

5
Connection with the Natural History Soc.

State 2 members of the Soc. whom he
came to Montreal.

Look through *Naturalist* for number of
presidential addresses, papers etc.

Provision of a building (how arranged?)

Field days. Audiences at lectures.

Educational value.

Constant attendance at meetings, gain
or shine. Extemporising subjects for
meetings when no papers forthcoming.

(The disapprobation incident?)

Whitman should know or something
abt. all this.

Destruction of the old Burnside building
(Notes)

Field days & excursions with students.
Harrington?

CANADIAN PACIFIC RAILWAY COMPANY'S TELEGRAPH.

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CHAS. R. HOSMER, MANAGER TELEGRAPHS.

B. S. JENKINS, SUPT., Winnipeg, Man.
HOMER PINGLE, SUPT., Toronto, Ont.

J. WILSON, SUPT., Vancouver, B. C.
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SENT NO.

SENT BY

REC'D BY

TIME SENT

TIME FILED

CHECK

Send the following Message, subject to the above terms, which are hereby agreed to :

To

189

The Peter Redpath Museum

The writing much seems to be laid out. (this)
 It is a collection, a collection & a collection,
 I don't know of collection bit.

Established writing place there at later
 date. - did ~~not~~ all work with
 specimens there after leaving college.

Secretary
 of the
 Museum.

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To _____ 189

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Manner of working. —

Many different interests. College work always first. Very numerous. Many lectures. Executives. Reports. Little Secretarial aid.

~~Scientific work in writing only~~

Writing diagrams for lectures in early days.
Drawing on blackboard.

Original Scientific work & writing only when College work completed.

Library in the E. wing. Surrounded by Cabinets below. Book shelves above.

Boxes with special specimens on which at work
" " notes etc referring to special subjects.

Board square at front window. Lead block.

Small hammer & simple tools.
Cupboard with chemicals, test tubes, Still-lack,
Canada balsam & a few minor watercolors.

Microscope always at hand.

Scientific writing chiefly in the evenings.

Subject to interruptions which he did not seem to resent.

But later
largely reserved
for notes.

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Chief geological interest always centered
in Wardens Province, but

On coming I wanted many new pictures
to which his attention immediately directed.
(See lecture on They to be observed in Canada)
Ordovician & Plumbtonian.

Indian remains - Munster early
wooly birds & excavations.

Study of Jacques Cartier's narrative.
(This was an instance of receptivity)

Where he went downy & whiny
afterwards writing out a foolishly done.
White hats. because of his illness
proves the reculturing.

Eastern trip.

Interest in Eastern history & the biblical
origin.

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To _____ 189

Early days in Montreal before he
became so completely overwhelmed in
work.

walks with the children.

Saturday visits to Quaries & to
St. Helen's I. - then a Garrison -
permit from Commanding Officer etc.

Fishing excursions in early mornings

Remembrance of visits to the Dept. of
Education (Chorale) in ~~the~~ Fort.
Fds. (Chorale Runway) ?

Sketches of the
children.
Instruction in
various pursuits
he had himself
followed as a boy.

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To _____ 189

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Conventions. A parliament at
 meet times in which matters of
 all kinds were discussed - very
 often abstract or more or less
 political or scientific questions.

At such times a great talker, having
 little place for reply.

A habit from lecturing?

Influence upon him ⁱⁿ later years
 of his children & their opinions.

Work done at the Joffins, Sorpe etc.
 Geology & dredging.

Literature work more when travelling?

Booklets for children part of his
 program for a journey.

His part in arranging the exhibition for
 the Decembris of the Paris & London in
 Montreal in 18-

Students' meetings & the time given up to them
 Corporation of his library & setting it to
 rest again.

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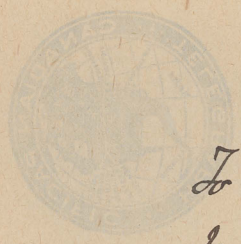
Send the following Message, subject to the above terms, which are hereby agreed to :

To _____ 189

*note - Father's
eye.*

To within a few years of his death,
 My father appeared to draw upon an
 almost inexhaustible fund of energy & vitality.
 He was seldom prevented, even for a day,
 from attending to his regular duties & engagements
 & he scarcely seemed to know, from experience,
 any of the minor pains & aches, ^{two} ~~one~~ or
~~three~~ ^{three} ~~times~~ ^{times} only I can remember that he was induced
 to keep his bed for part of a day when suffering
 from a cold, & there were impressions &
 disconcerting occasions thus as children.
 Whether in public or in ~~family~~ household
 affairs he was always ready to assume
 any duty or respond to any emergency
 not otherwise provided for. He did not ~~seem~~
~~inter~~ when ^{engaged in} busy with writing, or surrounded
 with specimens, be regretted, but did not
 resent interruptions. Very often ^{I fear} we came
 to him in the evenings with Latin exercises
 or historical ^{questions} ~~errors~~ In assistance, & we
 did not fear to do so, no matter how busy
 he ^{might be} ~~was~~ employed.

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	<i>ri</i>				

Send the following Message, subject to the above terms, which are hereby agreed to :

To _____ 189

In later years, when it came to our turn to entertain a literary & musical club of which we were members, he would come from his desk ^{to} ~~appear in~~ the drawing room before the close of the evening & take an evident & real delight in conversing with our friends, ~~young~~ young or old.

~~The students of~~
~~the university~~

The students of McGill ~~came from every~~ were of diverse kinds, many coming from isolated ~~remote~~ country places, particularly those who were preparing themselves for the Ministry of some church - the Theologicals & others were city bred & had often, so wish to do were then spend a few years in the University classes & obtain, if possible, a degree in Arts. It was primarily for the benefit of these whose homes were not in ~~Montreal~~ Montreal & whose residence there was in very modest lodgings, that receptions ~~at home~~ were organized, & in this way ~~most~~ most redoubtly cooperated. The students were invited by years or by classes to an 'at home' on some

Given evening, specimens of several
 kind, microscopes, photographs etc were
 laid out & ~~some~~ tea, coffee ~~etc~~ etc
 were provided, ^{while} some of our own were
 intimate ^{lady} friends were always found ready
 to assist with music, songs & conversation.
 Very often my father would give a short
 address on some ~~very~~ special subjects post
 the evening's entertainment. Generally on
 Zoological or historical ^{topics} subjects.

I can not truthfully say that the younger members
 of the family regarded these receptions as occasions
 of great hilarity. ~~It is~~ ~~often~~ ~~said~~ ~~that~~ ~~it~~ ~~was~~
 reported that one ~~very~~ ~~critical~~ ~~young~~ ~~of~~ ~~the~~ ~~city~~ ~~boy~~
 of Montreal or Toronto described them as meetings
 of ~~the~~ ~~character~~ ~~of~~ 'old maids & microscopes',
 a criticism of which my father proudly acknowledged
 the honour while attributing its falsity to ~~the~~ ~~the~~
 extreme south of the cynic. I mention this evening
 here, because I have since met with so many
 men in ~~various~~ ~~different~~ ~~parts~~ ~~of~~ ~~Canada~~
 from the Atlantic to the Pacific who ~~to~~ refer
 with particular interest & gratitude to them as pleasing
 interludes in their student life in Montreal.

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To

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Such an evening was of course one
 lost to my father for his own ~~work~~
 scientific work, but he did not judge it, &
 when all his guests had departed, he would
 busy himself with ~~to~~ dismounting his
 instruments & ~~pack~~ reflooding his bottles &
 specimens, humming himself, or he very
 often did when preparing to retire for the
 night, one of the old psalm tunes of
 the Scottish psalter.

Handwritten note:
 James
 Wilson

CANADIAN PACIFIC RAILWAY COMPANY'S TELEGRAPH.



Faint, mostly illegible text from the reverse side of the page, including phrases like 'The transmission of messages may be interrupted...' and 'All messages taken at this Company are subject to the following terms...'.

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To _____ 189

St. Louis

My father ^{like his father before him} delighted in gardening, in planting & sowing you rough & ready practical kind, reducing the waste spaces to culture & making them productive in flowers or in fruit. There is an indistinct ^{picture} ~~remembrance~~ of a garden in Ricker with borders of iris, ~~plum trees~~ & straight tan-tack covered walks, plum trees & apple trees & a swing hanging from ~~the~~ one of them. He appears as a tall strong figure moving there, & when I count back the years I know how young he would seem ~~to~~ to me ~~now~~ now. In Montreal, among my earliest recollections ~~is~~ is the clearing away & burning of ~~the~~ ~~thickets~~ thickets & ~~with which~~ ~~in~~ in front of his college residence & the draining & fencing of a garden ^{wherein could afford to ~~plant~~ it}. There was no gardener, but a labourer or two & his own work & direction when he could spare the time.

