

Please to
return
M.D.

Carpenter
Bristol. Aug 13/84

Dear Dr Dawson

Since you left London, I have been making further examinations of the rock in which the specimens of *Lozoon* we collected together are imbedded; and I have become still more strongly convinced that it is formed of materials derived from previous generations of *Lozonic* growths. I have examined a good many ^{specimens} sections both by treatment with acid, and by transparent section; and I have uniformly found that the rock is composed of alternating layers (varying in thickness) of Serpentine grains - corresponding to your *Archeospherins* - cemented together by calcareous deposit; and calcareous fragments, which have every ap-

pearance of being the broken-up material of the calcareous layers of Eozoon.

The serpentine grains are (I think) ^{merely} ~~constantly~~ aggregated into layers, instead of ^{forming} ~~being~~ (as in the micaceous portion of Eozoon) a continuous growth. Sometimes they coalesce into larger particles, as if by partial solution and re-deposit. And on looking carefully at a considerable number of my Eozoon sections, in which (as I remember showing you) there are large patches more or less completely destitute of intervening calcareous substance, I have seen this so constantly associated with evidence of distortion, that I have come to regard the removal of the shell-substance by solution, and the closing-together of the

serpentineous elements, as a ~~not~~^{most} result of pressure. (You will doubtless remember that Loisy long ago pointed out the way in which pressure helped solution.)

Alike in the decalcified and in the transparent sections, I find the calcareous fragments often exhibiting very well marked canal-systems, some large, others very minute. The manner in which these are often seen to terminate abruptly at the edge of the fragment, and the general irregularity of their disposition, ^(as shown by polarized light) strikingly contrast with their regular arrangement in the calcareous lamellae of Eozoon. The derivation of the materials of this rock from disintegrated Eozoon seems to me so clear, that it may be accepted even by those who hold the latter to be a mineral product. My son will show you a capital

enlargement from a photo he took
of one of my deeply etched speci-
mens; this shows the structure
of the rock extremely well. The cal-
careous lamellae ^{include} contain a greater
or less proportion of small fissured
crystals of malacolite; and one of
the layers (at the small end of the
section) is almost entirely composed
of that mineral

I should much like to know
what Dr. Sterry Hunt and your-
self think of the mode in which
the serpentinous grains and ^{the} cal-
careous fragments have been (as
it were) sorted out so as to form
these layers. If by gravitation, then
they ought to lie parallel to the
bedding; and this point I hope
you will determine (if you have
not already done so) when you
go up to the place with Borney.
I am also anxious to learn whe-
ther further examination of the
country justifies my impression
that, notwithstanding the age of
this Eozoic limestone, there is no

evidence ^{in its story} of such local disturbance, as ~~would~~ ^{must} have produced metamorphic obliteration of organic structure. Bouney thinks this point very important; as the microscopic examination he has been making of Archaic rocks has strongly impressed him with the general fact of their greatly altered condition. He has not seen the transparent sections which my Son will show you; as I only got them after he left. The tumbling together of the calcareous fragments, seem to me most clearly shown by the diversity ^{in the direction} of their crystalline axes as seen by polarized light.

You may be interested in knowing a remarkable discovery just announced in the Somersetshire Coal-field by a local coal-owner of considerable geological ability, W. Handel Cosham. He believes himself to

have made it quite certain that the coal-measures he has been hitherto working are in a fold which was thrown over by the upheaval of the Mendip hills; and that the true original coal-measures lie at a very accessible depth beneath, making (as he says) a reserve of 8 millions tons, probably of a quality very superior to that of the seams now worked, which are about the worst in the market. He thinks, also, that there is a strong probability of the extension of this coal-field south of the Mendips.

Wishing you a successful and pleasant Meeting, and with kindest regards from Mrs C. and myself to Mrs D. and your daughter, I remain

always yours faithfully
Wm^m B Carpenter