

Report on the Buckingham Phosphatic
Mines — By J. D. Dawson, LL.D., F.R.S., F.G.S.

On the 17th of October last I visited
the above mentioned Mineral Property
in company with J. H. Ince Esq and
Montague Esq of Toronto
and have subsequently examined
specimens of the Minerals pro-
cured. The results may be stated
under the following heads:—

I Topographical and Geological Relations
of the Deposits.

The property is situated on the
4th and 5th Concessions of the
Township of Buckingham P. Q. and
the deposits of Graphite or Phosphates
occur in connection with a thick
band of Crystalline Limestone be-
longing to the associated with
gneiss rocks, the whole
belonging to the Laurentian System
of the William Logan. The tract
more particularly examined covered
of about 1850 acres on lots 15, 16,

24 & 25

~~and 5th~~

19, 20, 21, & 22 of Township 5th
and lots 23, 24 & ~~25~~ of the
5th Range or Township. These
lots may be grouped as follows:-
(1) The block of four lots, nos 19
& 22 inclusive, in the 5th Range
including the area of the "St Mary"
mine and the greater part
of the "St Charles" area (2) The
area of the "St Louis" mine in
lots 23 and 24 of the 5th
Range and lots 24 & 25 of
the 5th Range (3) The detached
properties in lot 20th of Range 6th
and lots 15 and 16 of Range
5th.

II Particular description of the Deposits.

(1) Lots 19 to 22 in Township 5th.
The principal opening in Lot 19 is
that known as the "St Marys
Mine", on the south-west corner
of the lot, on ground elevated
about 100 feet above the level
of the river Petite Blanche which
runs through lots 20 & 21. It is

a small stream
named the

a wide and shallow shaft - 20 feet
in length ~~and~~ 13 feet in width
and 14 feet deep. It exposes
on all its sides a bed of granular
plumbogamous limestone having
in so far as could be ascertained
a strike nearly East, and West
and dipping to the South at
an angle of about 80° . The
limestone is filled with small
crystals of decomposed plumbago
and is traversed by numerous
slender veins of ^{very} pure plumbago
associated with quartz & other
minerals. These veins dip to
the South-eastward at an angle
of rather more than 30° . They
are very irregular in their
widths, varying within the
limits of the ~~or~~ carata from a
few inches to two feet or more
in thickness. These thicker parts
of the veins constitute the centric
masses referred to in the reports
of Mr Chapman and Mr Bell
on this subject. One of these
masses removed from this shaft
is stated to have measured 5 feet

in length and 2 1/2 feet in its
 greatest thickness, and at the
 time of my visit another
 14 inches thick was visible
 in the East wall of the
~~the~~ near the floor of the
 mine, and a barrel thrown
 out from it about 100 lbs of
 pure Camellar Plumbago. In
 all about 3 tons of ~~the minerals~~
 are said to have been removed
 from this excavation, beside a
 large quantity of limestone containing
 disseminated plumbago. An ordinary
 specimen of this last was found
 to contain ~~per cent~~ of plumbago
 but when the contents of the
 small bits of and were slender
 veins of its general field will
 probably amount to ~~per cent~~ percent.

* Pure Camellar Plumbago

Independently of the
 masses of Camellar plumbago
 which may be
 pushed out of the wall
 and which may be
 estimated at 1 percent
 of the whole ~~mass~~ bed.
 The material extracted
 from this shaft may
 thus be estimated as
 containing percent
 of graphite; but it is
 to be observed that
 a much larger amount
 of impurities ~~has~~
 has been taken out
 than would be necessary
 in regular mining

Regarding the Sacton and
 the apparent strike of the
 beds, which in one place were
 observed to dip S 10° W at an
 angle of 20, indications of
 plumbaginous limestone and
 plumbago veins were observed
 in several places, and at the

distance of about 320 yards a
second opening has exposed about
4 yards square of plumbeous
limestone and purple bands
richer in plumbeous than the
work seen in the shaft, and
traced 9 small veins of
pure graphite. Proceeding to
the north-east plumbeous
limestone appears in more
small openings; and at a distance
of about 125 yards from the
second excavation a third has
been made in decomposing purple
and limestone filled with
small veins of very pure
plumbeous. It trend 33 feet
long, ~~and~~ 7 feet wide and
2 feet deep, has been dug
in this place from which about
two tons of plumbeous have been
picked out by hand. From this
point to the eastern side of the
lot occasional indications of
graphite may have been seen
and no excavations have
been made.

