

"EVOLUTION OF MIND."

The Minister of Education Urges
Upon Teachers to Cultivate
the Study.

Processes Through Which a Lower
Life Has Risen to a Higher
Order.

Helmholtz' Hypothesis—Life Upon
Earth Began During the Paleo-
zoic Period.

The following is the address delivered
by Hon. Col. Baker before the Mainland
Teachers' Association at their recent
meeting in Vancouver:

Colonel Baker spoke as follows: It is
now two years since I had the pleasure
of attending the annual meeting of the
Mainland Teachers' Institute, and I can
assure you that I feel much gratified at
finding myself again addressing you on
this occasion, as in duty bound, in my
capacity of Minister of Education.

My position at these meetings is some-
what analogous to that of a farmer who
is about to cultivate a well prepared
field, which from its fertility and adapt-
ability will respond to his labors, and
any labor which may be bestowed upon
it. I feel that I am addressing those
who trade in knowledge, and we are
therefore all of us sufficiently
aware of how little we really know and
how much we have to learn. And when
we analyze this trade in knowledge,
in what does it consist? In the cultivation
of mind. Yes, but what is mind?

We have heard that question answered
to the effect—"What is mind no mat-
ter, what is matter never mind," but
we will endeavor to refresh our memory
on this occasion, and inasmuch as it is
your principal duty to fashion immature
minds into higher forms, it may be pro-
fitable to dwell for a time upon what
the human imagination conceives the
mind to be, and in order to do this in an
intelligent manner it will be necessary
to go back to the genesis of knowledge.
It is a long, long stride, and when we
have spanned it we find ourselves landed
somewhere about the genesis of
life.

At this resting place we
become aware of the infinite powers
of our reason, and we discover that, al-
though the revelations of the present en-
able us to recognize many of the wonders
of the past, still we can only do so up to
a certain point, and there we are forced
to pause and to bow in reverence to the
superior wisdom of the Allwise Creator.
We have, however, learned this much by
the way, namely, that the limitation
of our reasoning power is being expand-
ed upon a scientific formula, and that in
periods of time the bounds of our
knowledge are being enlarged.

Both in the infinitely great and the
infinitely small we are now able to see
partially where before we were
blind. The microscope has enabled us
to assert that there are living organisms
so minute that they would take six
thousand millions of them to
cover a square inch, and even
under the limit of the microscope would
not be reached in the infinitely great.
The great spectroscope has revealed to us
the composition of the atmosphere of the
sun and its planets, and we are now
able to measure distances so great that
start at, at last, our imagination be-
comes lost in space because our imper-
fect reason does not permit us to realize
a distance so great that it can have no
end, neither on the other hand can we
realize distances being so small that
there must always be something beyond
the boundary.

Hardly a decade passes without some
new revelation from science founded
upon the experience of the past, and
which tells us that although our
former deductions were correct some
of our premises were wrong.

For example, the atomic theory of
Democritus has after a lapse of two thou-
sand years been corrected, and I might
almost say perfected, by Clerk Maxwell
and others. In point of fact we are
gradually being lifted up to a higher
level of reasoning power, and we are at
last permitted to grasp the wonderful
hypothesis of evolution.

And when we contemplate that hypo-
thesis, what a marvellous revelation is
laid out before us! We are first con-
fronted with the advent of life upon this
earth. How it came we are not yet
permitted to know, but a most ingenious
and fascinating hypothesis has been
suggested by the distinguished scientist
Helmholtz, and it may interest you if I
describe it.

It is known that through the azure
and clear sky—which the people of Van-
couver are sometimes permitted to see
—there are passing great streams of
what in astronomical language is called
"dust," which is composed of rocky
matter of various sizes, some of them as
large and probably a great deal larger
than this building. And if it is doubted
that such large masses could be floating
through the sky without being visible to
the naked eye, let it be remembered
that a large object like a balloon be-
comes but a mere speck when even a
few miles distant.

The great streams of gigantic dust
which are circling through space are
probably debris from other worlds,
and their courses have been
so accurately defined by astronomers
that they can forecast almost to an hour
when these streams of dust will come
into contact with the atmosphere of the
earth about eighteen miles distance, but
before that time the attraction of grav-
ity has drawn the nearest rock matter
towards the centre of the earth, and the
accelerating velocity of falling creates
so much friction from the air that the
exterior of the meteorite becomes head-
ed to incandescence and we see what is
called a falling star. Helmholtz suggests
that there are germs of life from other
worlds roaming through space in this
ethereal dust and that they may have
come to us unscathed in meteorites. The
idea certainly harmonizes with the beau-
tiful legend that a star falls unto
us a child is born—"We have seen His
star in the East and have come to wor-
ship Him."

