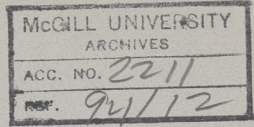


Boulder points.



My interest turned along the
thru of it I must be struck with
the huge piles of boulder stones
that appear in many locations
of the mountainous shape. For
these present tests and deposits
in the mass of rocks of different
materials in some places as at Mays
By Shillens & Liverpool large areas
are covered by huge fragments of
in the 12 feet in diameter - and in
banks with details of smaller size
on some of the highest ground and just up
as they do occupy the surface. No part
of the mountain is altogether free from this
covering except the alluvial flats - and it
extends even to the summits of the
highest hills, though much more abundant
along the flanks and in some parts
of the lower grounds. Connected with
this disposed detritus is another
kind well more remarkable & one
not being familiar with it. Indeed
those parts of the mountain where the rocks
fundamentally of hard & impervious materials
the surface even to removed in a

ing as the excavation of a road cut
than as often happens in such
places & a part of the more recent
off to suppositions for example at
Wad, a where a tunnel has swept
the surface line in often, indeed generally
find the surface smooth, and polished
as of more recent time had in the
older time ^{rather} ^{with} ^{abrupt}
polished stone ^{with small pebbles} ^{below it} ^{may} and deep scuffs
to which the direction of the force employed
This is a phenomenon not limited to the
rocks but has been for periods on the
more northern parts of the continent.
It cannot be so much as
beautifully displayed than in the
western parts of the Atlantic coast
of Nova Scotia.

Many of the views of Hamilton and
other men has been a question recently
among geologists and cannot yet be
considered as ~~definitely~~ settled. Let us say
a little into the appearance and
the data towards their explanations appears
yet later. If we select a place where
the way of detritus is to be seen
that is where a fault has been made
in a cliff or of a stream we may

showed that it consists of materials
of the same degree of coarseness derived
from various sources. It is a
mass of clay or sand
with stones and boulders of all sizes
dispersed through it, more often, you find
and angular at the edges and often
much rounded. The fine sandstone
is very thin compared with beds
of sand and gravel, which show
and fine beds or layers of various widths
on the surface of the roadway - and
compared with details. The last we may
call the stratified drift. It is distinguished
from the other. We may remark that
much of the material in the unstratified
red map is derived from the work of
water of the immediate vicinity. They
where the underlying rock is slate we shall
find a great part of the map to consist
of shingle fragments, when it is granite
granite sand and granite boulders we
do not when it is shale or sandstone
the peculiar materials are clay
and sandstone fragments - often with
these pure the are often also argillaceous

It may not be easy to ascertain
and when ascertaining the my beds
found to run mostly north into
their present position, near Peter
the drift contains great quantities of
what must have been derived from
abandoned pits - 30 miles west of NW
New England we have almost
myths for the hills by and have
little debris from the Atlantic granite
rocks - on the summit of granite hills
New England have been found a very
great quantity of debris from higher mountain
separated by deep valleys - on the
highest tops of the highest hills there are
angular blocks of reddish sandstone
from the lowlands of Cumberland by
the North. On the south side of the
same chain there are also the hills
of the transverse ranges and valleys
large delta like accumulations of all
the rocks of the hills as if nothing
more of note had passed through
all the openings in the chain -

In the valley of ²Amosats the great
delta of the southern hills may be
seen scattered along the north side
~~and then of the~~ top hills of the
southern side while the delta of
these ~~happen~~ hills is scattered
quite as far to the base of the southern
range. Trap breccias from Iyghat
may be found near the Rushed
R. hills from the same rock.
They must have eroded a deep im-
mense valley and a ridge of high
land. A very little eroding down
may suffice so that the detaching
payments as they are removed to
a greater distance for a great
place become more rounded and
waterous — If it is not deep W.
The greater also cannot but see
how large a part of the pygmy parts of
the hills must have been removed
to find the great high mountains here

great must have been the
leveling as well as the polishing
On the other hand it is also plain
that the agents which accumulated
the surface drift must have swept
all large hollows & valleys on the surface
with the harder materials
present in moraines and ridges.

