the true Darwinian view that the individual variations always occurring are infinite in number and in every direction, and that the fittest survives to the exclusion of the vast majority of other variations as a natural consequence of its fitness; but he demands in each case the exercise of a special will or creative act in directing the particular variation which is intended to survive, and which then does survive by reason of its having been created more fit for the new conditions surrounding it.

Now it is not the object of my present discourse to maintain or to dispute the truth of any of the views which I am merely adverting to as occupying attention elsewhere, and as eminently fit to become subject to investigation and discussion here; but I may fairly quote the strong and, as it appears to me, crushing answer to this last “providential” theory which Mr. Darwin himself has suggested. He asks, “Can it with any probability be maintained that the Creator specially ordained for the sake of the breeder each of the innumerable variations in our domestic animals and plants;—many of these variations being of no service to man, and not beneficial, far more often injurious, to the creatures themselves? Did He ordain that the crop and tail-feathers of the pigeon should vary in order that the fancier might make his grotesque pouter and fantail breeds? Did He cause the frame and mental qualities of the dog to vary in order that a breed might be formed of indomitable ferocity, with jaws fitted to pin down the bull for man's brutal sport? But if we give up the principle in one case,—if we do not admit that the variations of the primæval dog were intentionally guided in order that the greyhound, for instance, that perfect image of symmetry and vigour, might be formed,—no shadow of reason can be assigned for the belief that variations, alike in nature and the result of the same general laws, which have been the groundwork through natural selection of the formation of the most perfectly adapted animals in the world, man included, were intentionally and specially guided.”†

Mr. St. George Mivart's recent book, “The Genesis of Species,” is

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\* See “The Reign of Law,” pp. 208–212.

† “Animals and Plants under Domestication,” Vol. II., p. 431; quoted Mivart, p. 293. Also Wallace's “Natural Selection,” p. 290.

one of a rather singular character, marked throughout by lines of thought not usually found in books of purely scientific discussion. Its object as stated by himself is, "to maintain the position that 'Natural Selection' acts, and indeed must act; but that still, in order to account for the production of known kinds of animals and plants, it requires to be supplemented by the action of some other natural law or laws as yet undiscovered. Also, that the consequences that have been drawn from Evolution, whether exclusively Darwinian or not, to the prejudice of religion, by no means follow from it, and are in fact illegitimate."\* In maintaining these positions, he has brought forward some very unexpected witnesses, not against the doctrine of all or any of the varied forms of life having been evolved from earlier forms by the continued operation of a natural law, but in favour of it. He cites St. Augustine, St. Thomas Aquinas, Cornelius à Lapide, and the Jesuit Suarez, the eminent casuist of the Spanish School, for the positions that "in the first institution of nature we do not look for *Miracles*, but for the *laws of Nature*," and that terrestrial animals were created, not immediately, but "potentially only, the kinds of which time would afterwards bring forth." And, singularly enough, he maintains, by the aid of these novel witnesses in favour of the results of modern research, that the views even of the abiogenesisists, so energetically maintained by Dr. Bastian, that life may be produced from inorganic matter without the presence of any living germ, and "that under fit conditions the simplest organisms develop themselves into relatively large and complex ones,"† are perfectly consistent with orthodox (Catholic) theology. But while admitting these apparently greater postulates, he strenuously objects to the sufficiency of the theory of natural selection to account for the derivation of species and especially to its having any share in that great development of some of the members of the order of primates, which has resulted in the appearance of men upon the earth. He insists upon the immense numerical chances against the survival of a variety, even the most favourable to the individual in the struggle for existence, if such variation should be produced only in single or in very few individuals in the presence of a great majority of a less favoured type. Again, he urges, and rather exaggerates the well-known arguments brought forward by Sir William Thomson, and established by him by transcendent mathematical analyses based on three different sets of physical hypotheses, by which he considers that he has proved that the world cannot have existed in its present condition suitable to the maintenance of animal life for more than "some such period as one hundred millions of years," and he labours to show that such a period would be insufficient for the phenomena on the Darwinian hypothesis; both of which propositions, I need hardly say, are in a high degree doubtful, as has

\* "Genesis of Species," p. 5.

† "Genesis of Species," p. 249.

been shown by many writers, and especially by Professor Huxley, in one of his best known papers.

