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Report on the Sloss Co. Properties Contents of D - Iron Ores

William Ruffner

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D

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(No. 1)

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Special Report on the
Gloss Company Properties.

[I shall assume that the reader of the following descriptions will have maps in hand, that is, ~~and~~ Barker's property map and my map of the region, ready for reference.]

I. Iron Ores.

1. Brown Ore lands.

(a) Huronian & Drift. The brown ore lands as heretofore intimated lie in the Huronian hill country to the South in the dolomitic formation of Murphree's Valley, and in the Sub-Carboniferous formations of Cahaba and Coosa Valleys. I designate as ore lands or coal lands all such properties as I think were born on the supposition that contained one or the other minerals. The brown ore lands are all South and East of

ing one tract of 80 acres which is West of the railway and quite close to it.

This small tract I may as well dispose of at once. It is in S 21, T 22 N, R 14 E, and was no doubt bought on account of the red sandy drift ore which lies scattered thinly over part of its surface. As ore property it is not valuable. The land is partly cleared and farmed by James Collins, a squatter. It lies well for farming. The soil is light, being composed of the sand and white clay of the drift. There seemed to be considerable good pine timber on it. This tract is a mile North West of Lomax station.

Next, starting out from the county seat, Clanton we may find a tract of 40 acres, two miles East of this village in the South East corner of S 31, it being one of a large group of tracts belonging to the Company in T 22 N, R 15 E: which tract of 40 acres I could not find

owing to the ignorance of the people. But I met a man, after I had passed the place, who told me what I felt satisfied about before, namely, that it was just another of those sand and clay tracts sprinkled over with sandy drift ore, which I will say once for all has no value at present on any of the tracts belonging to the Sloss Company, so far as I could discover. The drift top-dresses most of the township, but on the higher lands it is generally so thin as not to conceal the underlying Huronian rocks.

Proceeding two miles further to the East we meet with a Sloss tract of 80 acres on the East side of Sec. 33 which is also strewn thinly with lumps of drift ore. The land is occupied by one Easterling, and a large portion of it is cleared, so I had no difficulty in seeing that the ore was simply the sandy drift ore unfit for furnace use, and showing no bed of any size. The drift is thin and

underneath is flaggy whitish sandstone and micaceous slate of a reddish color with quartz veins.

Still moving Eastward we come to Section 35, to most of which the Sloss Company has the mineral right. Near the North West corner of this section is a swell called Iron Ore Hill on which is a somewhat puzzling deposit which seems to be a combination of different ores. Mica slates show their basest edges along the hill top, and some of the outcrop of these slates seems to have been converted into ore, and along side seem to be fissures or cavities filled with drift ore. Near by are also lumps of good brown ore which resemble the brown ores found in place further north. I can only account for these lumps by supposing that they were washed down from the higher country by the floods which closed the Quaternary ~~period~~ or drift period. For a moment I thought the deposit might be valuable, but on

further examination it seemed to be wholly superficial and I finally concluded that whilst a few tons of good ore might be obtained on Iron Ore Hill it could have value only in connection with some larger deposit near by which might justify a railroad.

This swell of ground flattens down into a wooded country strewn thinly with ore, some of which was of the same quality as the good lumps of brown ore before mentioned. Mr. S. B. Adams was my guide over this as well as other tracts, and under my direction carried me to all places where there was any show of ore. But there was no accumulation anywhere except the small bed on the hill.

The country rocks are generally mica, hydromica and clay slates, with numerous small veins of white quartz whose debris bestrews the hills. This statement applies to most of the country in this township.

On the top of Iron Ore Hill the

185-

loose rocks as well as the basset edges of the rock beds, were reddened by iron oxide, and to the inexperienced eye much of this seemed to be ore which a blow of the hammer would show to be simple rock. A world of mischief has been done by mistakes occasioned by the discolored surface of rocks.

Section 27, cornering on Sec. 35 is similar in character to Sec. 35, though even less encouraging.

Mr. DeBardeleben has some more land adjoining on the East, which in places shows ore in deposits similar to Red Ore Hill.

I visited all the tracts of the Sloss land, and may simply say with regard to all the lands in which only the mineral right is owned in Sections 21 + 29, I could see nothing on them which justified me in placing a high estimate on their value as ore properties. Some signs of Auriferous

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ore may be found in a few spots on the mineral right land, especially on the 40 acres in Sec. 20.

But the only Huronian ore prospect
5 of any promise seemed to be on the lands owned in fee simple and this chiefly in Sections 16 & 17, and North East corner of Sec. 21. Here

Abandoned
Mines

I found the scars of the work done
10 in former years by the Sloss Company, and to which a narrow gauge railroad had been made from Lomax station. Redding Jones
15 was my guide, and probably the best to be had, but he could not give me the exact information that I wanted with regard to the land lines. He seemed clear however that this railroad terminates in Section 17, where the most mining was done. There was however considerable digging in Sections 16 and 21, where I found numerous shallow pits, one of which seemed to have a spread of a fourth of an acre. The ore was hauled from the pits in wagons to the terminus of the

railroad. All the pits are so shallow as to show that the ore deposits were quite superficial. Some piles of ore were left, and float ore was
 5 to be found thinly scattered around. The most of this ore was very silicious. It not only had grains of sand thickly peppered through its body, but it often inclosed an-
 10 gular bits of white quartz. This ore no doubt was a superficial, possibly a drift formation. But there was a small proportion of smooth, compact ore of good quality, which
 15 probably came from the body of the underlying slates. But I could see no ore in place along here.