The whole of the above exc.

lump

* I am disposed to
believe the second
and third openings
are referred to as
exposures rather than
of the vein than
that seen in the
shaft.

on pomes are on the outcrop of
a thick band of limestone capping
the lot with a general
East and West strike and
limited by to the North by
a rocky ridge composed of
felspar and quartzite gneiss.
The thickness of this band
observed amounts to at least
600 feet, and it appears to
be more or less graphitic
throughout, and in places very
highly so; while it is traversed
by a vast number of veins
of pure graphite. The ground
is supposed elevated in drawing
to a considerable depth and
there is little surface cover.

On lot 20 the same
formation no doubt extends
but on the southern end of the
lot the ground descends rapidly
to the level of the Petite Rivière
which runs diagonally across this
and lot 21. A little to the
northward however the ground
rises and at about a quarter
of a mile from the south line

At the lot the graphite rock is
exposed in a small tree
pit. It dips S. 60° E
at an angle of 35° and a
thickness of four feet is exposed.
The lower four feet consist of
plumbeous limestone ~~containing~~
~~containing~~ about 25 per cent of
fine plumbeous overlaid & are
part of fine also plumbeous
though to a less degree. The bottom
of the limestone was not exposed
and the part seen was estimated
to contain in veins and
disseminated spots about 25
per cent of plumbeous.

This bed is probably a con-
tinuation of that seen on lot 18
but dipping to the northward, it
is on the other side of an anticline
fold. In this case it may
extend over lot 19 in case
of the fine ridge before mentioned
and if so the whole exposed will
in this way be repeated on that
lot. No openings had been
made in that direction, and
the rocks being covered with
soil no indications could be seen

* As it dips
is probably
possible

have indicated this possibility
in the plan.

Lot 21 is traversed on a
great part of its length by the
deep and narrow channel
of the Petite Blanche affording
an admirable water-power
and means of access and
drainage by adits to the ~~lot~~
deposits on either side. Much
if this lot is worked and the
limestone was seen out in
one spot in the bed of the
small stream. Crossing to Lot
22 the Plumbagoes rock of
high quality again appears on
the very ground, dipping to
the south west at a small
angle. This exposure is par-
tially near the line of an antic-
linal, and in accordance with
this view, small exposures of
plumbagoes rock appear on
the lot at some distance to
the southward and not southe-
ast. Asperum for lot 22
afforded. Percent of Plumbagoes.
It would thus appear
that the four lots now under

Preparation and
preparation

Mining

Conduits are traversed throughout
their whole breadth by the great
bed of planolapores. Conduits
above referred to, and which
is repeatedly repeated by an ante-
clinal fold. The quantity of
graphite rock thus exposed is
immense and practically in-
exhaustible, and the facilities
for offered by the character of
the ground and of the nature
of the Petite Blanche are all
that could be desired. The
limited extent of the exposures
renders it impossible to estimate
the actual extent of work
sufficiently well to pay for
~~extraction~~ and for the repairs
of the present graphite; but I have
no doubt that by a judicious pro-
ceeding, selection of localities, it will
be possible to work the deposit
without any considerable estimate
from present work. The only
preliminary operations necessary
will be the opening of a sufficient
number of trial holes or trenches
across the outcrop of the bed
to ascertain accurately the local production
portions.

