

Letter to Roderick I. Murchison, [August 1855]

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[0001]

[...] above its confluence with this arm
and the great body of flowing deep water
it there contained from 80 to 100 yards made
me believe that it receives a supply from
the Northern as well as from the southern
end of Dilolo. the fever having there caused
vomiting of large quantities of blood I had
no inclination to return and examine
the curious phenomenon more minutely.
But I consider it as almost quite certain
that Lolem lewa parts its waters between
the Atlantic and Indian Oceans. thus
a portion down the Casai Zaire or
Congo and another down the Leeba
Zambesi. the whole of the adjacent
country is exceedingly flat. In coming
to Lotembwa from the North we crossed
a plain 24 miles broad so level the
rain water stands on it for months
together and when going North we waded
through another south of Northern Lotembwa
15 miles broad and a foot of water on [...]

[0002]

Dilolo and the Lotembuas seem [...]

As the Society is supposed to collect
Geographical information from every
quarter, and then acts on the eclectic
principle of securing the good and true
from the heaps of nonsense which
travellers abroad and loungers at home
may send to the crucible, I have with
less diffidence than I should otherwise
have felt, resolved to state some ideas
which observation and native information
have led me to adopt as to the form of
the southern part of the continent. It is
right to state also distinctly that I am
now aware that the same views were
clearly expressed in the anniversary speech
of 1852 by the gentleman to whom this
letter is addressed, yet having come to
nearly the same conclusions about 3 years

afterwards and by a different route, the reasons which guided my tortoise pace may though stated in my own way be accepted as a small contribution to the [0003] [...] of the inferences deduced from the study of the map of M^r Bain.

In passing Northwards to Angola the presence of large Cape Heaths, Rhododendrons & Alpine roses, and more especially the sudden descent into the valley of the Quango near Cassangé led me to believe we had been travelling on an elevated plateau. I had hopes then of finding an Aneroid at Loanda but having been disappointed in this I had to resort on our return to the next best means of measuring elevations viz. the point of ebullition of water. I have no table at hand for turning the degrees into feet and will give therefore a list of observations only and if you do not reject the instrument altogether it will be allowed that there is some plausibility at least in what follows.

		Brisk Ebullition
4210 feet	Top of the rocks of Pungo Andongo	204°
3151 - " -	Top of the ascent of Tala Mungongo	206°
2097 - " -	Bottom of same Ascent	208°
3680 - " -	Bottom of Eastern Ascent	205°
5278 - " -	Top of Eastern Ascent	202°

[0004]

Dilolo	203°	4741 feet
Confluencce of Leeambye & Leeba	203°	4791 feet
Linyanti	205 1/3°	3521 feet
Lake Ngami	206° or 207° = 206 1/2	2600 to 3151 feet

the highest point in the district of Pungo Andongo is given to shew that it is lower than the ridge which I believe is cut through the valley of Cassangé in which the Quango now flows. And the top of the ascent of Tala Mungongo which to the eye looks much higher than the Eastern ascent as if we may

depend on the point of ebullition as
an approximation - is in reality much
lower indeed not more elevated than
Lake Ngami which is clearly in a
hollow. In coming along this elevated
land towards the Quango we were
unconsciously near the crest of a large
oblong mound or ridge which probably
extends through 20° of Latitude and gives
rise to a remarkable number of rivers
thus the Quango on the North, the Coanza
[0005]

4th Sheet

on the West. the Langebongo which the
latest information makes the Loeti & the
numerous streams which unite and form
the Chobe on its South West. All the feeders
of the Casai and that river itself on the
East and probably also the Embarrah or
river of Libébé on the south. Yet is by
no means mountainous. The general direction of all these rivers except the
Coanza and Quango being towards the
centre of the continent, with Northing or
Southing in addition according as
they belong to the Western or Eastern
main drains of the country, clearly
implies the hollow or basin - form
of that portion of Intertropical Africa.
the country about Dilolo seems to
form a partition in the basin, hence
the partition of the waters of Lotembwe.

Viewing the basin from the Northward,
we behold an immense flat intersected
by rivers in almost every direction, and
these are not South African mud, sand
[0006]

or stone rivers either, but deep never failing
streams, fit to form invaluable bulwarks
against enemies who can neither swim
nor manage canoes - and they have
numerous departing and reentering branches
with lagoons and marshes adjacent so
that it is scarcely possible to travel
along their banks without canoes following.
We bought two donkies as a present from
certain merchants in Loanda to Sekelétu,
and as this animal is not injured by
the bite of the tsetse, they came as frisky
as kids through all the flowing rivers

of Londa but when we began to descend the Leeambye dragging them almost hourly through patches of water or lagoons nearly killed them and we were obliged to leave them at Naliele. these valley rivers have generally two beds one of low water and another of inundation. the period of inundation does not correspond with the rainy season here but with a period subsequent to that in the North. the flood of the Leeambye occurs in February and March while that of the Chobe from [0007]

being more tortuous a month later. We hear of its as flooded 40 miles above Linyanti 8 or 10 days before it overflows there. But when they do overflow then the valley assumes the appearance of being ornamented with chains of lakes and this is probably the geologically recent form in which the great basin shewed for all the low water channels in the flats are cut out of soft calcareous tufa which the waters of this country formerly deposited most copiously. the country adjacent to the beds of inundation is except where rocks appear not elevated more than from 50 to 100 feet above the general level.