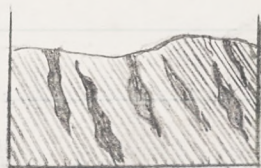
The old Company seemed to have hit upon the best place
 20 for its principal mining, which is in Section 17 at and near the terminus of the railroad. Here I found the ore embedded among the slates, very much in the style
 25 in which I have seen it along the James River, in Amherst Co., Virginia.

There are here some super-

5 ficial pockets, which were no doubt a later deposit, and there were some thin plates of ore interleaved with the outcrop of slates
10 which resembled the red sandy ore of the drift in character. This may have worked in from the surface, for I could see no signs of it more than a few feet in depth. These bands of ore are only 2" to 3" in thickness: but the most of the ore is of much better quality, in fact some of it very fine ore, com-
15 pact, smooth and heavy, reddish brown in color, and much of it with a look which suggested that it belonged to that class of ores which, judging from the eye, one scarcely knows whether to call limonite or hematite. It is probably limonite of the turgite or göthite variety, which approached hematite by reason of the small proportion of water in its composition. Some of it, however, is manifestly a true limonite. Then again some of it on the exposed surface looks like a true limonite,

but is reddish within and has the red streak and powder.

The only trouble respecting this ore is as to the quantity. It lies imbedded in the hydromica and damourite slates, in thin lenticular buttons or small pockets. That is the thin strata of ore were not continuous, but seemed to have been packed in lens-shaped plates like foreign matter in the slate beds. In the accompanying section this is shown.



No pit is as much as ten feet in depth, generally less. Manifestly the cost of mining was too great for the product: too little ore for the quantity of rock. It is said that the ore trains ran only about four months.

The ore group, that is, the ore bearing slates, seemed to be but a few feet in thickness so far as cut. The strata have a

southerly dip at an irregular angle, but generally of about 40° . The earth around the mines has been colored red whilst the soil
 5 generally is white.

I would not condemn this property because the prospecting may not have been ~~done~~ intelligently and thoroughly done. It
 10 would be worth while to experiment still further. We have a right to expect that the gray specular ore should exist in this neighborhood and workable beds of Bessemer
 15 ore might be found.

Gold Belt. It may be worth while to mention that here we are on or near the gold belt of which I spoke under the head of minerals, and it is in Section 22 of this township that Redding Jones claims to have a gold mine which was valued at \$25,000. Jones says also that Mica has been mined in this neighborhood; which is not improbable.

Dwellings Inasmuch as the Sloss Company
 + Soil my own about 1800 acres of this land in fee simple, I observed the surface

and the growth. There are two dwelling houses occupied; and two or three small clearings in Section 17. The lands are what is called in that country "poor pine woods land", but easily cultivated, and will produce some corn and cotton. I told the people to call at the office and make some arrangement which would keep them from getting into a panic whenever a well dressed man makes his appearance.

Mill
Timber

The most of the land is covered with long leaf pine timber. Jones and Adams think that nearly the whole of what the Sloss Company own is clothed with mill timber which could be sold at \$3 to \$5 an acre. I cannot say whether this is an exact statement or not. Much of the timber was certainly good, and much of it also seemed rather slender for the mill, especially on Section 15. The whole surface is well peppered with quartz gravel.

I saw the railroad at intervals along its whole length of 5 miles. The rails seemed to be very good, though

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not of the heaviest. None had been taken away and the road which is well graded could be made available for carrying lumber if not ore, although many if not most of the cross ties would have to be renewed.

Potsdam Ridge

NE $\frac{1}{4}$, S. 34, T 23 N, R 14 E.

This tract of 160 acres owned in fee simple, I have heretofore mentioned as lying on the South side of the quartzite ridge locally called Hayes Mountain or Rocky Mtn. (supposed to be Potsdam) which crosses this country from West to East. The tract reaches to the crest of the ridge and extending down the South side terminates a little beyond the base. Excepting a very little show of surface ore and a few inches of shaly ore in place at the base of the ridge and any quantity of good building stone, I could not see that the tract possesses any mineral value. There might be a few acres

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of farming land upon it and a considerable quantity of good lumber obtained. In fact the tract is pretty well covered with long leaf pine of good average quality.

Littleton, my guide, said that the land was bought on account of a report that somebody had discovered precious metals on it.

The ridge here is about 300 feet high, and its surface rough from quartz fragments. There is an occasional exposure of the rock in place dipping 40° South. The flat lands at the base of the ridge are top-dressed with five feet of drift material some of it making a good soil.

Tracts in T 23 R 15 E. (See Map.)