Be that as it may, we are able to fix
the commencement of life upon earth in
the early geological period to which the
name of Paleozoic has been given, when
the atmosphere was far warmer than it
is at present and more highly charged
with carbonic acid gas, indeed at the
period the temperature at the poles was

not much less than that at the equator
—and scientific research leads us to be-
lieve that the medium which surrounds
existence has a great influence upon the
growth and formation of organisms. We
know that a great change has taken
place, not only in the atmosphere, but
also in the composition of the
waters of the ocean since the
creation of the earth, and that a change
is still going on, but so slowly as not to
be perceptible to our senses. Evolution
may, therefore, be an adaptation of life
to the changing medium which sur-
rounds existence.

But before touching upon the spiritual
or psychical condition of life, it may be
well to indicate very briefly a few of the
stages of evolution.

It has been divided into three great
epochs, namely, the Paleozoic, or period
of ancient life; the Mesozoic, or period
of middle life; and the Cenozoic, or pe-
riod of recent life.

As far as our powers of observation
permit us to go, we find that life com-
menced in the Paleozoic period with the
protoplasm or first germ, and that these
primitive cells arrange themselves into
groups to form what are called Protozoa,
sponge-like and shell-like organisms,
which after great periods of time are
accompanied by radiates, which we re-
cognize in the present day in our jelly-
fish, sea anemones and star-fish; and
these again were followed by mollusks
which were the progenitors of our
oysters and clams, and after further
periods of time there appeared the ar-
ticulates, from which have been evolved
our shrimps, lobsters and crabs, and fi-
nally there appeared upon the scene the
vertebrates, which are represented by
fish, reptiles, birds and animals, any
thing, in fact, that has a backbone, and
we remark that in each period of time
there was a higher order of being.

But it must be understood that in this
process of evolution the changes from a
lower to a higher order of being did not
occur in a regular sequence by the lower
disappearing upon the advent of the
higher order; on the contrary, there ap-
peared side by side the protoplasm as a
common centre, and some of the organ-
isms after considerable development fail
and die out, some remain stationary,
while others are developed into higher
and higher orders of beings. This may
possibly be accounted for by the change
which has taken place in the atmosphere
and in the waters of the ocean, which
have become inimical to some organisms
and favorable to others.

Turning then to the Paleozoic period
we find life commencing in the lower
Silurian formation. It may have existed
in the Laurentian in the form of algae
or seaweed, and indeed some scientists,
such as Sir William Dawson among the
number, think they have discovered what
are called Rhizopods, a form of Protozoa,
in the Laurentian limestone, but as far as
our purpose goes we may say that life
commenced in the lower Silurian forma-
tion with the Protozoa, Radiates, Mol-
lusks and Articulates, all of which were
of marine origin. There was no life upon
the land at that period. When we
ascend into the upper Silurian forma-
tion we still find the same forms of life
continuing, but a very important event
now occurs in the history of evolution
by the appearance upon the scene of the
first vertebrate in the form of a low order
of fish, something like a dogfish of the
present day, and I want you to realize the enormous
length of time which it took from the
commencement of life to arrive at even
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Lord Kelvin, whom you may perhaps
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great numbers. For example,
there was the Plesiosaurus, which was
half serpent, half crocodile; the Iguan-
odon, a large lizard, which stood 30 feet
high; Ichthyosaurus, like great croc-
odiles, some of them 70 feet long; the
Pterodactyl, which could fly the air,
swim in the water and crawl on the
land, and from which birds have been
evolved. It had a head like a croc-
odile, and probably our ideas of a
flying dragon are derived from this
beast. Then there was the monster
Labyrinthodon, a sort of huge toad as
big as an ox, which went crawling about
the land and marshy places. Altogether
it must have been a period to give any-
one the jump, and I am very glad that
we are out of it.

But another important event in the
history of evolution occurred towards
the close of the Cretaceous formation
by the appearance of the first mam-
mal in the form of a marsupial, something
after the fashion of our kangaroos of the
present day—so that you see we are
gradually getting up in the scale of life.
This is the Mesozoic period, which
you will remember took eight
millions of years to develop. We
now enter the Cenozoic period, which
has been divided into the Tertiary
and the Quaternary formations. This is
the age of mammals, large and small,
and the Tertiary has been subdivided
into the Eocene, the Miocene and Pli-
ocene formations. We now find, curi-
ously enough, that most of the life
which disappeared during the Cretaceous
formation disappears when we enter
the Eocene, and that new orders are
borne. Again, when we enter the
Miocene, more than half of the
life, the reptiles, birds and animals, any-
thing, in fact, that has a backbone, and
we remark that in each period of time
there was a higher order of being.

But it must be understood that in this
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hypothesis of evolution.

And when we contemplate that hypo-
thesis, what a marvellous revelation is
laid out before us! We are first con-
fronted with the advent of life upon this
earth. How it came we are not yet
permitted to know, but a most ingenious
and fascinating hypothesis has been
suggested by the distinguished scientist
Helmholtz, and it may interest you if I
describe it.