Soon after, the unkempt fields ~~at~~ ~~then~~ were ^{also fenced &} then when the College grounds now are, were laid out in a rough way with walks; young trees were planted & there already there

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To _____ 189

were protected. The garden was, however,
 more intimately connected with my father's life
 for there he spent very many active happy
 hours ~~He was always an early riser of the~~
 early morning, of the evenings, or on
~~Michigan~~ Saturdays when no fixed
 engagements required attention. The purchase
 of seeds in the spring was a recurrent duty
 no less important than any other; & very often,
 before the family had collected for breakfast, he
 had been busy gathering fruit or vegetables
 & appeared with a handfull of ~~ready cut~~
~~flowers~~ at the table, after an hour or
 more of work, with a handfull of ~~the~~ flowering
 branches cut at the tent were cut & then
 removed by the bells.

The garden flourished, & from time to time
 new or untried ~~plants~~ shrubs &
 trees were added to it or ~~to~~ to the
 adjacent grounds. It was with regret
 that my father applied the pruning knife. The
 rose bushes grew to the thickets of roses, & the

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To _____

189

trees so shaded the ground as to
 interfere ^{seriously} with its cultivation, but every
 one of them was an old friend, not to be
 carelessly ~~interfered~~ disformed. It seems
 from a letter of my father's to me that I once
 called it ^{the} 'tropical jungle', but it occupied
 a very ~~rich~~ important place in the lives
 of all ^{his} children & of others who were children
 of mine with us. ^{Sorrow}
 It was with real ~~regret~~ ^{with} regret
 that my father saw this garden & much of
 the picturesque beauty of the college grounds
 obliterated by the changes necessary ~~in~~ in
 connection with the erection of the new Science
 buildings of the University, although these
 were really the fruition of his life work
 in connection with the University. When these
 changes were in progress he wrote a note
 in which this inevitable regret is very
 manifest.

*To my beloved son
Dr. G. M. Dawson
with my affectionate regards*

CREATIVE DEVELOPMENT
Dec. 1897, J. W. Dawson
AND EVOLUTION

BY

SIR J. WILLIAM DAWSON
LL.D., F.R.S

CONTRIBUTED TO "THE EXPOSITOR"
AND NOW PRINTED FOR PRIVATE CIRCULATION

CREATIVE DEVELOPMENT
AND EVOLUTION

BY

SIR J. WILLIAM DAWSON
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CREATIVE DEVELOPMENT AND EVOLUTION.

1. NATURE OF THE QUESTIONS INVOLVED.

IRRESPECTIVE of Divine revelation, the minds of the more thoughtful and gifted men, inquiring as to the origin of the universe, have oscillated between the ideas of a Divine creative power planning and determining the cosmos, and a fortuitous concourse of particles or of energies working out unintelligently, and by an almost interminable series of trials and errors, the existing equilibrium of nature. The former has always appeared to the majority of men the more rational idea, because it postulates a First Cause akin to the only self-determining or primary power known by experience, viz. the human will and reason; and because the resolution of all the complicated adjustments in the universe into mere blind chance seems to our mental constitution inconceivable, besides removing that bond which unites us with external nature, when considered as the product with ourselves of the power and wisdom of a common Creator.

In recent times, however, the vast growth of physical and natural science has so excited the minds of men that many have assumed to be gods to themselves, and the bold mechanical hypotheses of Spencer, Darwin, and others have gained much credence, not only among scientific specialists, but with the general public, so that evolution and its supposed accessories of Natural Selection, Struggle for Existence, and Survival of the Fittest, have become popular catch-words supposed to be sufficient to explain all the mysteries of nature and even of human progress.

More especially have these ideas obtained currency in the domain of life and organization, which at first sight seemed to present the greatest difficulties, as exhibiting—to use an expression of Louis Agassiz—“a wealth and intricacy of the higher mental manifestations, and none of the simplicity of purely mechanical laws.”¹ Life indeed so manifestly overrides, controls, and dominates the merely mechanical and chemical forces, that it seems to afford an illustration of higher power in some respects intermediate between the merely mechanical and the spiritual spheres. Strange to say, however, biologists, professedly students of life, have been among the first to give their adhesion to a merely mechanical theory of this great and mysterious power, and thus zoologists and botanists, whose sciences are based on the stability of species, have freely given this up in favour of a perpetual flux of specific characters, which, if it actually existed in nature as supposed by Darwin, would have rendered any scientific classification of organized beings, whether recent or fossil, impossible.² Thus the biological sciences may be said to exist in spite of principles held by many of their cultivators, which are rationally subversive of the facts on which those sciences rest. In the meantime the theory of evolution itself, as is the nature of such phantasms of the human mind, is undergoing rapid changes, and its followers are resolving themselves into antagonistic sects, while the unthinking multitude is using it in many ways not contemplated by its authors. To not a few students of the subject, all this portends a speedy dissolution of this philosophy, more especially in its agnostic and Darwinian form. This much at least is certain, that whatever may ultimately remain of the work of Darwin and his followers, it cannot continue

¹ Letter to the Duke of Argyll.

² Romanes, the ablest of Darwin's followers, has admitted this in his posthumous work, *Thoughts on Religion*.

to dominate the world of science as a system of merely mechanical evolution; and that the time has arrived when those who have been watching its origin, or revival, and progress, from its commencement in our own time, may endeavour to take stock of its present results, and to inquire as to how many of them are likely to be of permanent value, and how many are to be cast out on the great rubbish-heap of discarded philosophical notions. An opportunity to do this with some advantage, at least in so far as British science is concerned, is afforded by the discussion which has arisen from the reference made to the subject by Lord Salisbury in his address as President of the British Association, at its Oxford meeting in 1894, and in which discussion leading men of science, both in England and in Germany, have taken part. The Biblical and theological implications of the question, though important and even urgent, may be reserved till we have briefly noted the positions of the scientific combatants; carrying with us, however, the thought that we are in presence of doctrines whose tendency is to make nature give an entirely different account of its own interactions, and its relations to God and man, from that which has been generally accepted by the better and wiser minds in every age; and that it has been publicly maintained that in the near future the progress of science, in union with the philosophy of evolution, will leave "little but cloud-land" for the domain of its "rival" religion.¹

2. LORD SALISBURY ON DARWINISM.²

Salisbury introduces his reference to the Darwinian evolution with the remark, intended perhaps to mollify some fanatical Darwinians, that "the most conspicuous

¹ Huxley, *Nature*, 1895.

² Address as President of the British Association at the meeting at Oxford 1894.

event in the scientific annals of the last half century" has been the publication of *The Origin of Species* in 1859. In this connection he takes the opportunity to refer to the change which this memorable work is supposed to have effected in the methods of research, which it has tended to make historical rather than merely statistical. In this, however, he fails to allow sufficient credit to the profound historical views of living beings which have resulted from the study of fossils by such great minds as those of Cuvier, Owen, Barrande, and Agassiz; and, on the other hand, to deprecate sufficiently the tendency which Darwinism has produced among the younger generation of working naturalists and popular writers on nature to occupy themselves with imaginary lines of development and loose reasonings as to possible phylogenies rather than with the careful investigation of facts, and to regard nature as a sort of mechanical perpetual motion machine, without plan or purpose, rather than as a cosmos of order, beauty, and fine correlation of parts; thereby rendering it less attractive and less congenial to our higher thoughts and sentiments.