(2) Lts 24 & 25 in the 5th conc
Canyon and Lts 23 & 24 in the
10th Canyon —. The most
important occurrence here is
that known as the "St. Louis
Mine" on Lt. 25. This lt is
marked by a steep escarpment
facing the west and running N. W.
& E., and probably indicating
the course of a line of fault.
The beds exposed in this cliff
are gneiss and coarse limestone,
apparently very irregular,
those of the ^{many} ~~several~~ small
slips and flintstones. The carbon-
aceous graphitic layers but the principal
deposit seems to be of
the nature of a ^{vein} ~~vein~~ a dyke,
about 6 feet in thickness and
running very parallel with the
escarpment of which it forms the
face for a short distance. A
sharp sink at the foot of the cliff
has penetrated this vein to a depth
of 16 feet. It was full of water
at the time of my visit, but
was said to have ascended the
penetration of the vein ^{to that depth} ~~downwards~~,
and about 100 tons of red graphite

rock extracted from the vein
~~were~~ ^{were} piled at the mouth of the
shaft. A specimen of this
material was found to con-
tain ten per cent of plumbago.

On the summit of the camp-
ment and about 600 feet to
the S. E. a tunnel can opening has
been made in a bed of ~~the~~
plumbago limestone holding
rich graphite layers. The
pit opened here was full of
water but about 4 ft of the
material extracted from it
appeared to be rich graphite
with crystals of pitch about
20 per cent of the mass. The
remainder was of poorer quality
that turned in places to
rich veins of pure crystalline
plumbago. Other exposures
in this tunnel showed rich
plumbago limestone, and
a bed of
fine grained & a network
of remarkably beautiful veins
& undulating masses of pure
plumbago. These exposures
show that the plumbago
rock is not connected to the

vein above mentioned but
extends in some distance
across the property at right
angles to the strike of
the vein.

These lots from the
nature of the ground offer
great facilities for the ex-
traction of the minerals which
occur on them in ample
quantity. They require no
water power but the water
required for washing operations
could be obtained from a
lake which adjoins lot no
25.

Lots 23 and 24 are
the fault escarpment being
to this part of the property
They are said to show
indicators of graphite deposits
but being wooded and
no openings ~~to~~ having been
made in them they were
not visited.

(3) Other Detached Leds. - The northern half of lot 20 in the Smith Range belongs to the company. On this lot three exposures were observed. The first showed gray quartz and crystalline limestone, both rocks containing numerous small veins of graphite. The dip is $S 20^{\circ} E$ at an angle of 50° . In the southern part of this place there appears to be a considerable thickness of limestone not exposed by the graphite, beyond which at the junction of the limestone with a micaceous band there is a bed a vein of plumbago about 10 inches in thickness and estimated to contain about 30 per cent of the mineral. Still farther to the south and west another exposure shows a coarse and sparsely plumbaginous limestone with small rich veins of graphite. It is well exposed but does not show several feet thick.

This lot has a mill site
in the Petite Blanche and
though its area is only 100
acres it probably includes
the whole thickness of the
plumbaginous limestone
seen in Set 19 in the 5th
range. The exposures are
however insufficient fully to
test its value.

Sets 15 and 16 in the
5th range also belong to the
group but were not
visited. It is stated by Mr
La Bague who has explored
the whole group that they
show satisfactory indications
but no openings have been
made in them.

I have indicated the above lots
with the exposures seen and the
probable course of the plumbaginous
beds, on the annexed plan

III General Remarks

Of the above mentioned projects
the most important are
those mentioned under Nos
1 & 2 above. The first or
"St Mary" area is the more
extensive and has the
best facilities as to water power
while it contains a vast quantity
of valuable Plumbagoes rock.
The second has at present
the best exposures but is more
limited in area and deficient
in water power. Both are
amply sufficient for an inde-
pendent mining enterprise
on a very large scale, and
both are ~~amply~~ supplied
with timber for fuel and
construction. The other
lots ~~for various~~ may be
regarded as subsidiary to the
areas above mentioned.

In commencing operations
in either area it will be
desirable to secure operators
& ascertain the precise
limits of the water powers

portions of the deposits but
explorations of promising indications
may be made almost wholly
in productive rock.

Though large quantities
of ~~low~~ fine lamp flint
may be obtained & found
cheaply, yet the principal
field of the mines must
be derived from the ~~surface~~
of the flint layers. It
will therefore be of the
utmost importance to obtain
the most convenient and
efficient machinery for this
purpose, whether the wet
or dry methods be adopted.