Again, engrafting upon Darwinism the views propounded by some of the moral philosophers of the utilitarian school, especially Mr. Mill and Mr. Herbert Spencer, he argues against the views which he attributes to them, and apparently to the supporters of Darwinism generally, "that natural selection has evolved moral conceptions from perceptions of what was useful, that is pleasurable, by having through long ages preserved a predominating number of those individuals who have had a natural and spontaneous liking for practices and habits of mind useful to the race, and that the same power has destroyed a predominating number of those individuals who possessed a marked tendency to contrary practices," etc.\*

It is clear that these views are by no means a necessary part of the doctrine of development of animals by natural selection and the survival of the fittest; but that they may be abandoned or disproved without any detriment to it.

The origin of purely intellectual conceptions as distinguished from mere animal instincts is no doubt one of the great difficulties, indeed the greatest which meets the evolutionist in taking account of the development of man.

Of however low a type we may conceive man to have been at the commencement, or even in the stone period (neolithic) for instance—however much below the Hottentot or Bosjesman—still, in the mere possession of a capacity for abstract ideas, a capacity which indeed was latent, but the existence of which is proved by the large brain, the step was immense, indeed infinite, and this has been recognized by Mr. Darwin and all the leading supporters of the doctrine of development; but to seek from natural selection the origin of a particular class of mental conceptions, a class too which the majority of moral philosophers deny altogether to be intuitive, and which many believe to be a comparatively modern outcome of culture and civilization, is surely a very unfair and inadmissible line of argument.

The origin and maintenance of a race possessing a capacity for the higher mental emotions and powers, which would appear to have been at its origin of no advantage whatever to the individual in the struggle for life, is indeed a great difficulty, the greatest the Darwinists have yet met.

This difficulty has been propounded, in a manner which I think will be considered by most minds to be incomparably more conclusive than as stated by Mr. Mivart, by one who is entitled to be considered the leading apostle of the Darwinian theory up to a certain point, the eminent naturalist in fact who first publicly propounded it, and so led Mr. Darwin to publish the

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\* "Genesis of Species," pp. 212-213.

investigations which he had been for many years engaged in making on the subject, and which were not then complete.

Mr. Wallace has raised weighty objections\* which seem to suggest a further expansion of the theory so as to make it embrace some occasional and apparently violent or, at all events, sudden changes which would appear at first sight to be interferences with the course of law or to be "catastrophic," but which Professor Huxley has demonstrated may, though only occurring at intervals, be as much a part of the uniform law as those which recur rapidly.

Such difficulties and answers to them, more or less complete, are now agitating thinkers in every line of science; for it is the striking character of these discussions, and a noble result of Mr. Darwin's theory, that at last, after long pursuing divergent lines of investigation, all sciences are now meeting in front of this great question of the origin and development of life; the biologists and microscopists ardently disputing the possibility of its generation from inorganic matter; the anatomists investigating the mysterious functions of the brain and the curious facts of embryology; the palæontologist, the geologist and the botanist tracing up forms of life to the primitive type, and physiologists in common with metaphysicians labouring to the same end, seeking to obtain some notion of the action of will, mind, or spirit upon matter, or to ascertain if there be any real distinction between them. Astronomy and meteorology too have been brought to bear on the question, especially in the curious meteoric hypothesis suggested by Sir William Thomson, and Mr St. George Mivart's book affords a curious proof that this universal stirring of the mind has reached even to these tranquil regions of thought in which labours of the great scholastic philosophers of the middle ages and of the casuists who followed them usually repose.

I do not like leaving the subject without some reference to the reactions to which by an inevitable law of nature the great advances in thought made in our day have given rise; every sudden outburst of new light has produced a darkening effect in some quarters; and the eras of advance in the world have ever been marked by the wildest outbreaks of ignorance and superstition. A poet of the end of the last century says,—

"As Phœbus to the world, is science to the soul,  
And reason now through number, time, and space  
Darts the keen lustre of her serious eye."

And he then proceeds to rejoice in the victory he supposes to be gained over superstition.