He also broadly asserts that Darwin "has as a matter of fact disposed of the doctrine of the immutability of species" of animals and plants. No claim could be more unfounded than this. So far as popular knowledge is concerned, there is the best evidence that cattle-breeders knew the variability of the higher animals, and applied it successfully in producing races capable of permanent continuance, under proper care, at least 2,000 years before the Christian era, and probably earlier.¹ The *stability* or fixity of species, it is true, is a natural fact; but this does not imply immutability, which probably no naturalist has ever maintained, and which we cannot absolutely affirm of

¹ Genesis xxx. 34 *et seq.* Animals in tomb of Ti at Sukkarah and other Egyptian tombs of early dynasties.

anything in nature. Stability, within the limits of our observation, is, however, proved by experience, and is essential to any scientific study of organized nature. The evidence in favour of it has indeed been much strengthened, and its possible range in time immensely extended, by the facts disclosed in modern times in the study of palæontology. There are marine animals and land plants still living which have continued as identical species for enormous periods of time antecedent to man. Mollusks of the Eocene and Miocene Tertiary, for example, of the Atlantic coast of America, and of the Paris Basin in Europe, still live in the neighbouring waters. The late Dr. Newberry found the common sensitive fern of North America (*Onoclea sensibilis*) in beds of the Fort Union Group, now known to belong to the dawn of the Tertiary, and another fern (*Davallia tenuifolia*),¹ not now occurring in America, but living in the mountains of Asia, has been found in the same beds. Humble creatures of the group of Protozoa have been traced much farther back. Such examples show, as I have elsewhere contended, that frail and short-lived animals and plants may, by virtue of their unchanged and continuous reproduction, be more durable as species than the most refractory rocks or the greatest mountains, or the forms and dimensions of the continents and seas in which they have lived. It is true that species of the lower animals and of plants are more lasting than those of the more highly organized animals; but even these in many cases greatly antedate the origin of man, and we can show that, while retaining their specific characters, they can, under changed conditions, undergo considerable variations, especially in external and non-essential features. In some cases we can show that even temporary varietal forms, appearing and disappearing in

¹ Newberry, *Later Extinct Floras of America*; Dawson, *Report on the Geology of the Forty-ninth Parallel*.

consequence of physical changes affecting the species, may be of considerable continuance, and yet recur under suitable conditions to the primitive type. All this is matter not of speculation but of fact, and has greatly tended to enhance our ideas of the fixity and historical value of species in geological time, as well as in the short space measured by our investigation of contemporary forms.

To this great natural and well-known fact of the fixity of species with temporary variations under certain limitations, Darwin added the further hypothesis that variation may, under certain natural conditions, and without any intelligent purpose or agency, go so far as to transmute one species into another. Unfortunately, however, this doctrine remains at this moment as destitute of proof as before the publication of the *Origin of Species*, and, when properly understood, the facts as to domesticated animals cited by Darwin himself show its improbability, if not impossibility, yet we are required by Darwinian evolution to accept this supposition as the means of accounting for the vast multitudes of species of animals and plants and their succession in the geological history of the earth.

But after making these somewhat unnecessary admissions as a sop to the more zealous evolutionists, Lord Salisbury turns to deal with the alleged cause of the mutation of species as held by Darwin, namely, Natural Selection, and more especially with the attempt by Dr. Weismann, an eminent German naturalist, to vindicate this supposed agency in lectures delivered in Oxford in the previous year. Weismann, who poses as a "pure Darwinian," though he is, perhaps, more noted for his much-disputed conclusions as to the non-inheritance of acquired characters, believes implicitly in Natural Selection as held by Darwin, but admits that its agency has not been proved, and probably cannot be established by the evidence of facts. He believes, however, that if it be re-

jected on this ground, evolution will have no alternative but that of giving some countenance to the, in his view, altogether inadmissible "principle of design." Salisbury naturally remarks that such an avowal indicates a great change of opinion from the time, not far distant, when the doctrine of design in nature seemed to be held by all reasonable men. He might have added that it must still be held by all such men, although some German specialists may not be amenable to this ordinary reason. We shall see evidence of this in Weismann's rejoinder. In the meantime it is only necessary to remark that the German biologist accepts natural selection as the cause of the origin of species, because it enables him to dispense with a living and intelligent First Cause, or, in other words, to hang up his science in vacancy, or to dream that it so hangs, without any support for its first link. It is instructive to notice here that, as we shall see in the sequel, Spencer and Huxley, the greatest English authorities on Evolution, decline to follow Weismann in this great act of unreasoning faith, and regard the figment of Natural Selection as incapable of taking the place assigned to it by Darwin, while still holding "organic evolution" as in some way explaining the origin of living things without any intelligent plan or creative power.

Salisbury also expresses his inability to summon sufficient faith to accept Natural Selection as propounded by Weismann, though in opposition to its efficacy he dwells chiefly on the alleged slowness of its operation, which obliges its advocates to claim so great an extension of time that they have to place the beginning of life at a period so early that, reasoning from physical data as given by Lord Kelvin and others, we cannot suppose the earth to have been in a state in which organic bodies could exist upon its surface.¹ He then concludes his review of Weis-

¹ We have not space to discuss here this point; but it would seem that

mann's advocacy of the Darwinian principle of Natural Selection with the following weighty words:—

“I quite accept the Professor's dictum that if natural selection is rejected we have no resource but to fall back on the mediate or immediate agency of a principle of design. In Oxford, at least, he will not find that argument is conclusive, nor, I believe, among scientific men in this country generally, however imposing the names of some whom he may claim for that belief. I would rather lean to the conviction that the multiplying difficulties of the mechanical theory are weakening the influence it once had acquired. I prefer to shelter myself in this matter behind the judgment of the greatest living master of natural science among us, Lord Kelvin, and to quote as my own concluding words the striking language with which he closed his address from this chair more than twenty years ago: ‘I have always felt,’ he said, ‘that the hypothesis of natural selection does not contain the true theory of evolution, if evolution there has been in biology. . . . I feel profoundly convinced that the argument of design has been greatly too much lost sight of in recent zoological speculations. Overpoweringly strong proofs of intelligent and benevolent design lie around us, and if ever perplexities, whether metaphysical or scientific, turn us away from them for a time, they come back upon us with irresistible force, showing to us through nature the influence of a free will, and teaching us that all living things depend on one everlasting Creator and Ruler.’”

3. WEISMANN'S REPLY TO SALISBURY.

Weismann replies to Salisbury in the *Contemporary Review* for November, 1894. He endeavours to extenuate his somewhat unguarded statement respecting natural selection by the explanation that it refers to the fact that the action of natural selection is necessarily rather a matter of inference than of observation. He adduces, however, three agencies or factors by which, ac-

Spencer and Huxley do not so strongly as Darwin insist on excessively long time, and Poulton in his British Association Address (1896) is content to assume pre-geologic ages, altogether unknown to us, for the origin of life, but which no geologist can accept as probable or even possible. Thus evolution, in the attempt to escape from the observed fixity of species, comes into conflict with physical science on the one hand and geological science on the other. This may be designated as the dilemma of Darwinism, of which some of its advocates select one horn and some the other.

According to him, it manifests itself: viz., (1) Variability; (2) Heredity; (3) Struggle for Existence. Practically, therefore, these become the observed causes of evolution, or at least its outward manifestations. We have, therefore, to question them as to their capacity to produce new species. Variation is a well-known phenomenon, especially in the case of domesticated animals, and of some variable species which, so to speak, domesticate themselves, or are naturally domesticated, by being subjected accidentally or by choice to special external conditions. These are species of the higher and more intelligent animals. Other animals vary apparently because of their great simplicity of structure and the little differentiation or specialization of their tissues and organs. Thus among animals the most variable species are at the top and bottom of the scale. Still, in all ordinary cases, the variability refers chiefly to external and non-essential features, and unless the variety is perpetuated by isolation and care, and, if at all extreme, by occasional crossing with normal individuals, it is liable to die out or to return into the ordinary type. There is probably no good case known where it has overstepped the limits of the essential characters of the species. In the case of extinct or fossil animals or plants, it may be supposed to have done so, but this, of course, cannot be proved by actual facts. If, therefore, nature be personified as a breeder, producing varieties, and then selecting the best, it cannot be affirmed that it is more successful than human breeders who can produce races capable, by careful management, of being perpetuated for several generations, but cannot make new species. This, of course, is not invalidated by the subjective condition that naturalists, especially those who are desirous to multiply new species, may mistake mere varietal forms for the specific types. What has been said of animals will of course apply to plants, except in so far as the intelligence and volition of

the animal contribute either to the making or unmaking of varieties.

Heredity is another great and important fact in nature, though a very mysterious one. But independently of the doubt that Weismann himself has cast on the transmission of acquired characters, which Darwin apparently did not question, heredity certainly tells in favour of fixity, for it is the majority that transmit the ordinary characters to their progeny, while a variant minority labours under the double disadvantage of a less balanced development of parts and liability to reversion by intermixture, unless when artificially isolated or kept separate by some rare and exceptional natural accident.

Struggle for existence is not the ordinary law of nature, and modern experience as well as geological facts show that it tends not to elevation but to degradation or to extinction. No breeder would attempt to improve his stock by exposing it to cold or starvation, and in the succession of geological formations we find that facility for expansion rather than struggle has been the condition (I do not say the cause) of the introduction of new species.