The present access to
the mine is by the canoe
road from the village of
Buckingham 2 miles dis-
tant from the mine and
2 miles from the Buckingham Landing
on the Ottawa River. A line
of road has been surveyed to
the Langelle water ~~falls~~ of
the Ottawa 2 miles distant
in a direct line from the
mine. It is said to be the

especially from the
surface

Crushing and
purification

From facts learned as
the district road
appears that ~~not~~
less than 10 to 13
percent of deep
flint can be
profitably ~~driven~~
by the methods now
in use, and more
machines have
recently been
ordered connected with
the main picture in
this district which
claim to be more
efficient than
those now
employed.

a small county and doubt
but equal the two principal
young properties alone in
value &c.

With regard to the expense
of extraction and the probable
profits the estimates of
Prof Chapman and the author
show that the pure graphite
could be delivered in New
York at less than \$50 per
ton. As the price was then
\$130 per ton and is now
much higher the profits
would be ample. This ^{calculation} estimate
has been on ~~the average~~
a yield of 1 to 5% of
graphite which is ~~not over~~
~~the portion of all the~~
~~richer parts~~ of the deposits,
and it is probable that
even the poorer portions of
the plumaceous limestones,
yielding say 10 percent of
graphite could be worked
with advantage.

2 probably under

16 to 18 percent of
plumbago, which
is certainly not
an extravagant
estimate for ~~the~~
the average of
the material which
will be furnished
by the mines.

Chines

Report on the Buckingham
Plumbago Mines
By J. W. Dawson L.L.D., F.R.S., F.G.S.

On the 17th of October last I visited the above mentioned mineral property in company with J. H. Duce Esq and Herbert Mortimer Esq of Toronto and have subsequently examined specimens of the minerals procured. The results may be stated under the following heads as follows:—

~~I. Topographical and Geological Relations
of the deposits~~

The property is situated in the Township of Buckingham P. 2. and the deposits of Graphite or Plumbago occur in connection with a thick band of crystalline limestone associated with Gneissose rocks the whole belonging to the Laurentian system of Sir William Logan.

The ^{more} particularly examined consists of about 400 acres Lots 24 & 25 in the 5th Concession and lots 23 & 24 in the 4th Concession.

The most important excavation ^{on these lots} ~~here~~ is that known as the "St Louis Mine" in lot 25. This lot is traversed by a steep escarpment facing the west and running N 20° E; and probably indicating the course of a line of fault. The beds exposed in this Cliff are gneiss and coarse limestone, apparently nearly horizontal, though affected by many small slips and flexures. They contain rich graphite layers but the principal de-

were piled at the mouth of the shaft. A specimen of this material selected as an average sample, was found to contain no less than 56 per cent of plumbago. - On the summit of the escarpment and about 600 feet to the eastward, an opening has been made in a bed of plumbaginious limestone ^{g. gneiss} holding rich graphitic layers. The pit opened here was full of water; but about $\frac{1}{8}$ of the material extracted appeared to be rich graphitic rock capable of yielding about 20 per cent of the mineral. The remainder was of poorer quality yielding from 4 to 8 per cent, though traversed in places by rich veins of pure lamellar plumbago. Other exposures in this vicinity showed rich Plumbaginious limestone, and a bed of gneiss traversed by a network of remarkably beautiful veins and nodular masses of pure plumbago.

These exposures show that the plumbaginious rock is not confined to the vein above mentioned, but extends for some distance across the property at right angles to the strike of the vein.

These dots, from the nature of the ground, offer great facilities for the extraction of the mineral, which occurs on them in ample quantity. They possess no water power, but the water necessary for washing operations could be obtained from a lake which adjoins lot No 25, and there is abundance of wood. Lots 23 and 24 on the fourth concession belong to this ~~part of the~~ property. They are said to show indications of limbitic deposits. but being wooded

The deposits above described would
afford material having a much higher
percentage of lime than pure
plumage which might be separated
by hand. Pupillage many operations
might at once be commenced at
the point opened by the St. Lawrence
River and might be extended with
great profit to the other deposits lying
to the eastward of that point.