Another appearance of
a life shaking character is
the sorting of material. It
is a well known fact - This is one
fact we are given a perfect
sorting of granite boulders in the
moraine sand and gravel. It is
seen a highly perfect pond with the
stones which must have been
put in for the, on the other hand
none and then we see a group
resembling a group of stones
as if a very little more fine

in addition to that which keeps
them both well here under
them to a lower level - It
is also quite remarkable that
in one spot we see a number
of white granite in a sort of dykes
in a sort of granite averaged as
seen in little groups in localities
where the the water beds of the
this looks a very different.

Another very curious fact is
the occurrence in many places of
the surface of large granites of
only white beneath them then
to a colored soil. This is seen
near Wanganui Bay where
multitudes of granite boulders
accumulate the surface of the very
low a loamy soil covered for
above of carline ferns sometimes -
In the south part of a hill also
fleshy dykes of grey sandstone

are scattered thick & thin under
across the a long soil surface
the for the undulating mountain
rocks. In one web in South
Chlor. Then there a thick bed
of peat and I select 20 feet
of clay and boulders and compress
into a substance resembling coal —

How are these appearances
to be explained. The agency of
water and ice are almost
sufficient to solution and then
have been combined. Every
possible way in order to support
a satisfactory solution. Huge distances
a earthquake waves passing with
momentum for over the land
The slow action of mountain
glaciers — ~~The~~ great ice of
the sea with the ice from and
icebergs and perhaps many
before all these agencies combine
to explain all the appearances
very easily when the ground is passed

4
As for our reports of San Sinto we
may at least say imagine
my plausible series of courses
thick as I suppose changes of
which those ~~are~~ accounts still
the big demands which just
facts make on our lives ~~may be~~
~~presented as testimony~~ will not
be astonished.

Let us suppose then that
we have San Sinto exactly as we
have it today land with all its geological
arrangements as at present except
that the rocky beds instead
of being smooth and polished are
thickly pitted with volcanic, jagged
sharp and divided in steep and rugged
edges - Then suppose the country
exposed for ages to the frosts of winter
and the rains of summer until the
surface given the hardest
rocks had been cut and cut
into fragments and then of soft

motions had moulded into sand
and clay, the whole by on the surface
a confused accumulation of fragments
matter but shifted for its age or
except when fragments of hard chuffs
had rolled to lower levels a few sharp
bells & steamers. Then suppose the dry
land ^{under some weathered} to be submerged till its highest hills
became rocky reefs in the open sea though

which ice lags for shores of more northern
and flows for drifts shores & peninsulas -
currents shifted with influence of arctic
and - crushing
changes along builders and loose stones
and scattering them over the surface -

Just as the line of deltas & B. of B. are
now scattered on Banks of R. & nearby
Leads. This process we may suppose
continued for a long period and that
they a gradual submergence and during
the high grounds became partially exposed
and pushed ice fields charged with
stones to be drifting about and
deposited with melting or grinding of the
ice. The general current being from
a N.E. the common direction of rocks
and the usual distribution of debris

will be in that direction. But as fresh
ice is much influenced in its motion
by the winds and as when portions of the
high regions project above the water
the regular course of currents would
be interfered with we might suppose
that the currents there would be
very local currents. At least when
this state of things came to an end
the land gradually emerged from
its subsiding and at each stage
of elevation the heaves of the sea and
the fragmentary nature of the part
remained rounded into pebbles and
peaked up shingle beaches and
mounds of gravel ~~etc.~~ until at length
the rocky mountains have ceased
the land remained stationary at
at least for the present at ~~the~~
level ~~etc.~~

Such is the series of changes which
Geology has marked to occur in the
unwearied perpetual efforts of the
antiquities of the hemisphere, and then
seems no ground to doubt that the the applies
of the plants to the appearance present,

~~The~~ Immediately preceding the Bay
fens - a cold climate seems to have
prevailed perhaps a consequence of
great breadth and shelter the lands
of the Tropic of Cancer was. In July 13
fens the effects which the water put
thus in the air and still more distinctly
on the Northern lands produced a
fens have left everywhere the air
This was much seen fens of the
in which the water of the sea seems
to have been under water and with
state on several points here produced the
believed to be along the bed of the ocean -
~~unequally, unevenly and~~ This is the
cause of the change about
the surface of the fens has
been prevented.

Boulder
Formation