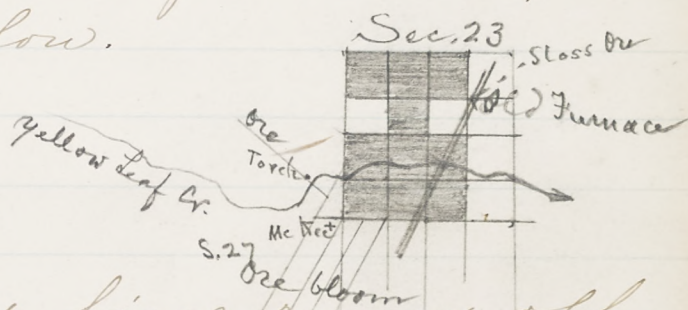
This group of lands I regard as highly important. They are iron ore lands of a very striking character though their absolute value cannot be determined without exploitation. I will name the

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tracts as follows:-

McKee
Group

1. McKee. This is the body of land owned in fee and comprising most of Section 23. I name it from a citizen named McKee who lives in the N.E. corner of Section 27, and on whose land and that of his neighbors I could see lines of float ore which run through the company's land but were covered. There is quite a group of ores running in four parallel lines diagonally across the corner of Sections 27 + 26. See diagram below.



Another line runs off at right angles to the general course as will be seen. These lines I number 3, 4, 5, 6, & 7. I could not see the outcrop of any bed and most of the ore is either too lean or much injured by silica chips. Some of it however is very good, as will be seen by reference to the analysis in Part III. The country rocks are chiefly damourite slates and

I doubt not that these ores are interstratified with the slates very much in the same style in which I have just described the ores to lie at the old mines in S. 17 T 22: in fact, a reference to the map will show that it may be the same group of ores. At any rate it is manifestly attended with the same uncertainties which belong to this group of Huronian ores wherever it has been opened in Alabama, Georgia, North Carolina and Virginia. At the same time as I state in Part IV I think it would be wise to test these ore beds.

Torch.

On the diagram it will be seen that I write the word torch opposite a certain spot opposite Yellow Leaf Creek. I will give a statement made to me by Mr. McKee who seemed to be a respectable man, and confirmed by his son and one of the neighbors concerning this torch.

Occasionally on a damp night McKee and family see from

the dwelling house a light across Yellow Leaf Creek and less than a fourth of a mile distant, near which there is no residence nor camp. At first the light does not seem larger than that of a candle but soon runs up into a torch-like flame of bluish white color 4 to 5 feet high. It lasts three to five minutes, then dies down and expires. His son was once quite near to it, separated only by the creek. He said it seemed to rise out of an ore bed. There is nothing impossible in this statement.

There are two other lines of ore outcrop as indicated on the diagram which I number 1 & 2. No. 1 is a large bed of dark, rather puffy ore, of good quality (see analysis) weathering durably, showing massive rounded boulder heads above the surface. It is 15 feet or more across, and is exposed fully half a mile. Its south end is seen on a low knoll which reaches to Yellow Leaf Creek. The outcrop is seen in the creek forming a strong ledge

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which does not seem to be quite so wide as the show on the hill. North of the Creek it is seen up to and beyond an old pit of considerable size from which McKee says ore was taken to run a small furnace nearby, where an excellent silvery looking iron was made. But he added that the main object of the manufacturer was not to make iron, but to get silver out of the ore. Considerable mystery was observed, and it is not known what the parties got or why they stopped the furnace. The ore shows well in the pit: some of it soft and some hard, but not sufficiently uncovered for accurate measurement. The outcrop runs half a mile through the Company's land.

Three hundred yards North West of this lode is another bed running parallel, but not so large as No. 1, and not so good on account of the quartz chips which are imbedded in much of the float. It is quite possible

that this impurity may not exist below the surface. The Company's land lies mostly in a high ridge called here "the mountain". It is made up of short ridges, some of them rising 200 feet above the surrounding country and separated by ravines with steep sides. The surface is strewn with quartz blocks which at least suggested the presence of precious metals.

The whole M'Kee group no doubt passes through this land in a North East direction, but I observed no sign anywhere, except the outcrops of No. 1 and No. 2. The land is cleared and cultivated in spots under orders from young James M'Kee, who sells whiskey and claims to have some sort of agency given him by one of the younger Slosses. He is a smart young man. The land generally is covered with a miscellaneous growth of timber, of rather small growth. The large ore bed lies along a leading road and could

easily be reached. Yellow Leaf Creek is a bold stream that would run mills or turn washers to any desired extent. I was guided by Mahan, McKee's son-in-law, an honest man, who has a poor opinion of the iron business.

The samples in Table of Analyses are marked 6, Old Mines; 7, same 2nd quality; 8, Catalan.

Marcus
Group

2. Marcus land. This is a mineral right in 60 acres of Section 16. Here I found two lodes which I called Marcus East and West. The topography is bold. On the North West side is a high ridge, the most of which is in forest. It is strewn with quartz blocks and I could see or hear of no ore sign on this part of the land. Running out from this ridge are spurs and vales cultivated by the owner of the surface, Marcus, who is said to have received \$800 for the mineral right.