For fuel and
Construction.

seems to be of the nature of a vertical vein or dyke
about 4 feet in thickness and running nearly parallel
with the escarpment of which it forms the face for a
short distance. A shaft sunk at the foot of the
Cliff has penetrated this vein to a depth of 22 feet.
It was full of water at the time of my visit, but was
said to have ascertained the persistence of the vein
downwards to that depth, and about 100 tons of
rich graphitic rock extracted from the vein

and no openings having been made on them, they were not visited

From facts learned in the neighborhood
it would appear that rock ^{containing} no more than 10 to 13 per cent
of disseminated ^{plumbago can be} ~~is~~ profitably dressed. With the Machinery
~~etc.~~ ~~See above for further~~
~~operation on the series~~ at present in use, and

~~exposed a bed~~ bulky red graphitic
layer about 500 feet thick
of the same but the part by free
of water I could see up the
broken strata for it is about 100
feet off the surface of the graphitic
limestone. Near the top a bed
of greenish red was seen to be
made of remarkably numerous
and thin of pure lamellae
planolites. These exposures show
that the planolites which in the
lith is not confined to the same
blue venting but extends to
some distance across the surface.

These also for the value of the
found present great quantities of iron
and other ample supply of the plan
lites, red. The top of the iron
water from, that water for working
the mine and of course the
limestone for a lake which will
be 25

Sets 2 & 3 of the same are
as stated to show exposure of plan
lites but were not examined.

Of these parts of the surface
of my last that the iron was
seen to the 11th of May area and
the point in water from the exhibit a
large body of pure exposure of planolites
which are abundant and
suitable for manufacture

2 Lots 24 & 25 on the 5th camp at
 lots 23 & 24 on the 4th camp

The most important exposure here
 is on lot 25. This lot is traversed
 by a steep escarpment about 50 feet
 high rising off 20.8 and cutting
 through the line of a previous
 fault or of the joints of purple
 beds with a soft limestone re-
 moved by denudation. The beds ex-
 posed in the cliff appear to be heavy
 massive and columnar layers of
 purple rock, that appear of the
 well shaped & fractured. The whole beds
 of purple rock but the purple
 deposit seems to be of the nature of a
^{bedded} ~~bed~~ is of the about 4 feet thick and
 very much in the line of the escarpment.
 of which it is the purple is a short dark
 sharp rock at the foot of the cliff has
 penetrated this bed for about 16 feet
 I have seen of purple at the time of
 my visit but was surprised to find
 then that the bed is persistent down
 nearly and about 100 tons of purple
 from which rock which had been
 extracted for it was piled at the
 mouth of the shaft. A specimen of this
 material found. ^{of plumbago}
 The bed is the same as the 1st series of plumbago.

On the summit of the escarpment
 at the distance of 600 feet from the
 mine... an exposure has been made
 in a cloth the limestone ~~and~~ ^{is} ~~very~~

(3) other tabs. The north half of
 lot 20 in the first camp is
 the property of the company. These
 exposures have shown the first gray
 quartz apart with quartz, but with calcareous
 layers of graphite. The dip is 8 to 12° at an
 angle of 80°. In the south half of the place
 there occurs a considerable thickness of brown
 stone of pure graphite, of graphite layers
 which is seen all part of much of the
 limestone with a felsparitic cement in
 bed in layers of graphite 10 inches wide and
 only due to the presence of the limestone.
 Still further S.W. another exposure shows
 a coarse upward planolagous cement
 with shale not very crystalline. It is
 not well exposed but seems to be a
 feet thick. This lot has a well
 shown the Petate Cloud and they
~~show~~ the axis of NW and SE
 fully includes near the whole
 thickness of the planolagous cement
 this extends up to the first
 side of lot 19 in the 5th range.

At 15 & 16 have not seen the
 remains of planolagous in the
 points but no true pits have
 been made in them.