that the same formation exists on the Eastern side of the country I aver from the statements of Arabs or Moors from Zanzibar. they assert that a large branch of the Leeambye flows from the country of the Banyassa (Wunyassa) to the South West and passes near to the town of Cazembe. It is called Loapola. The Banyassa live on a ridge parallel to the East coast [0008]

and though they have no Lake in their own country, they frequently trade to one on their N.N.W. My Arab informants pass this on their way home to Zanzibar. It is said to be ten days North East of Cazembe and is called Tanganyenka (Tanganyenka) and connected with another named Kalágue (Garague?) and both are stated to be so shallow the canoes are punted the whole way accross (3 days) Will it be over speculative to suppose that these large collections of fresh water are nought

else but the residua of greater and deeper
Lakes just as Lake Ngami is? - the openings
in the Eastern ridge not being deep enough
to drain those parts of the basin entirely.

In a foray made by the Makololo
in the country about East of Masiko's
during our visit to Loanda, they were
accompanied by the Arab Ben Habib
from whom I received much of the above
information, and saw another river than
the Loapola coming from the North East
with a South West course to form a
[0009]

Lake named Shuia Shooea A river
emerges thence which dividing forms the
Bashukulompo and Loangua rivers. There
is a connection between these and the
Leeambye too, a statement by no means
improbable seeing the country around Shuia
(Lat 14° or 15°. Long 27° or 28°E?) is described as
abounding in marsh and reedy vallies.
When there the Arab pointed to the Eastern
ridge whence the rivers come and said "When
we see that we always know we are about
to begin the descent of ten or fifteen days
to the sea"

I am far from craving implicit
faith in those statements for so many
possess a sad proneness to "amiability"
and will roundly assert whatever they
guess will please you. "Are you happy
as a slave" "O, infinitely more so than
when I was free." but my object in making
enquiries was unknown and when supported
by the testimony of the Makololo the statements
may be taken as supporting the view
[0010]

that the central parts of Africa south of the equator
though considerably elevated above the level of
the sea, form really a hollow in reference to
two oblong ridges on its Eastern and Western
sides. As suggestive of further enquiry
only I may mention though not pretending
to have examined the pretty extensive
portions of the country which came under
my observation with the eye and deep
insight of a geologist the general direction
of the ranges of hills. the dip of the strata
being down towards the centre of the country

led to the conclusion before I knew of the existence of the ridges - that Africa had in its formation been pressed up much more energetically at the sides than at the centre. the force which effected this may have been of the same nature as that which determined most recent volcanoes to be in the vicinity of the sea. this seems to have been the case in Angola at least and having probably been in operation over a vast extent of coast probably decided the very simple littoral outline of Africa
[0011]

I am inclined to make this suggestion because when the ridges are situated far from the coast they do not seem to owe their origin to recently erupted rocks. We have a section of the Western ridge near Cassangé of nearly a thousand feet perpendicularly and except a capping of Haematite mixed with quartz pebbles it is a mass of the red clay slate termed in Scotland "Keel" the thin strata of which are scarcely at all disturbed (this keel is believed to indicate gold. Had I met a nugget I would have mounted a mule instead of the ungainly beast I rode.)

I have mentioned Dilolo as forming a sort of partition in the valley but it is not formed by outcropping rocks one may travel a month beyond Shinte's without seeing a stone. But in proceeding south of Ngami the farther we go the greater has been filling up. the 25th parallel of Latitude divides a part of the valley containing one thousand feet more filling up than that North of Kolobeng and strangely enough the only instance of a large
[0012]

transported boulder occurs first at the edge of the more hollow part. the plains to the south of that are all elevated perhaps 5000 feet above the level of the sea but the erupted rocks as that on which Kuruman stands have brought up fragments of the very old bottom rocks in their substance.

As I am not aware whether the Rev^d D^r Buckland made any public use of a paper I sent in 1843 on the gradual desiccation of the Bechuana country it

may not be improper to mention that in support of the actual drying up of all the rivers which have a westerly course I pointed out the bed of a still more ancient river than those trickling rills which now pass by the name. It flowed from North to South exactly as the Zambesi does now and ended in a large [Lake] which must have been discharged when the fissure was made through which the orange river now flows. At the point of confluence between river and Lake some hills

[0013]

of amygdaloid caused an eddy and in the eddy we have a mound of tufa and travertin full of fossil bones. From these I had hopes of ascertaining the age of the river but in addition to being much restricted by sacred duties as to time I have been singularly unfortunate in learning geology. I had no instrument with me when I discovered these beautiful fossils which stand out in relief on the rock. on the second occasion I was called off by express to the child of another missionary and galloped a hundred miles to find him in his grave and to crown all some epiphyses and teeth which I picked up when sent with specimens to illustrate the geology of the interior though taken to England by the Rev. H. H. Methuen were stolen from the railway before reaching the venerable Doctor's hands.