The principal line of ore is on a short spur projecting into

a field made up of slates, earth very red, strewn with float and showing ledges of good looking ore, and giving indications though not very distinct of a large deposit, stratified with the slates. Two hundred yards North East is another line of ore parallel with this of equally good quality, but not showing so large on the surface. Between these two beds runs a ledge of limestone. In walking over the fields I saw float at a number of places and red stripes of soil suggesting the presence of at least two more beds of ore running parallel with these. The whole farm seems to have a slaty basis, some of which looked as if it might make roofing slates. The strike is North East, dip 40° South East.

I would express myself strongly in favor of the prospect here if it were not in Huronian slates, which have so often disappointed the miner. But there is every encouragement to test

this property thoroughly. There is certainly a very considerable quantity of fine ore in these beds. (See Analyses, Marcus East and Marcus West.)

The ore seems aluminous in its character, contains but little silica, is yellowish red to reddish brown in color. The Eastern lode is more solid than the Western, and has a few threads of crystallized quartz running through it, but not enough I think to injure it seriously. The ore of the West lode is more cellular and hence lighter, but is the more fusible for this reason. In fact an aluminous, cellular ore is very desirable when low in silica, as is the case with these ores.

Oliver
Mullins

3. Oliver Mullins' Group.

This is so called because it lies near the residence of Mr. Oliver Mullins, a respectable and intelligent citizen. The group consists of two "40^s" in Section 17 and two "20^s" in Section 18. On the N.W. $\frac{1}{4}$ of the S.E. $\frac{1}{4}$ of S. 17 is a remarkable outcrop of brown ore of fine quality, standing 1 to 3 feet out of the ground and 20 to 30 feet in width. It crosses the land diagonally from S.E. to N.W., which, be it noted, is exactly at right angles with the Marcus lodes, and with the strike of the country rocks generally. So far as I could see, the ore bed stands vertical, but I could not be sure of this, nor could I find any indications or testimony in respect to the depth of the bed, or its appearance and width below the surface. As presented to the eye it is a most magnificent exposure of superior ore. And if it holds good underground to any considerable depth its value is very

great. I could not see anything unfavorable in the quality of the ore, or in its position, except that the outcrop is not much elevated above water level. It looks as if water might be struck in twenty feet or less from the surface. This outcrop extends on to the adjoining lands both North West and South East and these two adjoining "40^s" can be bought of Mr. Mullins at \$500 each.

Analysis Oliver Mullins Ore

Iron - - - 57.96
Silica - - - 3.26

Limestone

I saw a little outcropping of shale near by, and saw limestone not far off. I should mention that the outcrop is not so ~~far~~ prominent on the adjoining lands, and on the South East "40" it is covered by swampy land. Mr. Mullins says that the covering is very thin and that the ore can be reached with a sharp stick anywhere.

Single
40

The "40" in the South West corner of the section presents no

outcropping of ore, although float is to be seen on each side. And here again the strike is peculiar. It seemed to be East and West, but
 5 the indications were not sufficiently marked to make this certain.

Both of these tracts in S. 17 are mostly cleared and cultivated,
 10 partly by Oliver Mullins and partly by his brother, Marcus Mullins. I do not know by what authority. It is clay land of more than usual strength for that region.
 15 The first tract mentioned is nearly level, the second is hilly.

2-20^s Two "20^s" in Section 18. These semi-forties lie end to end making an East and West line half a mile long and an eighth of a mile wide. The big ore lode runs East and West through the middle of this tract, not rising above the surface except in places. It is however, on a hill and consequently its outcrop is more uplifted above the water level, say

50 to 100 feet. The bed is wide but I could not anywhere see it plainly enough to get an accurate measurement. The average quality did not seem to be quite so good, though still good.

analysis of 2-205 Ore

Iron - - 39.85
Silica - - 19.46

Limestone

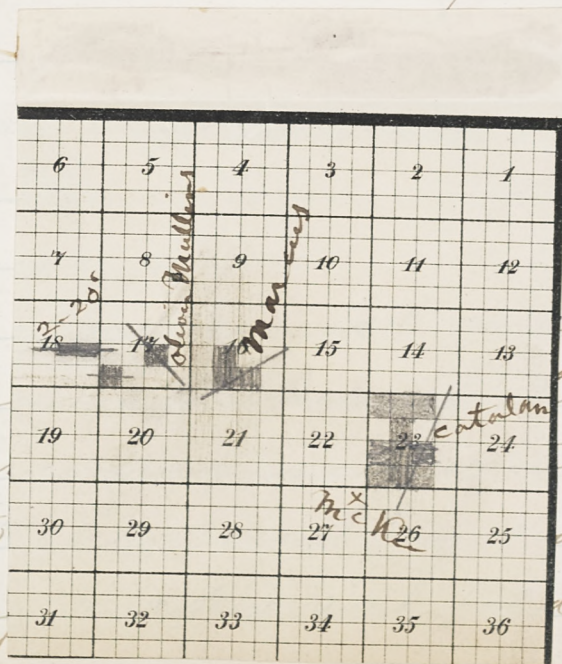
There is one if not two beds of limestone running parallel with the ore. Feldspar is associated with it also: and I saw indications of lenticular pockets of ~~shale~~ ore in the shales.