Public Inquiries & Members

Of the other members present the
last of the day on 19-20-21-22. and
then again on 24-25 with the press and
then with various other people. The
first of the members and has the
present policy for in so far as the
is concerned. The very friends of
the present and the whole of the
the whole of the world is the
people do not regard it as the
first. The other things are very
valuable and can be very
helpful in the whole of the
present.

The numerous people on the
the whole of the world. It would be
very difficult to find a
person of the active interest and
which parts of the present
the present people and attempts
as well as the present in a large
area. But the present of
the present of the present
to be the present.

It will be of the whole of the
present and the whole of the
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perish that a large amount of fine plum
 eggs and young of perching birds
 will be obtained. In the month
 of March making no fear need
 be entertained of getting an ample
 and cheap supply of the live birds.

Must remember for the time
 to the village of Newburyham about 4
 miles. The latter is 2 miles north
 for the Anna R. where spring has
 been less success than at the
 Ottawa & Miller station and is
 found to present no difficulty. Then
 the value of the spring we need
 neglect down for the value of
 all the other old mines known.

Whereas the expense of
 transport and the price of profits. The
 estimate of Prof. Chapman. He tells
 me that the value by the census
 is now put at up to \$850 per
 ton; and as the machine
 is now worth for \$130 to \$200
 he has the profit would be ample
 24/1000 The estimate we have made
 but put at 1 to 52 it is 8 of them
 what is under the price of all
 the whole parts of the deposit and
 in the same parts for 10 per
 cent of the plumage value by
 for other and separate.

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David H. Hall

This paper is fully seen the
Cave of an antelope and in
accord with the new the
small crepus of plumbeous time
to the view in the ^{last} view
its further limit.

It would thus appear that
the 4 lots now much much
we know, that the whole
extent of the great bed of
plumbeous limestone also be
ferred to and, fully, especially
of an extensive field. The great
of phosphate rock thus exposed
is enormous and practically un-
exhaustible and the great effect
of the of the church of the ground
and of the view of the Petite
Plaque to its extent very all
that could be done.

The limited extent of the crepus
renders it impossible to estimate
the actual extent of rock exposed
and to give its extent and ~~value~~
~~value~~ that for the separate
of the phosphate but seems to
indicate that a very considerable part
of the whole land is of this character.

not seen and the part creasing
 in, cutting & cutting in veins &
 chertites plumbago about 25
 percent of graphite. This bed
 is probably a column of that seen
 off on bed 19 but chiefly in
 an opposite direction and probably
 on the N side of an antiform fold
 In this case it may extend into
 bed 19 in view of the green edge
 before mentioning as indicated on
 the plan but no openings had
 been made in this direction and
 the ground has covered with soil.
 Any no indicators of this probably
 chertites. Exposure seen in Ant-
 Oates corner at 20 which reveals
 a fold that the opening above is
 joined & appears as a small part
 of the thickness of the plumbago
 bed.

Bed 21 is trending in a great
 part of its length & the deep and
 brown color of the Petate Blanche
 appears an admirable note for any
 water exposure that may be upon
 in rocks. The name The spring
 here is in rock part and the
 chertites are seen up in the plan
 in the bed of the stream and in
 plumbago was chert. Crops to
 bed 22 herein. The plumbago
 rock appears with nearly the same
 characters as that in bed 20 but
 dipping SW. at a small angle

The average grade in Plumley of specimens of the Limestone is present of pure plumlage. This occurrence is more locally as the 9th May Mine and has a few about 8 tons of the pure plumlage from veins and weeps, beside that depending on the rock.

Passing to the Eastward on the apparent strike of the beds which are in place were found & dip S. 10° W at an angle of 70° inclining of Plumlagers limestone and plumlage weirs appear in several places and at the distance of ^{about} 320 yards a second opening has exposed about 4 tons of plumlagers limestone & greenish bands with small veins of pure plumlage. The rock in this opening appears to be much softer than in the 1st and appears pitted of plumlage.