When the Natural Selection of Darwin is thus broken up into three factors, its validity is further placed in doubt by the question as to the possibility of these three independent agencies, without intelligent guidance, co-operating in one definite direction of improvement, and securing for the best modifications the necessary conditions of isolation and continuous favourable environment. We seem to require here that very principle of design which Weismann and other adherents of the Darwinian evolution so distinctly repudiate.

It is really this blunt revelation of Weismann's mental position as distinguished from the more reticent confessions of English evolutionists, who, though possibly of the same opinion, are less frank in its avowal, that gives the

chief interest to his adherence to natural selection and the reason assigned for it. He expresses his own view as follows: "The scientific man may not assume a designing power. . . . His concern is with the mechanism of the universe." He adds: "It is inconceivable that a Creator should designedly interfere in the course of nature—inconceivable that He should, so to speak, intervene to supplement the forces of nature, just where they break down. As if, on the principle of theism, God is not merely over but in His works, or as if there could be any "forces of nature," or "course of nature," except as ordained of God and regulated by His laws. He speaks, it is true, of the possible evidence of a "power behind nature," but it is evident that this is merely an inanimate prime mover, an expansive steam-power within the boiler, and not an all-wise Creator.

4. HUXLEY AND ZITTEL ON THE QUESTIONS AT ISSUE.

The late Dr. Huxley, the foremost English exponent of Darwinism, was present at the Oxford meeting, and took the opportunity, in seconding the usual vote of thanks to the President, to parry the force of the anti-evolutionary argument in the address by congratulating the speaker on the admissions he had made as to the beneficial influence of Darwin's great work; but he evidently felt that damage had been done, for in the following autumn, in a brief article on the progress of evolution, on occasion of the 25th anniversary of the establishment of the scientific journal *Nature*, he takes occasion to define his own position, as having on the evidence of fossil animals, even before the appearance of Darwin's great work, indicated the probability of the introduction of new species by descent with modification; and proceeds to argue that this kind of proof

remains valid even if the doctrine of natural selection should be abandoned, or should have to occupy a subordinate place. In support of this he appeals to the testimony of Zittel, who says in his great work on animal palæontology:—

“For the naturalist evolution (the theory of descent) offers the only natural solution of the problem of the development and succession of organic beings, but as to the causes which bring about the modification of species, and especially the change (continuously) in a given direction, opinions are yet greatly divided. That the principle of natural selection discovered by Darwin leaves many phenomena unexplained is no longer denied by even the warmest followers of Darwin.”

This statement of Zittel, endorsed by Huxley, may be taken as authoritative on the behalf of evolution in geological time as held by Darwinians, though some pure or ultra-Darwinians, like Weismann and Wallace, continue to attribute the whole to natural selection, while others, like Cope, Hyatt, Romanes, and Bateman, doubt the reality of natural selection, or its sufficiency to originate species, and seek for other and very different causes of change, which are, however, so far as known, equally unreal or ineffective. When Zittel says that descent with modification is the “only natural solution” of the problem, we have a right to inquire in what sense he uses the word “natural.” Ordinary generation is the only natural mode in which the species can be continued at all, whether with or without modification; and when he assumes that this is the only way in which new species can arise, he is taking for granted that which he should be called on to prove, namely, that varietal modifications which may arise in the course of descent are pushed so far as to transgress the limits of the specific characters. The word natural, therefore, referring to ordinary generation, by his own observation, can apply only to that which the writer

knows or can receive on credible testimony; and if he can point to no case in which a new species has been observed to arise in this way, he really excludes all natural cause for the origin of species except as a mere conjecture or supposition. Still, like Weismann with natural selection, he must accept this unwarranted supposition or have recourse to something which he would probably regard as "supernatural," that is, beyond the scope of his present knowledge of nature, and therefore inadmissible, simply because unknown in his experience.

It is instructive to note here that Zittel, in discussing this question before the International Congress of Geologists in 1896, admits certain remarkable defects in the supposed "natural" mode of introducing new species by descent as held by him. While he thinks that in the case of some species of the higher animals, as for example in the horse and its allies, we have the appearance of a continuous succession of new species, he does not pretend that the continuity can be absolutely proved, and he admits that no links can be found to connect distinct classes, as the Mammals, Birds, Reptiles, and Amphibians, with each other. Intermediate forms seeming to connect these are found only in small and *diminishing* numbers as knowledge advances. Nor is the analogy perfect of the succession of animals in geological time with the stages of the development of the individual from the ovum to maturity. Thus, as I have pointed out in my work, *Relics of Primeval Life*, the evidence of transition from one group to another breaks down just where it is most desirable that it should be perfect, and room is left for the multitude of hypothetical phylogenies, subjective rather than objective in their character, with which enthusiastic evolutionists entertain us in speculating on the evolution of the animal kingdom, and which merely serve to show how each individual speculator would have carried on the development had it

been left to him, but prove nothing as to how it actually proceeded, or could proceed, spontaneously, and with no plan whatever.

5. SPENCER AND ARGYLL ON "ORGANIC EVOLUTION."

THE doctrine of Evolution being left in this apparently helpless condition by Salisbury and his opponents in the fields both of biology and geology, Mr. Herbert Spencer, the greatest champion of this philosophy, enters the arena in the number of the *Nineteenth Century* for November, 1895, and takes up the original issue as raised by Lord Salisbury. In doing so he at once dissociates evolution from Darwin's doctrine of Natural Selection, affirming that this is incompetent to account for the primary origin of living organisms or for their subsequent elevation. In truth even "Nature," as personified by Darwin, approaches too near to the character of a divinity to suit his nescience, and he prefers without her aid to imagine a purely fortuitous or necessary origin and progress of living beings by the interaction of the organism and its environment, which leads to the "survival of the fittest"; and he appeals to several factors by which, now and in past time, this organic evolution has been promoted, or which at least show analogous changes to those which it demands. He holds, therefore, that if the special Darwinian doctrine were cleared away, his idea of organic evolution would remain intact. It has, however, been pointed out that it would remain merely as a speculation respecting a possible fortuitous origin and progress of an orderly cosmos, without any ascertained cause, and leading only to the conclusion that the fittest to survive will survive, a truism teaching us nothing. All this is lucidly and convincingly stated by the Duke of Argyll in two articles in the March and April numbers of the same Journal, in which he shows that Spencer's

organic evolution is either the ordinary and well-known fact of development which all human experience has shown to be the law in nature, whether organic or inorganic, or it is a mere dream having no substantive reality whatever. This will appear very clearly by a few actual examples. We learn from the structure of the earth and the daily changes going on under our observation, that all things are in process of change, gradual or sudden, and that all living things undergo a process of development from microscopic germs, and go on to maturity and decay and replacement by new generations. So, in the rocky strata of the earth, we have evidence that these changes have been going on from the beginning of time, and that the physical features of our continents, and the vast variety of living beings on the land and in the waters, are the results of a long and orderly development from the lower to the higher, from the simpler to the more complex. But it is perfectly possible, as Argyll well puts it, that this development may have taken place under a great creative plan, without accepting either Darwin's idea of Natural Selection, or Spencer's of spontaneous or necessary organic evolution. It may well be that the things which appear are not made of or by the material things themselves, but by an unseen Power behind all the phenomena—even the word of God. Otherwise, without the Natural Selection of Darwin, and without any means of obtaining the primary material whence to select, we are left without any rational basis for any development whatever.

Darwin himself keenly felt this, and therefore found it necessary to assume what may be termed an original creative act. At the close of his work on the origin of species he introduces this idea in words borrowed from a very old author, the writer of the first chapter of Genesis. He speaks of the Creator "breathing life" into a few organisms or into one, and that from this original inbreathing of life

"endless forms, most beautiful and most wonderful, have been and are being evolved." Darwin therefore, unlike Spencer, assumes a Creator, but he does not seem to perceive two consequences that flow from the admission. (1) It is not improbable that the creative process may have been repeated at subsequent times, when it was necessary to introduce any new or special type of being; and this would serve to account for the fact already stated, that while it is possible at least to imagine derivation by descent of closely allied species, we cannot so readily find links to connect the earliest species of new classes with their predecessors.¹ (2) It is scarcely probable that a Creator capable thus of beginning the great and complex procession of life on the earth, would leave it to chance to complete His work, and not rather fix its plan and the laws of its development and final culmination.