Copper
Sign

I also saw indications of copper ore in the accompanying quartz.

I felt annoyed by the changes of strike in these beds of ore. This is seen in the accompanying diagram.

Changes of
Strike



are one of the ore is without reference to rocks or the bed, perhaps

crumpled, and bent in directions corresponding with the strike of the ore beds. If the former be the fact then these iron ore beds
5 are probably the "iron hat" of a pyritous copper lode, the outcrop of which is often so changed as to show only iron ore at the surface. This of course would greatly diminish
10 the value of the ore beds. But having this possibility in view, I looked sharply for exposures of the country rocks, and wherever I could see them they seemed to
15 be running parallel with the ore beds. And this led me to think that the second of the two alternatives gives probably the true solution. Of course it is not desirable
20 to have ore beds zigzagging, but this does not necessarily impair their value. My impression is favorable to the idea of a large deposit of fine ore in this locality. Either
25 shafting or drilling at different points would tell something of the depth of the ore, but only deep crosscuts would tell the whole story.

North
Tract
in Chil-
ton Co.

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4. The North Tract: in Sections
5 & 6, T 23 N, R 14 E.

Here are four "40^s" only one
of which is owned in fee, but on
this are all the diggings and all
the ore sign that I could find. It
is in the N.W. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ S. 5-. Here
is a low hill thickly strewn with
lump ore on which numerous
large pits and cuts have been made
by the old Sloss Company. No ore in
place was reached. It was all float,
drift
ore and I suspect that it was all de-
posited by the currents of the drift.
The ore is heavy but its value much
impaired if not destroyed by the
quartz chips imbedded in the lumps.
I could not set much value upon
this deposit, although viewed as a
phenomenon it is unusual
to see so much drift ore stranded
on one small hill.

I rode about on the other "40^s",
and whilst an occasional lump
of ore could be seen, there was no
indication of an ore bed that I could
discover.

This completes what I have to say
of the Huronian ores.

(6) The Dolomite Res of Murphree's Valley.

Owner-
ship

The only brown ore land owned by the Sloss Company in the Birmingham Valley is in Murphree's Valley. Here is the splendid surface show owned in partnership with Mr. A. C. Bardeleben, with a Railroad Company for a third partner in a tract of 160 acres.

Three smaller tracts of brown ore lands to the North East of the main deposit are owned by the Company, and will be described in due order.

Location

The main body of the brown ore is from three to four miles North East of Chepultepec and opposite to the Allgood gap in Blount Mountain. In fact, the road that leads from the Valley through Allgood's gap may be taken as the Northern boundary of the principal brown ore property, although it is not exactly on the line.

Charac-
ter of the
different
tracts

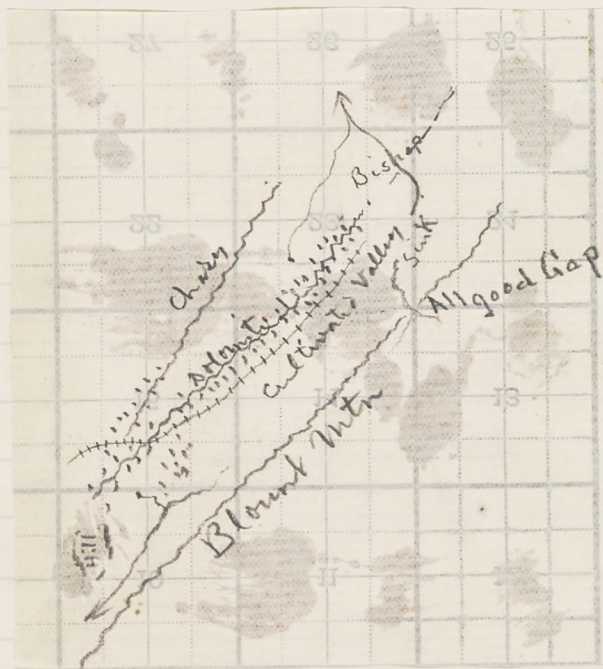
By reference to ^{Barker's} the map it will be seen that the Sloss Company here own in whole or part a large body of land. Some of this lies within the Blount Coal field. This part will not

be considered at present. All the rest seems to have been regarded as iron ore land, but some of it is destitute of valuable mineral.

Boundary of the
brown
ore land

The brown ore land extends about two miles in a South West direction from the road above mentioned; or to be more exact, it begins about the middle of S 33, T 12 S, R 2 E, and passes diagonally through the middle of S 5, T 13 S, R 2 E. Along this line runs a ridge, which at the North end is estimated at 75 to 100 feet above the valley on the East, but which gradually lowers and flattens toward the South West end of the land and connects with the cherty (chazy) ridge on the North West side. Still the top is decidedly elevated all the way above the drainage on the East side, but not so much above the Valley on the West side. This ridge is strewn with float ore of superior quality. The ore is not only on top but has rolled down the sides until the spread is more than a quarter of a mile wide in some places, though less generally. In the following diagram I indicate approximately the drainage, and also the crest of the ridge and the crest of the chazy ridge. There is a sag in the ridge near its lower end; but further to the South West beyond the Floss property it suddenly rises boldly into a

hill which has comparatively little
 show of ore upon it. This map was
 made without measurements, and
 therefore is not minutely accurate.