The triumph was premature; the advance in science indeed, since Beattie's day, has been far greater than he could have foreseen, but credulity has not diminished but has only shifted its ground, and seems rather to increase with

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\* Wallace's "Natural Selection," pp. 332-342.

the spread of knowledge than to show any tendency to disappear ; nay instead of, as in his day, lurking in the dark places where—

“In the deep windings of the glen no more  
The hag obscene and grisly phantom dwell,”

its acolytes seem to take advantage of the popular recoil against the clear, cold deductions of reason, to come out in the face of day, and to erect their emotional ecstasies into a system.

The most popular dream of our day, the so-called spiritualism, with its walking and talking tables, and other upholstery, has hitherto taken such a shape that serious minds have not been called upon to notice it, but now when I find in several numbers of a periodical with so imposing a title as the “Quarterly Journal of Science” serious papers on what the writer calls “psychic force,” it cannot be unbecoming in anyone to refer to it. For my own part I find still the same want as before of any *facts* on which to found an induction, but whatever be the value of psychic force it is at all events a very curious and interesting fact in psychology that a gentleman of scientific eminence, and whose perfect good faith there is no reason to doubt, should really dignify by the name of experiments some oscillations produced in a balance, without apparent contact, by a professional conjurer (or “medium” which I take it is the modern slang for fortune-teller, as a barber now-a-days calls himself a professor) standing beside the friendly shelter of a dining table in connection with the apparatus, while the person who conducted the experiment, according to his own account, was engaged writing notes, and that forthwith instead of exercising his ingenuity in striving to find out “how he did it,” he should deliberately attribute these shakings to a psychic force, which is to do away with or to suspend gravitation and all those laws on which physics and astronomy depend.

I cannot consider this curious case without my mind referring to the only explanation possible of the persistent hallucination which seems to have affected so many honest but utterly mistaken witnesses on the recent trial which has excited so much attention wherever our language is spoken. It seems that the “very improbable” has a singular fascination for many minds, and that with such persons, to quote the “Saturday Review,” “as soon as the attention has been caught by some salient fact which they can believe, and which awakens their faculties of wonder, they become interested in believing the whole story, and their intellects succeed in representing every new fact as somehow confirmatory of the foregone conclusion. The lesson of the Tichborne case was an instructive one in many ways, for the secret of the claimant’s power was precisely the secret upon which all spiritualists and other impostors depend for success. A man is first asked whether he has been the victim of a hoax, or the laws of nature have been suspended.

Naturally he prefers to believe that the laws of nature have been suspended, and from that moment he becomes unintentionally the ally of the impostor, and develops a strange ingenuity in evading all difficulties, and seizing every bit of evidence that seems to make in his favour." \*

I had intended to have made some reference to spectroscopic science—to the wonderful perfection which has been attained in the measurement of minute intervals of time, intervals bearing the same proportion to a second that a second does to an hour—and especially to the great subject of astronomical interest, the approaching transit of Venus across the Sun's disc, which should be of particular interest to us, since its last occurrence in 1769 was the immediate occasion of the first exploration of these Islands, and the means of introducing them to the knowledge of the European world, and since this place is one of the forty-six stations determined on for observation of the ensuing one, by concert between the four Governments of England, France, Germany, and Russia. But I have trespassed at so inordinate a length on your attention that I will now conclude, with a hope that in the present session we shall not only have a continuance of the truly scientific papers which have hitherto given the transactions of these Societies a permanent value, but that our members, who like myself are without the technical knowledge and observant habits necessary to the collector and collator in the natural history sciences, will, nevertheless, take courage from the feeble attempt I have made to bring forward subjects requiring general and desultory reading only.

The Secretary drew attention to a remarkably fine specimen of *Solenognathus spinosissimus*, presented by Mr. Wyatt, of Mongonui, and to several other recent presentations.

1. "Notes on the Flora of the Lake District of the North Island," by T. Kirk, F.L.S. (See *Transactions*, p. 322.)

This paper was illustrated by numerous dried specimens of plants collected in the district and presented to the Museum by the Director of the Geological Survey.

2. A note by Capt. Hutton was read on the occurrence of the sprat and anchovy at the Thames, and specimens of these fishes, presented by Mr. C. O. Davis, were exhibited.

3. "On the Growth of *Phormium tenax*," by the Hon. Col. Haultain. (See *Transactions*, p. 357.)

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\* "Saturday Review," March 16, 1872, p. 331.