

Charlotte Waters
21st July '96

Dear Professor,

Many thanks for enquiring about plant. I should not have sent it but that several horses have died here lately, and this plant being Euphorbiaceous I thought it was probably the cause.

I quite agree with you that the hot spring theory is quite as bad as the volcano, and think in my letter I ascribed the calcification of the desert sandstone to deposition from sea water, and only invoked the aid of hot springs to account for some mound-like elevations capped with large masses of limestone.

rock, and for the silicification, in places, of the Cretaceous ironstones and Karwins. By this I mean apart from the Supra-Cretaceous sea concretions with the final upheaval of the Bessert Sandstone. But I find that the direct action of hot springs will not account for the ferruginous rocks as they ^{are} are distributed all over the higher tablelands altho' not in such large masses as on the isolated mounds rising out of the valleys.

The diversity of the formations underlying the Supra-Cretaceous at comparatively short distances apart points to denudation of the Cretaceous prior to the deposition of the Bessert Sandstone, and some denudation of the latter may have taken place before its final upheaval and silicification, as land and marine conditions appear to have alternated

during its deposition. Presuming that the Supra-Cretaceous formation was thick and uneven on the elevations, and thinner and felspathic in the depressions, the silica would penetrate to a greater depth and form a more stable or weathering proof combined with the sand than it would with the clays, and the latter occupying the depressions would in time be denuded leaving the Sandstone capped hills isolated. The Scoriaeous

Chalcedony and allied micaceous masses found on the surface may represent the final deposit of silica after the underlying rocks were saturated, and as the saturation would occur earlier in the case of the felspathic rocks the surface masses would be larger when found in the concretion. Their Scoriaeous appearance is probably due to the decomposition of included felspathic and other matter. The coarse felspathic

truccias sometimes present a very ^{Leucianic} appearance through the feldspars being decomposed and only a network of the cementing silica left. A hill near here ^{Leucianic} is capped with masses of the rock overlain by heavy sandstone and silicified ^{quartzitic} ironstones and kaolins. It is noteworthy that where limestone occurs the capping is always chalcedony. The obsidian must I think be derived from the older rocks - probably an examination of the ranges to the westward of here would throw some light on their origin. How they were transported with so little erosion is a mystery unless one inflicts an Ice Age on a country that has already been roasted and boiled. Still, despite the latitudes, such a condition may not have been altogether impossible, tho' I can understand the objection a strict uniformitarian like Tate would have to the introduction of a cause demanding

extraordinary conditions.

Your suggestion that the silica was supplied to the sea by hot springs appears probable, as they might represent the second stage of volcanic action, or the accompaniment of such action at a distance. But tho' a fresh water sea may have existed during Tertiary times I think it could only have covered portions of the recent sandstone. To have caused the desiccation it would have to be co-extensive. Tate in the Horn work is very reticent, merely referring to a basin at Walthour Springs and a supposed one at Crown Point. He certainly says that the rainfall was at our time "vastly" than at present, but even that condition would not require a rainbow as an assurance of safety from deluge. In his pamphlet he speaks of the vast lacustrine area which isolated West from Eastern Australia

and of the similar fresh water area which
continued the isolation into late tertiary
times, but the only witness adduced in
favor of the fresh water sea is the existence
of circumcumbent lake basins, extinct rivers,
and the remains of Crocodiles and large
Labyrinth. Of course a glacial period
in tertiary times might have occasioned
large bodies of fresh water like Lake
Labonton & Bonneville in N. America!

I agree with your description of the formation
of the gaps, but why should not Crown Point
Lays have been formed in a similar manner?
It seems strange that the Finks, which had
kept pace with the upheaval of the Salinian
and flowed into the Super-Catawissa Sea,
should, on the upheaval of the Desert-
Sandstone, only succeed in cutting a
channeled 100 miles in length before
the country was denuded nearly to its
present level. It is especially

difficult to understand if Fink's
theory of Salification is accepted,
for then the Finks would only tend
to cut its way through soft Sandstones
and Clays, and the Salification must
have taken place while it was
winding its way to C. Point. Don't
you think it more probable that the
Salification had already taken place,
and that the Finks on arrival at
Crown Point found a depression between
two slight elevations, and, flowing in
a broad channel, left a single deposit
in front of, and at the sides, of the elevation.
This deposit may have been repeated at
different times, and each deposit would
be left on the banks as the river
channeled became deeper & narrower
with reference to the distribution of the
tomb. I know that they are found from
Tacoma to St. Louis (over 500 miles)

and in this vicinity they are found on the
tablelands twenty miles East and thirty or
forty miles West. Perhaps they are more
plentiful in the vicinity of the Peak and
Lerr than elsewhere, but I think they come
from the West.