We may pause here for a moment to note how much less accurate Darwin is than the old author whom he quotes in this reference to a creative power. In Genesis the in-breathing of God, that "Inspiration of the Almighty," as it is called in the book of Job, is limited to the introduction of the rational and spiritual nature of man. It is not said of the lower forms of aquatic life which were first introduced, and which have neither "breath of life" in the strict sense, nor any approximation to the Divine likeness. The statement as to them is that God said, "Let the waters bring them forth." Under God, the waters in which they swarm are commissioned to produce them, that they may increase and multiply and fill the ocean. Herein, strange to say, Moses, though not an evolutionist, is more in touch with the grand idea of development than Darwin. The environment is first provided, and is then made to be the medium of the development of its inhabitants.

Returning to Spencer, who finds it necessary in dealing

¹ This is illustrated in detail in my *Relics of Primeval Life*, ch. i.

with Salisbury's objections to modify his own previous demand for indefinite time, and to express himself as content with what physical and geological science may be able to allow, it may be well to inquire a little farther into the validity of his contention that all organic nature may be accounted for by the one idea of evolution without natural selection. In doing so, we may carry with us the searching criticism which Argyll applies to these evidences.

1. We may take first the facts of embryology in individual animals considered as a recapitulation of the evolution of their ancestral types in past geological ages. It is easy to adduce apparently good examples of this. The frog is in its young state an aquatic tadpole, without limbs, and breathing by gills like a fish; therefore the ancestors of the frog and other amphibians were fishes. The butterfly in its larval state is a worm-like caterpillar; therefore the insects are descendants of worms. The analogy is, however, not complete. A caterpillar is not a worm, but really an immature insect; and a tadpole is not actually a fish. Besides, there are other reasons, quite independently of recapitulation of an ancestral state, which render such immature stages necessary to the development of the modern animals in question. Further, the conditions and relations to time in the two processes are quite different. The development of the individual animal is a visible evolution, that of the species cannot be observed, and, if open to observation, might prove very different from ordinary evolution, and might be related to it only on the higher plane of design, or of the similarity of the workings of the Divine mind in different spheres. Further, it may depend rather on the involution which always must precede evolution than on that process itself.

One of the most familiar instances of evolution is that of a chick from an egg, a process which we can observe from hour to hour and from day to day till the microscopic

germ, apparently structureless, becomes developed into all the complicated parts of the young bird. In some of the smaller fishes we can even watch this evolution under the microscope continuously, and can note the first appearance of every tissue and organ. In such a case we know that the living germ contains in it potentially, or in the form of invisible organic units,¹ something to represent every part of the animal to be produced. Along with this, there is a store of protoplasmic material, not itself living, but ready to be absorbed as required, to be built up into the several parts as each of them is fashioned. It is a wonderful process, and no one who has seen it in any one instance can ever forget it, or, if at all in a proper frame of mind, can fail to be impressed with the marvellous power and inscrutable adjustments which it implies, and with the mystery which lies behind the visible processes of formation and growth, under the wonder-working energy of life. All this is evolution proper, but there is much more implied in the whole development of which it forms a part. There is the previous involution in the germ of all that we have seen evolved from it. This includes the antecedent determination of the form, structure, and living powers of the creature to be produced, and of all their relations to the environment in which it is to live and the place it is to occupy in the system of nature. It includes, in the higher animals, energy and material derived from two parents. It includes all that takes place in the ovary of the mother—the fertilization of the embryo cell, its being furnished with a store of suitable pabulum, and, finally, the incubation or whatever other external conditions are necessary to secure the commencement and successful progress of the growth of the embryo.

In this elementary case, then, it is not so much the

¹ I may refer in this connection to an interesting paper by Miss Layard, read at the meeting of the British Association, at Ipswich, in 1895.

evolution as the involution that is prépotent and mysterious, and it is here that at this moment the greater part of the minute investigation and warm controversy among biologists is centered. This raises the question—What is there in the succession of individuals in different generations that corresponds to the involution in the individual embryo? One thing we may certainly conclude, that if there is such a thing as transmutation and development of new species, it must be sought for here, rather than in evolution properly so called. Farther, with Darwin, we must suppose one or a few perfect organisms given to begin the development, and we must suppose such primary types to include potentially or structurally all that is to be evolved from them in thousands or even millions of generations.

Let it be observed that this is the simplest view that we can take of organic evolution as propounded by Spencer. Is it possible, then, to imagine it as beginning and continuing spontaneously and fortuitously? Must we not rather see in it the development of a Divine plan too vast and intricate for our comprehension, and must we not cease to designate it by a term which can at best cover but one portion of the great and practically infinite scheme of the development of life. Many years ago a friend of mine, now departed, the late Mr. Higgins of Liverpool, proposed in a paper on this subject the use of the term Development and the abandonment of Evolution, except in its proper sense. I made the same suggestion in 1890 in my little book, *Modern Ideas of Evolution*, and later in *Salient Points in the Science of the Earth*. The Duke of Argyll, in his paper above referred to, has more fully advocated the same idea and illustrated its significance. It is time surely that in the interest of accuracy of thought it should be adopted, and that the loose use of the term Evolution should be left to those popular writers who have

already destroyed its scientific value, even in the estimation of those who still believe in the hypothesis respecting organic nature to which it was originally applied.

(2) In like manner an analogy can be perceived between the classification of animals in orders and classes in accordance with their degree of complexity, or with their type or pattern (or, to use the slang of certain artists and antiquaries, their "*motif*"), and their succession in geological time. But here we are met by that difficulty of explaining the first appearance of classes and orders referred to by Zittel and previously noticed. Besides, this point of view rather inclines us to compare nature with certain human works of art, in which we perceive, as the result of design, the same union of type or pattern with utilitarian purpose; as, for example, the erection of buildings in accordance with particular orders of architecture, or the growth of Egyptian temples by the addition of successive halls and propyla, all in similar style. We are not usually inclined to refer such things to chance or to mere mechanical necessity. Here we may also observe that the anti-Darwinian fixity of specific and generic characters alone enables us to classify the oldest and the most modern animals or plants in the same systems of arrangement, so that all the animals and all the plants, from the beginning of geological time, go into respectively the same zoological and botanical classifications, a fact which tells in favour of one great comprehensive plan, rather than of indefinite and fortuitous variation.

(3) In the case of geographical distribution we have a different consideration, which relates not so much to style or complexity as to position. It is true that in some more or less detached continental or insular areas, as in South America, Australia, and New Zealand, we see special groups of animals that are closely allied to those that occupied the same areas in the later geological periods;

but it is not necessary to suppose that the extinct species were transformed into the modern ones, which are, besides, generally degenerate in size, like the modern sloths of South America in comparison with the great ground-sloths of previous periods, or the modern Kiwi, or Apteryx, of New Zealand, in comparison with the gigantic *Dinornis*. It seems more likely that of a group of animals of different statures only the smaller species have been able to survive owing to changed conditions. Besides, investigation has extended the range of some of the supposed local groups, and weeding out of the larger and more massive types has been general in the early modern period on all the continents.

(4) In the case of rudimentary organs appealed to as remnants of structures fully developed in remote ancestors, some of these are still useful, though the uses of others may not be understood. Others are provisions for contingencies or future needs; and this, as Argyll has well pointed out, is explicable only on the supposition of a deliberate plan extending into the future.

I may here leave the hypothesis of evolution, as held by Darwin and Spencer, as one deprived by its own advocates of any good foundation in nature, when regarded as an explanation of the origin and succession of species; and may refer to the papers of the Duke of Argyll, already cited, as fully showing that this conclusion is inevitable, and that Spencer and Darwin take their followers very nearly into the same position with that of the pre-Newtonian physicists, who explained the rise of water in a pump by the aphorism that "Nature abhors a vacuum." So Spencer endeavours to show us that among the varieties of organic beings "Nature abhors the unfit," and the Natural Selection of Darwin is merely the converse of this, to the effect that "Nature selects the fittest." Neither of these dicta, however, exempts us from the necessity of enquiry

as to the First Cause, and under Him the secondary causes, if any, of the vast and complicated succession of living things that have inhabited and now inhabit the earth.

In the previous parts of this paper we have discussed the claims of spontaneous evolution to account for the origin of species of living beings, in comparison with that view of nature which regards it as the development in time of a great creative plan, by agencies determined by the Creator, but for the most part as yet very imperfectly comprehended by us; and have endeavoured to show, in the light of recent discoveries, that the ablest advocates of spontaneous or mechanical evolution have failed to make good its case.