As it is not likely I shall ever visit the spot again I may mention that the mound is near Bootschap and well known to Rev H. Helmore who

[0014]

would willingly shew it to any one desirous of procuring specimens. they are perfectly fossilized and in shape resemble those of Zebras or buffaloes.

With respect to the spirit in which our efforts have been viewed by the Makololo, I think there is no cause for discouragement. the men of my company worked vigorously while at Loanda and saved what to them appeared considerable property.

But the long journey back forced
us to expend all our goods and
on arriving at the Barotse we were all equally poor. Our reception
and subsequent treatment were
however most generous and kind.
the public reports delivered by my
companions were to me sufficiently
flattering and their private opinions
must have been in unison for

[0015]

many volunteers have come forward
uncalled for to go to the East. A fresh
party was dispatched with ivory for
Loanda and only two days allowed for
preparation. they are under the guidance
of the afore mentioned Arab from Zanzibar
the men having no voice in the disposal
of the goods. they are simply to look
and learn. After my late companions
have rested sometime it is intended
that they return as independent traders
and so of the others this was not my
suggestion indeed I could scarcely
have expected it; for the hunger and
fatigue they endured were most trying
to men who have abundance of food
and leizure at home. But the spirit
of trade is very strong in the Africans
and they are so elated with the large
prices given at Loanda. If no untoward
event interferes a vigorous trade will
certainly be established. the knowledge

[0016]

of the great value of ivory puts a stop to
the slave trade in a very natural way
our cruizers on the West coast render
property in slaves of very small value
there - the Mambari who are generally
subjects of Kangombe of Bihé or
Bié purchase slaves for domestic
purposes only but to make such
a long journey as that from Bié
to the Batoka Country, East of the Makololo at all profitable, they
must secure a tusk or two. these
can only be got among certain
small tribes who depend chiefly
on agriculture for subsistence
and are so destitute of iron they often
use hoes of wood. they may be induced to part with ivory and
children for iron implements but
for nothing else. the Mambari tried

cloth and beads unsuccessfully but
hoes were irresistible, the
[0017]

The above ideal section of the country between 9" and 10" South Latitude and 13" - 18" East Longitude is sent with a sense of its many imperfections. I would scarcely have ventured to send it at all in its present state, but having once indulged the hope of forming a geological map of the country North of the Orange river as far as Lake Ngami I made a very extensive collection of specimens of rocks for the purpose. As I did not know many of them while waiting for farther information I lost both specimens and papers in the destruction of Kolobeng by the Boers. This misfortune makes me anxious to send any information I can pick up out of harm's way. The following additional remarks may not be out of the way.

Between 3 and 4 in the district of Cazengo the igneous rocks indicated at 2 have evidently ran through gorges in the mountain ranges 4444 and have tilted up schist, gneiss &c. and in the latter veins may be seen or rather cracks filled with a dark blue rock exactly like clay slate. Between 3 and 4 too in the districts of Cazengo and Golungo Alto abundance of excellent iron ore occurs. some strongly magnetic, others not; but all very largely impregnated with the metal. To the North of 2 and 3 near the river Dande Petroleum is reported and so it is said to occur - southwards of 5 from under the dark red sandstone which forms the crust of the country. the spot reported is on the banks of the Coauya and near Cambambe. Veins of copper appear on the banks of the Coauya in the same district but I did not see them. the rocks of Pungo Andongo (7) are large masses of conglomerate about 300 or 400 feet above the surrounding country. they stand in parallel lines nearly N. and S. in direction and rather more than a mile in length the conglomerate stands on horizontal strata of dark red sandstone and this in a very small proportion to the other materials forms the matrix. there are granite, gneiss, porphyry, schist, clay, and sandstone, trap syenite greenstone - quartzite &c &c all rounded and waterworn and forming immense masses of shingle. there is also a kind of soft limestone containing sea shell on the tops of some of the rocks D.L.

Remarks.

1) Lowlands adjacent to rivers and extending about 50 miles from the coast. composed chiefly of calcareous Tufa and a marly rock composed of lime &

friable clay, containing
many sea shells. modern
near the coast, ancient inland.

2) Porphyritic trap
having dark red angular
crystals embedded in it.

3) Pale red sandstone
tilted up from the West.

4) Micaceous schist
stratified and tilted up
a great variety of
angles but generally
from the West & S:W:

5) Clay slate and
sandstone schist

6) Gneiss lying under coarse sandstone grit
and occasionally brown
haematite

7) Large masses of
shingly conglomerate
300 or 400 feet high

8) Coarse dark red
sandstone with pebbles
of greywacke, granite
clay schist &c in beds
the sandstone itself
lying in thick horizontal
strata

9) The same sandstone
~~but~~ without pebbles but
having much yellow mica scales

10) Soft bright red
clay which gradually
becomes harder as
we descend to the
bottom of the valley
a mountain called Casala near the village
Casamsange has the very
same structure as the descent

No rocks
appear above
ground till we
approach the
Zambesi the opposite
descent has
the same red clay structure