Chazy
ore

On the parallel ridge North West (Chazy) there is a little sprinkling of ore, which probably led to the purchase of some of the land. But I would call ore land only the dolomite ridge as before defined. By reference to the land map it will be seen which tracts are thrown out by this description. It will be seen also that the tract

Lands
excluded

Intrusion
of
a cutting
joint
property.

of 160 acres owned by the Sloss Company, DeBardeleben and the T.C. & R.R. Co.

jointly, pushes its North West corner into the ore field. It should also be mentioned that the N.W. $\frac{1}{4}$ of the N.E. $\frac{1}{4}$ S 5 although colored as Sloss and DeBardeleben land, is said to be claimed by the A. & C. R.R. trustees.

The corner of the S.W. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ So trenches a little also upon the ore field. This "40" is owned by Mac Sloss. Mac Sloss also owns the hill at the South end of the ore line. All the rest of this ore field is the undisputed property of the Sloss Co. and DeBardeleben.

When I thus limit the field to two miles in length and a fourth of a mile in width I do not mean to say that the ore may not go deeper than this into the ground, nor do I mean to affirm that there may not be some ore connected with the Sub-Carboniferous formation in the Valley between the ore

ridge and Blount Mountain. I only mean that in the absence of openings, the indications are as stated. The source of all the ore is to be sought primarily in a belt lying along the line of fault, and on the North West side of it.

In developing this brown ore field there will also be a partial development of the line of Clinton Red Ore which runs side by side with the dolomite ore; Separated only by the fault.

Red Ore
developed
at the
same
time.

It should be noted however that the fault is not a clean cut straight line, but that it has a ragged edge. Hence in following the

line of red ore the miner must be prepared to see it suddenly cut off. Following on, he will find that it comes in again. These inequalities helped to form the conditions under which the brown ore was formed.

The Quantity of Brown Ore.
 Quantity always doubtful. In respect to quantity, iron ores are the most uncertain of all ores except when regularly stratified: and I am not sure that any iron ore is stratified in the sense of having been originally deposited as it is now found. Iron ores are products of decomposition and re-composition; and generally they are

of Sub-aërial formation, that is, formed near the present surface of the earth and as the result of the action of the air and its contents upon stratified rocks. This is certainly true as a rule, and hence the question of quantity is a matter of probabilities and experiment.

Concerning the ore deposits now under consideration, the pick and shovel will rapidly discover the facts, and hence I will make only some general statements which may be of use in the work of exploitation. Some of which I have already given to Mr. Worthington.

Conditions

1. It is not to be expected that

the ore will be found in large quantity much below the water level: because so far as the conditions are known there must be both air and slow moving water in order to decompose the limestone and drop the iron. If the water is stagnant, the ore is not formed: if the water is swift it sweeps the ore away. And it may be added that if carbonated waters continue to flow through an ore bed the ore will be carried off in solution and be discharged as chalybeate water, or be redeposited as bog ore. It is possible for the right conditions for accumulating ore beds to exist below water level, but it is so rare that no

Calculation should be made upon finding ore below this level.

None in regard to our ore beds we may consider the base of the ridge as the extreme depth of the deposit.

2. It is not to be expected that all the limestone in the ridge has been decomposed. In fact the limestone projects from the surface of the ridge about one third of the way from its South end.

3. The ore will probably be found in a succession of pockets of various depths: and the shape of these is usually trough-like running with the edges of the rock.

4. These pockets may be on different

horizons with raw limestone between
~~(See page)~~: I thought there were in-
 dications of this on the ridge. The ore
 at the lower end seemed to be on a
 different horizon from that on the
 upper. It may be the case that there
 are pockets under pockets with rocks
 between, thus



5. The indications are favorable
 for a large deposit. These are the large
 quantity of float, the number and
 size of the boulders of ore apparently
 in place, the areas of shot ore, and
 the deep red of much soil outside of
 the surface ore. For say a quarter of a
 mile of the North end the show is iron

derfully large: for the next quarter it continues good: then for half a mile there are no boulders and less float: and on the last quarter the show again becomes large: about equal to the second quarter, and is moved more to the Eastward. Here the float makes long trails in old fields on the East face of the ridge.

Mining the Ore.

Mining
facilities

6. The ore lies well for mining, breaking, screening, washing and loading on cars: assuming that artificial methods of bringing water will be used. Whether the mining be done by drift or shaft it must, at both the upper and the lower ends

be done high enough on the hill to give sufficient elevation for all needed machinery: and the position of the ore beds will admit of this in each case. Near the middle there is a watershed or divide in the Valley next to Blount mountain, which elevates the valley so as to reduce the height of the ridge, and which marks a change in the character of the valley itself. From the divide Northward the valley is parallel with the ridge: but Southward it is at right angles, thus changing the topography. The explanation of this is that the surface line of fault from North to South gradually moves downward and away

from the ridge, crosses the valley diagonally and at the extreme lower end climbs the hill on the opposite side. The drainage here breaks across the outcrop and for some distance moves directly toward Blount Mountain: it then turns South and goes into Mill Creek. This cross cut at its point of departure from the Sloss lands is deep enough to give access to the ore beds by horizontal cuts at sufficiently high levels.