It may be asked, however, What relation does our idea of creative development bear to that of "special creation," so much decried by evolutionists?—on the same grounds which caused the Athenian philosophers to "scoff" when St. Paul referred to the resurrection. On this it may be observed that, as we have already seen, even Darwin had to admit the necessity of a primary "inbreathing of life" to afford the initial species for the work of selection; and, though many of his disciples fail to see the necessity for such creative act, this must be because their mental vision is less acute than that of their master. What may have occurred once in this way might have occurred again. But, waving this, we are, no more than Darwin, obliged to maintain that every so-called species, recent or fossil, is the product of an independent creative act. There is the best reason to believe that many of these species are merely varietal forms elevated into specific standing by species-making collectors, who desire to have the credit of discovering something "new to science," or have not been sufficiently critical in their discrimination of characters. A vast amount of detailed and thankless labour will be required to settle this question, especially with regard to

fossils. So far as this labour has been undertaken, as, for instance, by Barrande and Davidson in the case of the Brachiopods, the long lists of synonyms attached to many of the species indicate the present uncertainty on a point which requires to be definitely settled before we can enter with confidence into any discussion of the origin of species, or even into that of the preliminary question of their fixity or liability to incessant change. In so far as the mullusks are concerned, my late friend, Dr. P. P. Carpenter, who had devoted years to the study of the more variable shells, had arrived at important conclusions in regard to the limitation and fixity of the species, which, unfortunately, he did not live to publish; and in the same department another deceased friend, Dr. Gwyn Jeffries, of London, has told me that in visiting collections on the continent of Europe, he had found that the species in some of them bore the same relation to his as that of a shilling to a sovereign, they were split up so finely. Who can tell how many of our received species are only the small change of God's coinage?

Again, there were "critical periods" in the introduction of species and groups of species, as when, at certain geological crises, large areas of the continents subsided and became shallow seas, tenanted by hundreds of species of marine animals not found in the formations of previous ages. Le Conte, the geologist of California, has given much attention to this, and his results are sustained by the study of fossils in the more northern parts of America as well as in Europe. It may be that the present human period is one of stagnation—a "rest of the Creator." There seems indeed good geological evidence of this in the rich and varied fauna and flora of the middle and later Tertiary ages in comparison with the more meagre character of that which now exists. Darwin might here have obtained another hint from the author of Genesis, who

speaks of the Creator entering into His rest after the introduction of man.

The destruction of faunæ in critical periods, and their renewal thereafter, seems to be referred to in the following lines from that "hymn of creation" which has come down to us in Psalm civ.,¹ and which Humboldt justly characterized as the finest general view of nature to be found in poetry:—

"These all wait upon Thee;
That Thou mayest give them their food
In due season.
That Thou givest them they gather:
Thou openest Thy hand, they are filled with good.
Thou hidest Thy face, they are troubled:
Thou takest away their breath, they die,
And return to their dust.
Thou sendest forth Thy Spirit, they are created:
And Thou renewest the face of the earth."

It has also been suggested that just as species, by gradual loss of vitality and by access of unfavourable conditions, become extinct, they may have their periods of vital exaltation and advancement, recurring at long intervals, and causing them to assume new characters, which may have been regarded by naturalists as specific. In the articles already referred to, the Duke of Argyll has very ably presented some of these possibilities; and if we do not know more of such principles of mediate creation, as I have elsewhere termed it, this may be owing to the limited scope of our observation.²

But a more profound and practical question arises here. What does nature teach as to the character and purposes of its Author, and as to His relations to ourselves considered as rational and moral beings? There is no room here for

¹ An anonymous psalm of uncertain date, but on internal evidence probably one of the most ancient.

² *Story of the Earth and Man.*

agnosticism other than of that kind which Romanes has called "*pure agnosticism*," which consists in placing ourselves in the position of inquirers, uninformed but open to conviction. Causes in nature are generally known to us rather by their effects than by their essence, and this must apply *par excellence* to the First Cause of all, who must to some extent be revealed to us by what He has made. But this is an inquiry to be entered into with much caution, in view of our own limitations, and the certainty that we can never penetrate the whole of the designs of the Creator, however we may be able to investigate "parts of His ways."¹

On the one hand, we cannot fail to see the surpassing grandeur, the beauty and marvellous complexity of nature, and the admirable way in which means are provided to serve all purposes therein. But, on the other hand, in view of the fact that it is to so great an extent invaded by pain, suffering, and death, men have been found to deny that the Ruler of the universe can be either a benevolent or moral being in our sense of the terms; or that, if He is so, He can be omnipotent. These doubts are probably as old as human thought. They appear in some of the oldest of the so-called natural religions, and are among the topics discussed in that patriarchal philosophy which we have in the book of Job, and which is as sound and far-reaching in its conclusions as any later attempts to solve the problem. In modern times Stuart Mill has ably discussed it in his essays on theism, and Spencer and Romanes have entered into its detailed investigation, and the latter, in his latest work,² has, like the "Man of Uz," been able to emerge from the darkness of his earlier agnosticism into the light of

¹ Lo these (the structure of the earth and the visible heavenly bodies) are parts of His ways, but how little a portion is heard of Him, and the thunder of His power who can understand" (Job xxvi. 14).

² *Thoughts on Religion*.

has allowed to such creatures. Such free-will may injure or destroy works of God, producing thereby long trains of irregularities and interferences, which may go on till corrected by Divine intervention, and are to be considered distinctly from the main course of the great plan from which they diverge, or appear for a time to diverge.

(4) This great plan cannot be rightly judged till we are in view of its ultimate results. At present we can scarcely see in most cases even its general tendency. In this regard the demand made upon us in Holy Scripture that we should have faith in God for the present, and be assured that the Judge of all the earth will do right, is surely reasonable. I confess that nothing impresses me more with the divine origin and inspiration of the Bible than the lofty attitude which it assumes from the beginning to the end on this subject. God is responsible for the goodness of all His works in physical, organic, rational and moral nature, and regulates their introduction, advance, maturity, decline and extinction, and their subsequent renewal from age to age of His working. This appears everywhere,—in the first chapter of Genesis, in the book of Job, in the Hymn of Creation (Psalm civ.), in the teaching of Christ, in the arguments of Paul and Peter respecting the sovereignty and justice of God, and in the destructions and final renewal predicted in the Apocalypse.

These grand and far-reaching conceptions, so conspicuous in Scripture, are often equally conspicuous by their absence not only from the arguments usually employed in opposition to design and teleology, but in those in defence of these principles. Perhaps no external consideration is more fitted than this to show us the necessity in religion of some direct communication between the spiritual Creator and His rational offspring, in addition to the indirect teaching of natural phenomena, which are neither fully representative of the Creator nor fully understood by us.

If now we turn to the teaching of revelation as bearing on the points discussed in this paper, I think we shall find, though we can look at it only in a very summary manner, that it throws a flood of light on man as a part of nature, and as at the same time a spiritual being allied to his maker, and thus furnishes the solution of the perplexities which surround us in inquiring into the Divine and human relations of the material world.

To every careful and earnest student of the Bible the scheme of creation and redemption, as presented therein, has neither the aspect of a series of fortuitous occurrences, nor of a spontaneous evolution, and rather appears as the development of a great plan running through all the ages of the earth's existence, and culminating in new heavens and a new earth, with their appropriate inhabitants. This is so obvious, and has been so often dilated on in different ways, that I may here be content merely to sketch its general features in so far as they are parallel with the history of the world as we gather it from other sources, and to point out some portions of the analogy of nature and revelation which impress themselves more strongly at the present day than was possible formerly. In the first chapter of Genesis we find a chaos "without form and void," developed by one advance after another, till it blossoms in the garden of the Lord, with man in God's image as its happy inhabitant. So in the history of God's chosen people, the childless pair who migrated from Ur of the Chaldees expand into several nations, and ultimately constitute the nucleus of the empire of David and Solomon. Christ Himself compares His kingdom to a grain of mustard seed, which grows to be a tree, and we see the early stages of this growth portrayed in the spread in the apostolic ages of Christianity throughout the Roman empire. So in the bold imagery of the Apocalypse there appears the great scroll of destiny with its seven seals, waiting to be un-

rolled to display successive pictures of the future of the world and of the kingdom of Christ.

More especially is this developmental progress marked in the unrolling of the scheme of redemption which is the great and special theme of the Bible. Appearing as a germ in the promise to fallen man in Genesis, it is further specialised in the successive revelations to Noah, to Abraham, to Jacob, to Moses, and to the Hebrew prophets, until its primary realisation appears in the mission of Jesus the Christ, and its final perfection in the future and everlasting kingdom of this same glorified Christ Jesus. The late Dr. Romanes, the most subtle of English evolutionists, thus refers to this in the posthumous fragments published in 1896 under the title *Thoughts on Religion*.