Proceeding to the North East Plumlagers limestone & greenish bands appear in several places and a distance of about 125 yards from the second opening a third has been made in a clumpy green and limestone pitted with small veins of very pure graphite. It is about 33 feet long and 2 feet wide and about 4 feet deep has been dug at this place from which it is stated that 8 tons of pure lump plumlage have been cleared which from the very rich appear to be from 4 tons to 7 1/2 tons in thickness.

From this point to the Eastern side
of the lot accurate indicators of
plumage appear but no openings
have been made.

The whole of the above crops
are on the surface of a flat land
of limestone crops the lot with
a green soil and well shales
and limited to the north & a
loose rock composed of pelican and
granite pieces. The thickness of
this band of cement amounts to
at least 600 feet and it offers
the same or less granular throughout
and in places very highly so.
The point is supposed elevated also
the men were for change to a
considerable depth and there is
little or no superfluous work.

On Lot 20 the same principles
partially followed but the point depends
on the level of the Pelite
Blanche; but as this then crops
the south west corner of the lot and
the point of the road runs to the north
ward and here either more than
a quarter of a mile from the south
end of the lot the granitic line
appears in a small time pit. It dips
to the N. 60° E at an angle of 35° and
the rock thus 1 foot of fresh rock develops
very much of the effect of light plumage.
more limestone with very few pure
plumage. The latter of the limestone was

Report on the Thunder Mines in
Buckingham P. D.
By Wm. H. H. H.

On the 17th of October last I visited
the above mines in company with
J. H. Sney & of note and Mercur
& of Lead and have subjected our
various specimens of the rocks
and minerals powers. ~~The~~ The
results may be stated under the
following heads,

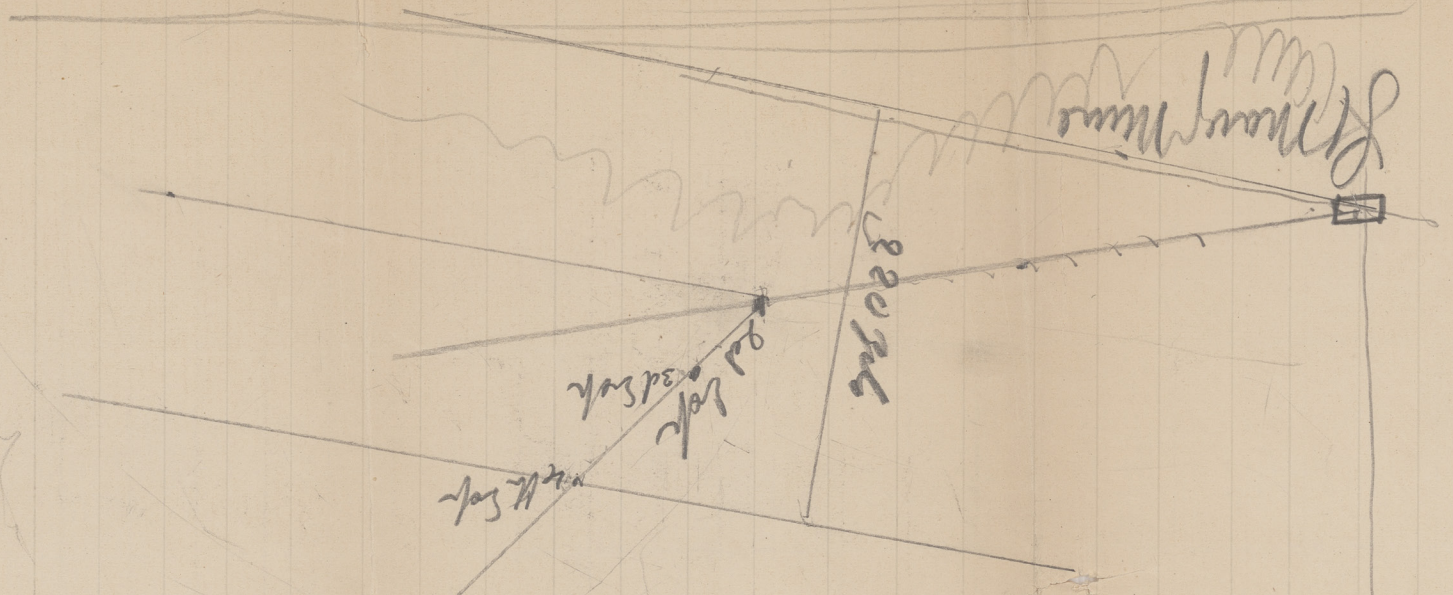
1 Topographical & Geological Relations of the Deposits

