

Traveling about
France (the Meuse
valley)
I enclose this to Father, as perhaps he can
enlighten me in regard to the questions I ask.
bridges, canals, etc

Acc. 976

My dear George,

I am now at this little place from which I date. It is a town of some 10 000 inhabitants on the line from Paris to Metz, where it crosses the Meuse. It is fortified, & every available inch within the walls has already been occupied. The Meuse passes under the walls, & at the upper end of the town there is an arrangement for damming it, so that the whole valley for miles above can be flooded as a means of defense.

I have come into this part of France to see the work that is going on on the Canal de l'Est. It is in two sections, one of them passing over a part of the Vosges mountains, & uniting the Saone with the Moselle. This section descends the Moselle to a point near Nancy where it unites with the Canal from the Meuse to the Rhine (Paris to Strasbourg)

The other ~~main~~ section leaves the ~~land~~
Paris-Strasbourg Canal at a point a
little further on, & descends the valley
of the Moselle to Belgium.

I went first to Nancy on leaving
Paris, as there is a great deal that is
interesting to be seen in that neighborhood.
From there I took a trip up to the
summit of the canal in the Vosges. The
principal difficulty there is the supply
of water, as of course the locks descen-
ding in each direction have to draw
their supply from the summit. To
make up the loss an alimentary canal
about 12 miles long brings a supply from
the upper Moselle. It passes through
two tunnels, each about nearly a mile
long, before reaching the canal. These
tunnels are through the Grès bigarré
or variegated sandstone of the Vosges. It
is a curious kind of rock. After being
exposed to the air it is hard enough to
be used in masonry; but in tunnel-
ing through it, the blasts throw it
into sand by the effect of the concussion.
Parts of the tunnel need to be timbered,
as every here & there, beds of having
very little consistency are met with.
The general structure of this country

is not difficult; but I must own to
having forgotten a good deal of the
arrangement of these newer formations.
The dip all the way from the Dofes
to this point is with the direction of
the rivers, so that they rise in the
series in descending from the Mountain
After leaving the Grès-bigarré & Muschel-
kalk of the Dofes, the succession continues
ascending till here the Oxford Clay &
Coral rag are met with.

I wish I knew of some way of
classifying soils; not so much from
an agricultural point of view; but for
the purpose of describing them accurately.
Gravel sand & clay are such wide &
indefinite terms; & there are all kinds
of mixtures of sand & clay. Even the
chemical nature of the sand & clay, ^{separately} above
& the proportion of the mixture is not
sufficient to define it for my purpose,
as the consistency is one of the main
points, & seems to be independent to
some extent of these proportions. I
met with a kind of clay that had
been excavated from the bottom of a
little lake. When damp it was almost
as tough as our blue Leda clay, but
& on drying cracked up into hard little

cubes, almost as hard as if it had been "blue-clay". Still it was an extremely different substance, as it absorbed water & turned into mud in a way quite different from anything that Leda clay is capable of. ~~Now~~ It was what English Engineers call silt, being deposited by the water of the lake. Now how could such a material be described? and what is the exact difference between it & Leda clay? There are no doubt chemical differences; & it is deposited by fresh water & not by salt. The purposes to which it can be applied by a contractor are essentially different from the uses of the other, & if called "clay" might be very misleading. It cannot be used for making dams, as instead of working up with water into a stiff pasty material, it turns into mud. It cannot even be left under an earth embankment, as it is compressible. I should very much like to see a work which would explain these differences, giving the chemical composition & physical properties of different soils, and a set of names by which they could be designated.

Another thing that I cannot explain to myself, is the way in which river

valleys are formed. The Meuse for ex-
ample, flows through a wide ~~of~~ meadow
for miles of its length. The meadows
are almost absolutely horizontal, ~~and~~
~~extend~~ form the bottom of the valley,
which is about a mile wide. The Meuse
summer level of the meuse is only about
2 or 3 feet below the level of the meadow
so that the least rise of the water,
floods the whole valley from side to
side. During these floods, a thin coat
of mud is deposited, so that at present
the meadows are slowly rising. On ex-
cavating anywhere in the valley, a
layer of clay about 3 feet thick is
found to extend over the valley, being
made up of these successive annual de-
posits. Below this to an indefinite
depth, is found a fine gravel. This
is obviously formed by the river, but
the question is When? as at present
nothing of the kind is added to the
bed; although the depth of the river is
greater than the layer of clay so that
the water often flows over the gravel
below. There must have been some
very different condition of the river
in former times, but there is no

reason for supposing that the change is
periodic, between it & the present regime.
How then was the change affected, &
what caused it?

I am intending to go as far
as the town of Charleville, & will follow
the offense as far as the Belgian fron-
tier before returning to Paris.

The weather here is pleasant, although
it has been rather warm last week.

I hope you have had a pleasant
journey to Victoria although staying
is apt to be tiresome. Let me hear
from you your plan for the summer
& where I am to suppose you to be.

There are very few flies in these
regions. The only kind is a sort of black
fly which is comparatively harmless.

I stay at hotels in the different
towns, I come to; so you see it is
half town & half country with me.
People here have a curious way of crowd-
ing together. Even the farmers live in
little villages with a paved street, & enjoy
the rattle of a passing cart as an echo
of Parisian civilization, when they might
have a house on their own farm.

Your affectionate brother

William.