“Supposing Christianity true, it is certain that the revelation which it conveys has been predetermined at least since the dawn of the historical period. This is certain because the objective evidences of Christianity have their origin in that dawn, and these evidences are throughout (parts) of a scheme in which the end can be seen from the beginning . . . The mere fact of its being so largely incorporated with secular history renders the Christian religion unique. So to speak, the world, throughout its entire historical period, has been constituted the canvas on which this Divine revelation has been painted—and painted so gradually that not until the process had been going on for a couple of thousand years was it possible to perceive the subject thereof.”

There are two features of this development of Christianity which deserve especial notice in considering its natural analogies. The first is that the Divine power takes the initiative in all progress. Nothing arises by a spontaneous evolution from the phenomenal or created. In the work of creation the Divine fiat is the sole cause of change and elevation. The Divine power and contrivance provides for the residence and destiny of man, and for the means of restoration from the moral degradation and death which he has brought on himself. Throughout the whole history,

men left to themselves tend to relapse into evil and degradation, and their conflicts too often tend to the survival of the rudest and worst types. It is only the Divine Spirit that calms the tumult of the sea of human passions. Even after the advent of Christ, apostasy soon tends to set in, and continues to deepen till new spiritual life descends from above. So it does also in the final culmination, where the city of God is not the product of the endeavours of men, however well meant or valuable in their way, but descends from God out of heaven. Indeed, all our scientific, educational, and social efforts are but like the gas and electric lights, which aid us in the darkness, but must be extinguished before the light of the rising sun of the Divine appearing.

Another feature of the development is that, like the course of life in geological time, it is accompanied by the rejection and loss of many important things. Of this kind are the exile of Cain and the destruction of the antediluvians by the flood; the rejection of so many of the peoples descended from Noah, and their lapse into idolatry and barbarism; the special selection of Abraham and his family, and of Jacob instead of Esau; the failure of Jesus and His Apostles to convert the Jews as a nation, and the consequent overthrow of Jerusalem and dispersion of the Jewish people; the subversion of the Western and Eastern Christianised empires by the barbarians and the Moslem; and, according to the Apocalypse, the still more stupendous catastrophe awaiting the present nations of the world. Thus blessing and cursing, building up and pulling down progress and retrogression, go hand in hand, and the advance of humanity as a whole leaves behind a series of wrecks which seem loss and waste, unless God has plans respecting them unknown to us. They resemble at the moment the perished animals of bygone geological ages, of which only crushed and distorted skeletons remain to us, sometimes testifying even yet by their attitudes to the pain

of their dissolution. The facts of history strike the historians and prophets of the Bible much as these crushed and distorted skeletons of fossil animals affect some of our modern naturalists, and give rise to similar questions, the only solution of which seems to be in absolute faith in the wisdom and justice of God. Paul testifies that the apparent rejection of Israel was to him a cause of much grief and continual sorrow of heart. Christ Himself weeps over the Jerusalem which would not permit Him to save it, vindicating perhaps the strange verse of Charles Wesley which says:—

“For those that *will not come* to Him
The ransom of His life was paid.”

So far as God's dealings with man in his wilfulness and disobedience are concerned, the reasoning of St. Paul in the ninth, tenth, and eleventh chapters of his letter to the Roman Christians gives us the most full explanation, one that applies to nature in general as well as to man. It is simply this, that if we believe in God at all, we are bound to believe that He understands what He is doing, and that before we undertake to “reply against God,” we should consider how very little we have in the way of data to enable us to judge of His plans or of His capacity to bring out of the whole the greatest possible good at last. This may be a humbling conclusion, but it is surely better than the pessimism and mental confusion which result from supposing that we are the sport of insensate and pitiless natural forces, crushing us in their mechanical progress toward ends in which we have no personal interest. We have also the right to take the whole in connection with the Christian doctrine of personal salvation provided freely for all who will accept it, and leading to reconciliation with God, and ultimately to entering into His counsels, so that we shall “know even as we known.”

Thus there is a remarkable analogy between the difficulties that meet us in explaining the pain, suffering, and loss that appear in nature and those that appear in human history, and neither can be solved unless from the point of view of theism and of personal faith in a divine Redeemer we can acquiesce in the dealings of God with us, and can entertain the assured trust that He doeth all things well, and that eventually we shall understand this.

In the meantime, in so far as science and common sense are concerned, we may consider the case of evolution of the kind held by Spencer and Darwin, as closed, and that the way is open to consider a Divine Development in nature as the process of the origin of the world. If we find this complex and difficult to resolve into its true secondary causes, this is what we should expect; but we should also expect it to be in harmony with any true revelation from God respecting our own welfare and our relations to God on the one hand, and to the world we are to rule over on the other.

I have only to add, as the personal conclusion of the whole matter, after more than half a century of study of nature and revelation, that when I regard the material universe as seen in the one or represented in the other, I am overwhelmed with a sense of my own ignorance and insignificance, and can but say, "What is man that Thou art mindful of him?" while, in regard to my natural inability to fulfil the ends of my own existence, I must regard myself as an altogether unprofitable servant, and, like the old patriarch depicted in the book of Job, must "abhor myself and repent in dust and ashes,"¹ asking God, not to "forsake the work of His own hands."² But when, on the other hand, I know that "God so loved the world that He gave His only begotten Son, that whosoever believeth in Him should not perish but should have eternal life," I am

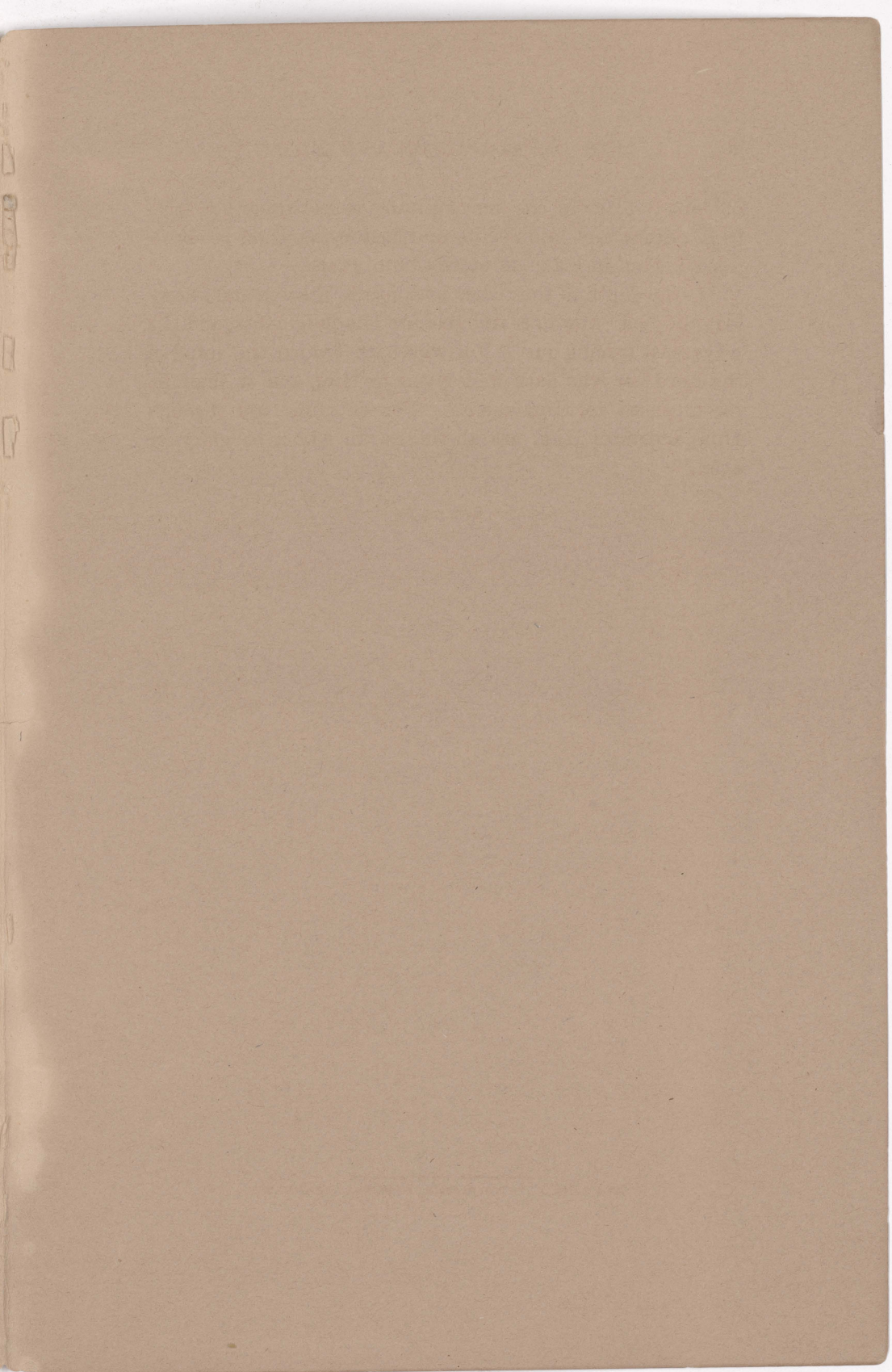
¹ Job xlii. 6.