The presence of the water shed may have interfered with the formation of ore opposite to the shed, or acting as a shelf it may have only caught the wash which covered ore

beds which might be found by trial pits.

The spot selected by Mr. Worthington and myself as best for starting is near 50 feet above the base of the ridge. It is less than a quarter of a mile from the North end, and other convenient places could be found both North and South of this place. We did not attempt to fix on a spot for opening at the South end.

My aim with Mr. Worthington was not so much to fix on points for mining as to make him familiar with the geology of the ~~country~~ locality, and thus furnish him with a key

which would direct him at any and all points. Of course he should not begin a horizontal drift far below the surface line of the fault, as this would require him to cut through too much barren material, nor would he drive in above the fault, as this would probably carry him above the bottom of the ore beds. It would be desirable to strike exactly the bottom of the ore beds, but go in where we may, we cannot be sure of being on just the right level: hence probably there must be offsets both up and down, and a good deal of zigzagging in hunting and scooping out the ore. There will

Must be
all sorts of
mining.

also be much stripping, and more or less shafting, and every other sort of mining "known to the profession". None of which is unusual in mining limestone ores, and all of which will pay well I suspect. But these details belong to the mining engineer.

Washing the ore.

Hydraulics

7. The question as to breaking, screening and washing the ore, belong also to mining and mechanical engineering. Hence any remarks that I make on these points are obiter dictum.

In parts of South West Virginia there is no available water for wash-

ing ore. Hence they simply screen the wash ore after getting the clay as dry and powdery as possible. In Pennsylvania well are sometimes sunk to supply water. The damming of small streams is common: and I should think that even rain might be held by dams across hollows. Passing the small ore through the washing machine is the common way, and it must be hauled to the washer. But there are many cases in which water is forced to an elevation and conducted to washers, which can be reached by the wheelbarrow, or dump cart direct from the mine.

I do not know to what extent

sluicing the ore bed is employed in iron mining. We know it is extensively used in mining the precious metals, and to some extent in iron mining: but it would seem to be well adapted to the separation of the clay from the small ore.

As to the water supply at Allgood Gap it is certainly sufficient if it can be ponded. It would be inconvenient though not impracticable to take the ore to the water: but the water could be forced into an elevated reservoir from the stream that comes out of Allgood Gap. This stream in dry weather runs under

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ground for five or six hundred yards, and rises on the adjoining property in larger volume. This is the best place to get the water supply. Probably the best place for the reservoir would be on the side of Blount Mountain. Here height enough could be gotten to give a hydraulic joint great power. The reservoir should be near the Gap.

The Quality of the ore.

Quality
very good.

8. The quality of this ore is superior. Prof. Campbell classed it with the turgites, owing to its small proportion of water. I have six analyses of the ore, which give the following average

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Iron - 57.1
Silica - - 4.72
Phosphorus - 0.376

This is a rich car-wheel ore, suitable for making the best of iron at low cost. Its phosphorus is too great for steel. By judicious mixture it may be made to bring into use silicious red ores up to 35 to 40% silica: which would not otherwise be used. Or, if the paramount object is cheap production of iron without reference to the future, here is an ore that might bring the cost even below \$9⁰⁰.

Altogether I know of no brown ore property in Alabama equal to this, excepting perhaps

Tannehill and Greenpond, about which I am not well informed.

More Northerly
tracts of ore land

Brown Ore Tract in

Section 13 & Section 18, T12S, R 2 & 3 E.

The ore land here is wholly in Sec. 13, and the brown ore ridge runs diagonally through two "40^s" as indicated on Barker's Map. Both the dolomite and chazy ridges show themselves; the chazy however the more prominent as the dolomites have been ground off lower than usual. There is a sprinkling of lumps of ore over the ground, pretty thick in a few spots, but there is much red soil filled with

that ore which would yield a large quantity no doubt if the hill could be sluiced, or the earth passed through an ordinary washer.

The only water is in two small Springs close to the line, but on the land of Col. Johnston.

Brown Ore on S 23, T 12 R 2.

Here are four "40^s" in a square occupying the middle of the section with the ore lead running say half a mile through it. This is the old Rice farm, and lies in a sag in the dolomite ridge through which the road passes, the ground rising pretty steeply on each side. The

best show of ore is on the South side, but as in the last tract described the lumps are comparatively small and scattering, whilst there are considerable areas of shot ore. This is another property which can only be utilized by washing, and water here is confined to one spring.

S.W. $\frac{1}{4}$ of N.E. $\frac{1}{4}$ S 27, T 12, R 2.

This 40 acres I did not visit. The line of brown ore passes through it, and Col. Gibson, who was familiar with the tract, assured me that the show of ore there was of the same character as that seen in the last two tracts.