The ^{James} ~~parcels~~ is situated in the SE and SW corners of the Township of Buckingham, ~~on lots of the Laurent~~ ^{system of Sir William Logan}, and the deposits occur in connection with a thick band of crystalline limestone associated with gneissose rocks, the whole belonging to the James Laurentian Series of Sir William Logan. The ~~parcels~~ ^{property} more particularly concerned ~~there~~ consists of about 1850 acres of land in lots 15, 16, 19, 20, 21, 22 of township SE and lots 23, 230, 24 of township SE. These lots may be grouped as follows (1) The Block of 4 lots nos 19 & 22 inclusive ^{in township SE} including the ~~parcels~~ ^{part} of the area of the St Mary mine and the greater part of that of the St Andrew mine. (2) The area of the St Louis mine in lots 24 ~~SE & 25~~ ^{in township SE}.

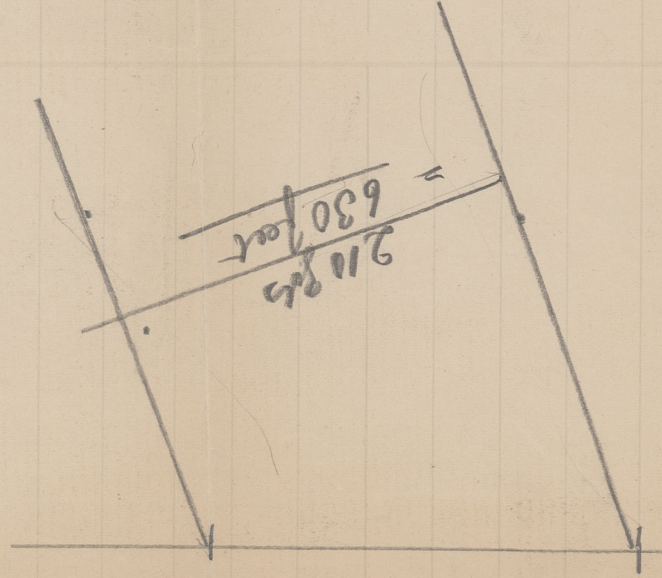
St. and lots 23 & 24 in Cuyahoga
Co. (3) The runway lots.

2 Particular description of the Deposits.

(1) Lots 19 & 22 Cuyahoga St. The principal
opening on lot 19 is near the south-west
corner of the lot on ground directly west of
the little run Petite Blanche
about four rods ~~the~~ lots 20 & 21. The
opening is a wide & shallow shaft 20 feet
in length ~~and~~ 13 feet in width and 14
feet deep. It exposes on all sides a
bed of granular plumbeous limestone having
no so far as could be ascertained a strike
being east & west ~~at a very high angle~~ and
dipping to the south at a very high angle.
The limestone is filled with ~~disseminated~~
crystals of lamellar plumbeous especially
on the north side and is broken
by veins of being steep to the south
east at a much lower angle. These
veins are filled with very fine lamellar
plumbeous and are very unequal
in size, from an inch or two in thickness
to 1 & 2 feet in thickness. One
of these veins measured for this shaft
is stated to have measured 3 feet in length
& 2 1/2 feet in its greatest breadth and
at the same opening not more than 14 inches
thick was visible in the east wall
near the floor of the mine and a
short distance from it more than
160 lbs of fine lamellar plumbeous.



- 1 ~~Feed silos~~
- 2 ~~Whey den~~
- 3 ~~Detent of lots~~
- 4



- 1 General den of H. P. P.
- 2 Improved scrap feed
with feed lots
- 3 Practical canals
drains