² Ps. cxxxviii. 8.

content to leave in His hands all the perplexities that arise from nature and human life and history, and am ready to join St. Paul in his great ascription of praise :—

“ O the depth of the riches both of the wisdom and knowledge of God ! how unsearchable are His judgments, and His ways past tracing out ! For who hath known the mind of the Lord ? or who hath first given to Him, and it shall be recompensed to Him again ? For of Him, and through Him, and unto Him, are all things : to whom be glory for ever.”¹

¹ Rom. xi. 33.





Letters to _____

Sci D. Wilson.

Sci C. Lyell.

W. B. Carpenter.

Thompson (Halifax)

Young (Halifax)

Reisby (Sort of Young & Thompson)
names etc.

Coole of Stellarton His father.

R. - To see or publisher.
wants to know all Copyright
laws.

W

Lord Strathcona and Mount Royal
requests the pleasure of the company of
Mr. Dawson

in the Royal Victoria College
on Thursday evening, 1st November, 1900,
at nine o'clock

A reply is requested to the Secretary,
Royal Victoria College, Sherbrooke, St.

Notes relating to Biography
of J. W. D.



Sir W. Young - Chief
Justice of N.S.

George Young Chief
Justice of P.E.I.

Charles Young.

Three Sons of
Mrs Thompson
not designated

Can. Nat.

May 1860.

Damper P. 99.

Vol 2.

Daily notes

Always had a
pocket-diary &
noted down
everything - never
charged the memory
things & and

190

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^{D.C.W.}
Dr. Colby. Oct. 20, 1900.

MS. as now in typed form
would make about 180 8vo pages.

It might be further reduced to
abt-150 pages with advantage
This to be done chiefly by curbing
addresses quoted.

38 years of his life should stand.
'Loyalty' slightly reduced - part
perhaps of only temporary interest.
No special advice given on other
addresses.

Want of the personal element.

This might be given by a concluding
Chapter of say 25-pages.

Could only be written by some
member of the family or intimate
friend.

How his work was done.

Correspondence to be looked over.

Enquire for letters, particularly

Early ones

Letters written to old students.

Colby seemed to regard the
early MS on matter in regard
to Education work as most interesting.

Did not seem to appreciate much
the concurrent progress of Scientific
work. This in the MS. wants
connection as it is generally only
alluded to

Did not seem to look for much
but a purely local audience. There
should besides be some
Scientific readers & many of
them who are read popular
books.

What has been said

The course of true love never
 does run smooth and there are
 many in it, chances and dangers
 just as there are trials as well
 as joys in married life. One
 incident connected with my
 return to Sullant in the
 autumn of 1846 may be
 of sufficient interest for the
 here. The ~~Common~~ steamers
 were then running ^{successfully}
 across the Atlantic ^{from Halifax} but passengers
 from ^{other} sea ports in ^{the States} America still
 frequently took advantage of
 sailing ships where time was
 not an essential consideration.
 So I preferred to take passage
 in a large and fine ship sailing
 from Pictou to Glasgow, and at
 a season when a ^{rough} passage
 might be ^{anticipated} expected. We sailed
 with a fair wind expected to
 run through the Strait of Canso
 where we were to leave our pilot
 and a passenger ^{in Cape Breton Sound} and to mail
 letters, but ~~but~~ within twelve hours
 a severe southerly storm set in
 which drove us from our course
 and obliged us to pass to the

This trip to
 Scotland proved
 eventful in more
 ways than one -
 Jan 1846 the
 command already

~~The ...~~
~~...~~

What has been done

~~The course of the war has been~~
~~then from month to month there are~~
~~in it, changes and changes~~
~~just as there are in the war~~
~~of the war in the war of life, the~~
~~incident connected with the~~
~~return to the front in the~~
~~autumn of 1864 was the~~
~~of sufficient interest for the~~
~~the Government & the~~
~~there were~~
~~and the~~
~~for the facts in the~~
~~documents to be~~
~~being kept where they were~~
~~but an essential consideration~~
~~to be referred to later~~
~~in a large and fine~~
~~from Boston to~~
~~a letter when~~
~~might be~~
~~with a fair~~
~~from through the~~
~~when we were to leave on~~
~~and a messenger~~
~~letter, with~~
~~a letter without~~
~~which there is~~
~~and which is~~

This is
 a copy
 of the
 original
 document
 which
 was
 sent
 to
 the
 office
 of
 the
 Secretary
 of
 War
 on
 the
 10th
 of
 the
 month
 of
 the
 year
 1864

5

North of Cape Breton, ~~and~~
~~this was without danger of~~
~~being wrecked on Prince Edward~~
~~Island or the Magdalen's. It~~
 thus happened that our pilot
 and our Cape Breton passenger were
 carried to Scotland and no letters
 could be left anywhere. So my
 parents and friends in Pictou were
~~thus~~ left in entire uncertainty
 as to what had befallen us until
 after our arrival in Scotland and
 the return of the mail. In the
 mean time news ^{came} ~~arrived~~ from
 the Magdalen Islands that a
 large ^{timber} ~~ship~~ had been totally wrecked
 in these islands in the same
 storm which had overtaken
 us, and ~~the wreckage that had~~
~~come ashore indicated a large~~
~~timber ship similar to that~~
 in which I had sailed. But
 as the Magdalens we were able
 in winter no farther intelligence
 could be expected till the spring.
 The result was that when
 after a somewhat long passage
 I arrived in Scotland, I appeared
 to my friends like a Jonah

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of the Cape Doctor
~~the next morning~~
~~being worked on~~
~~the Cape Doctor~~
that in fact
and the Cape Doctor
arrived at 8 o'clock and no letter
could be left anywhere, & they
parents and friends in Boston were
left in entire uncertainty
as to what had happened in winter
after an arrival in Scotland and
the return of the mail, for the
three times were ~~sent~~ from
the Registrar's office that a
large ~~number~~ had been totally wrecked
in their hands in the same
storm which had overtaken
us, and the package that had
gone with us was ~~lost~~ or large
number of ~~copies~~ in that
in which I had written, that
in the Registrar's office we were
in winter no further intelligence
could be expected till the spring.
The result was that when
after a somewhat long passage
I arrived in Scotland, I appeared
to my friends like a lost green

5

Up by the sea, for they had
received a letter from my father
informing them that, unless I
had met with a watery grave
I should probably be detained
in the Magdalen's all winter,
I had left in November and
my parents did not hear of
my safe arrival till after
Christmas,

My parents were thus left in ignorance
of my fate

I should perhaps be determined
 in the Magdalen's old center,
 that left in November and
 my parents had not been of
 they had arrived the other
 Christmas.
 I had just with a water from
 informing them that, which I
 received a letter from my father
 of the year, for the year

my parents were this life in ignorance
 of my fate

When in 1835 we returned from
 Nova Scotia to our new home
 in Montreal, ^{Sumner} our family consisted
 of three children two boys and
 a girl. One dear child we had
 buried in Nova Scotia. Two others
 were born to us in Montreal. These
 five still survive, ^{remember to us,} Our sons are we
 hope making their way in the
 world in honorable professions for
 which they have been prepared
 by the best educational advantages.
 Our daughters are now wives and
 mothers. In 1892 the last year
 of our residence in the old
 College home ^{in Montreal}, though at the time
 we did not know that it was to
 be so, we were able to gather
 them all with ~~our~~ ten grand-
 children under one roof.

Through the goodness of our
 Heavenly Father we were also able
 to have most of them and also
 many kind and sympathetic friends on
 occasion of our Golden Wedding ^{celebration} in 1897,
 of which true notes will perhaps ap-
 pear in a later chapter.