It is known that through the azure
and clear sky—which the people of Van-
couver are sometimes permitted to see
—there are passing great streams of
what in astronomical language is called
"dust," which is composed of rocky
matter of various sizes, some of them as
large and probably a great deal larger
than this building. And if it is doubted
that such large masses could be floating
through the sky without being visible to
the naked eye, let it be remembered
that a large object like a balloon be-
comes but a mere speck when even a
few miles distant.

The great streams of gigantic dust
which are circling through space are
probably debris from other worlds,
and their courses have been
so accurately defined by astronomers
that they can forecast almost to an hour
when these streams of dust will come
into contact with the atmosphere of the
earth about eighteen miles distance, but
before that time the attraction of grav-
ity has drawn the nearest rock matter
towards the centre of the earth, and the
accelerating velocity of falling creates
so much friction from the air that the
exterior of the meteorite becomes head-
ed to incandescence and we see what is
called a falling star. Helmholtz suggests
that there are germs of life from other
worlds roaming through space in this
ethereal dust and that they may have
come to us unscathed in meteorites. The
idea certainly harmonizes with the beau-
tiful legend that a star falls unto
us a child is born—"We have seen His
star in the East and have come to wor-
ship Him."

Be that as it may, we are able to fix
the commencement of life upon earth in
the early geological period to which the
name of Paleozoic has been given, when
the atmosphere was far warmer than it
is at present and more highly charged
with carbonic acid gas, indeed at the
period the temperature at the poles was

not much less than that at the equator
—and scientific research leads us to be-
lieve that the medium which surrounds
existence has a great influence upon the
growth and formation of organisms. We
know that a great change has taken
place, not only in the atmosphere, but
also in the composition of the
waters of the ocean since the
creation of the earth, and that a change
is still going on, but so slowly as not to
be perceptible to our senses. Evolution
may, therefore, be an adaptation of life
to the changing medium which sur-
rounds existence.

But before touching upon the spiritual
or psychical condition of life, it may be
well to indicate very briefly a few of the
stages of evolution.

It has been divided into three great
epochs, namely, the Paleozoic, or period
of ancient life; the Mesozoic, or period
of middle life; and the Cenozoic, or pe-
riod of recent life.

As far as our powers of observation
permit us to go, we find that life com-
menced in the Paleozoic period with the
protoplasm or first germ, and that these
primitive cells arrange themselves into
groups to form what are called Protozoa,
sponge-like and shell-like organisms,
which after great periods of time are
accompanied by radiates, which we re-
cognize in the present day in our jelly-
fish, sea anemones and star-fish; and
these again were followed by mollusks
which were the progenitors of our
oysters and clams, and after further
periods of time there appeared the ar-
ticulates, from which have been evolved
our shrimps, lobsters and crabs, and fi-
nally there appeared upon the scene the
vertebrates, which are represented by
fish, reptiles, birds and animals, any-
thing, in fact, that has a backbone, and
we remark that in each period of time
there was a higher order of being.

But it must be understood that in this
process of evolution the changes from a
lower to a higher order of being did not
occur in a regular sequence by the lower
disappearing upon the advent of the
higher order; on the contrary, there ap-
peared side by side the protoplasm as a
common centre, and some of the organ-
isms after considerable development fail
and die out, some remain stationary,
while others are developed into higher
and higher orders of beings. This may
possibly be accounted for by the change
which has taken place in the atmosphere
and in the waters of the ocean, which
have become inimical to some organisms
and favorable to others.

Turning then to the Paleozoic period
we find life commencing in the lower
Silurian formation. It may have existed
in the Laurentian in the form of algae
or seaweed, and indeed some scientists,
such as Sir William Dawson among the
number, think they have discovered what
are called Rhizopods, a form of Protozoa,
in the Laurentian limestone, but as far as
our purpose goes we may say that life
commenced in the lower Silurian forma-
tion with the Protozoa, Radiates, Mol-
lusks and Articulates, all of which were
of marine origin. There was no life upon
the land at that period. When we
ascend into the upper Silurian forma-
tion we still find the same forms of life
continuing, but a very important event
now occurs in the history of evolution
by the appearance upon the scene of the
first vertebrate in the form of a low order
of fish, something like a dogfish of the
present day, and I want you to realize the enormous
length of time which it took from the
commencement of life to arrive at even
this primitive vertebrate. According to
Lord Kelvin, whom you may perhaps
recognize better under his former name
of Sir William Thomson (and we could
start that, at last, our imagination be-
comes lost in space because our imper-
fect reason does not permit us to realize
a distance so great that it can have no
end, neither on the other hand can we
realize distances being so small that
there must always be something beyond
the boundary.

Hardly a decade passes without some
new revelation from science founded
upon the experience of the past, and
which tells us that although our
former deductions were correct some
of our premises were wrong.

For example, the atomic theory of
Democritus has after a lapse of two thou-
sand years been corrected, and I might
almost say perfected, by Clerk Maxwell