Watt's sections are well done, and his
account of the crystallization of the
mica is interesting, but on the whole -
tho' I am not at all enamoured with my
own opinions - I don't care for the
geology. The Silurian part may be
good, but little is added to our
knowledge of the Cambrian. Watt
cannot be held responsible for this as the
time at his disposal was altogether
too short for a detailed examination.

I am sending you a few bombs, one
of which seems to have taken on its
present peculiar form while spinning
in the air as it shows no marks

of impact with the ground. It may
be a button which his Latanic Majesty
dropped when stopping a volcano. I
am also sending an Apunga, or
bag, and a couple of Trovas.

Only two Leaywarder, obtained in Umbri,
and one dried Mole have been brought
in, and I am holding them over till
I get enough to fill a tin. I will
keep a look out for the Crustacea
immediately rain falls and obtain all
the information possible about them.

Goodness only knows when we will
get a rain. Our waterholes are just
dry and I am hard at it fitting
the stock together and shepherding them
to the Finke. With this and unexpected
travelling I look for the Queensland
bag I am kept going. The behaviour
of this bag is rather difficult to explain
according to the doctrine of the

Survival of the fittest. Perhaps his mission is to improve the breed of cattle. It would be sacrilegious to suggest that the country was only suitable for ticks!

Gellan must be having a great time amongst the ticks. His whole heart is in the work, and he spares neither himself nor the niggers. One civilized blackboy, whom he had questioned into a state of demerit, recently burst out with "— it Mr. Gellan you know more about that —" suggests than I do. Let me alone!

Cowley's suggestion re asking the Comptroller of Police for his assistance is a good one, and there is no doubt the use of the Camels would be gladly granted. If this drought continues it will be impossible for you to do anything without Camels as

all the outside waters are dry. Cows will be pleased to have another trip out with you.

I hope to get away from here about the end of September and will

Probably be in Melbourne early in October but I can't say exactly what I will do in Adelaide, I am glad that I will have at least a week or so with you here when you are returning, when we may solve the Zoological Problem. I think you will do it — of course with the assistance of an eminent Zoologist like myself!

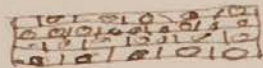
Yours for Sincerity,
P. A. Lynd

Professors D. Bellin & Lynd

July 23rd

Having finished prospecting yesterday I ventured over to the Anderson Range (12 miles west) this morning to have another look at some peculiarities I had noticed there.

I found the Range capped with flattened desert sandstones which in many places was conglomeratic from top to base. Both top and base of the section examined were silicified, but the centre was in many places loose and crumbling. Imbedded in a section of the soft conglomerate I found a rounded and striated siliceous boulder. It projects out of the conglomerate about a foot, and a few inches in from the face, it was broken, but the other half or portion was partly visible. On the lower spurs were a few isolated masses of conglomerate, siliceous breccia, and a white vesicular rock, which formed the capping - all blended together into a compact mass. In the conglomeratic portions the dark, brick red, cementing silica

was largely in excess of the Quartz inclusions.
 One boulder of this rock $6 \times 6 \times 9$, weighing
 say 20 tons was in an inverted position
 the base presenting a flayed appearance
 and the vesicular capping resembling
 this . On a slight saddle
 there is a smooth space which descends
 the hill on the North side for twenty or
 thirty feet and then sweeps East and
 West, being bordered on both sides (especially
 that nearest the hill, by blocks of desert
 sandstone conglomerate.

I had got this far in my examination when
 I noticed my horse making off in hobbles
 and when I got him back to where
 I had left the saddle it was too late
 to climb the hill again. So I will
 have to pay it another visit. I send
 you a rough sketch which doesn't
 pretend accuracy, and some numbered
 specimens of rock - N.º 1 capping of conglomerate

N^o 2 center, N^o 3 back, N^o 4 underlying
paleolithic rock; others labelled
Small apologies for reflecting all
this on you, but don't refer to the
subject again, and I promise faithfully
not to find any more rocks!

PAB

P.S.

Others similar to those in the
complement are distributed over
the low hills 9 or 10 miles N of Point
and also in a small tract running
out of a hill about 2 miles N of
Mt. Squaw



21



10 feet
 XXXX Lathford basalt sandstone conglomerate, varying in texture and hardness
 10-12 feet
 basalt sandstone conglomerate relicified top of base. } a crack
 # # # # top of platy the rock underlying conglomerate

B shingly slopes
 S. bicircular chopped boulders
 R smooth spars
 • striated boulders

Note. The first sketch is Shenas. Height of hill about 200 feet, but top portion is on a large scale. Below conglomerate



forms plan!
 Ladle