This ends what I have to say
with reference to the brown ore
tracts in Murphree's Valley.

(C) Sub-Carboniferous
Oak Ridge Brown Ores of Cahaba
Valley.
Cahaba Valley.
T. 18 - R. 1. W.
Sections 1, 11 & 15, T 18 R 3 E.

Here we have three tracts of
different sizes. I call the smallest
and most Southerly Eastman, the
middle tract Owen, and the North-
ern Lowry. These are all on Oak
Ridge bordering the Coosa Coal field,
five to seven miles from Leeds on the
Geo. Pac. R'y, the nearest railway
point. The route is along a smooth
valley, and the ore easily reached

through a gap in Oak Ridge. The ore is on the South East side of the ridge.

Eastman

The Eastman tract is the most Southerly of the three tracts and consists of twenty one acres, bought of Eastman who now lives near by. The ridge is 75 feet in height. Float ore strewn the South East side; some of it enclosing quartz chips, but the most of it very good. See analysis. I observed a number of boulders of ore fast in the ground showing 1 to 2 feet across the top. Generally good. A pit was dug on the hill side without leave, Eastman says, by one Armstrong.

for J. N. Aldrich. Now several feet deep, said to have been fifteen feet in depth. The sides so far as exposed show friable argillaceous ore, which is said to have continued all the way down, and to be solid at the bottom.

Owen

The Owen land lies to the North East and is but little separated from the Eastman tract. Near the middle there is a large pile of ore lumps at the foot of the ridge, perhaps a hundred tons, which is said to have been gathered for use during the war, but none of it was ever taken away. The ore is a good heavy brown, which I failed

to sample. Looking over the deposit on the hill side I found that it was confined to a fan shaped strip about fifty yards wide at the bottom and narrowing to a point upward. It did not reach the top of the ridge which at this point is 120 feet high. Within this area is a line of boulder outcrops some of them quite massive, as if a widening stream of boulders flowing from above had been caught and imbedded on their descent. The quality of the ore is best near the base of the hill, but much good ore could be obtained at a number of points, though in places too silicious. In one place a deep pit had

been dug which still shows next the hill a vertical face of ore some 10 to 15 feet in height. The ore is ^a mam-
millary structure, argillaceous and rather lean. There may be 1000 tons of good ore in sight on the hill side and of course much beneath. I traversed the Ridge in every direction but could see no ore except within this V shaped area. The lands which extend out from the ridge have some agricultural value. Says, my guide, lives in a house which he thinks belongs to the Glass Company, around which is a large old clearing.

Lowry

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The Lowry tract comes next.

The impression here is that the
Gloss Company own both the Owen
and Lowry land in fee simple,
though colored as mineral right
on the map. On the Lowry land I
could not see or hear of any sign
of ore on Oak Ridge; but in the bed
of a dry branch at the South East foot
of the Ridge near the Northern end
I saw the edge of an interstratified
bed of ore two feet wide; the rocks
vertical. Foster, who owns the adjoining
land to the North East, says
that this is the only ore on the land
excepting a little on the other ridge
(Chazy). Hays said the same thing.

North West of Oak Ridge runs a low chert or chazy ridge separated from Oak Ridge by a pretty, smooth flat of an eighth of a mile in width, covered with lespedeza (Japan clover). The chazy ridge has a slight sprinkling of brown ore on its surface. One or two of the Sloss "40's" reaches this ridge. I think the Eastman and Owen lands should be further exploited. Certainly much good ore can be here obtained.

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Oak Ridge, Coosa Valley, St.

Clair County; Brown Ore.

Coosa Valley

S. 1, T. 18, R. 2 E.

S. 6, T. 18, R. 3 E.

Sections 1, 32, 29, 28, 22, 34 T. 17 R. 3 E.

The Glass tracts are to be found
in these ^{above} sections. Those that run in
a string North East and South West
(see map) are on Oak Ridge. The 80
acres in Section 22 is near the Ridge,
perhaps partly on it. The tract ~~xx~~ of
120 acres in Section 34 is in the dolomite
area of the Lower Silurian. These tracts
are equally distant (8 miles) from
the Georgia Pacific Railway on the North
and the Columbus and Western Rail-
way on the South. Access is easy.

The Oak Ridge here fronts on a level

country. It is probably two hundred feet high at its highest points, with sags at intervals.

The Smith tract is the most Southern and lies in T. 18. This holds an exceedingly valuable body of ore. The South East face of the ridge shows ore for its whole length, with patches of float ore in the flat woods running out from its base. I did not quite understand the latter. It looked as if some of it, which I saw on low hills, might be in place or nearly so. It lay not far from the fault which separates the Sub-Carboniferous from the Lower Silurian. Hence it seemed possible that this

ore was of Silurian origin. As the deposits were not large, I did not take the time to decide its geological relations. The main body of the ore is Sub-Carboniferous, and lies on Oak Ridge. There is a large show for at least a quarter of a mile. It is well exposed in fields, some of them in cultivation and others growing up in brush. At intervals there were patches of ground almost covered with ore, both loose and fast. The loose lumps were of all sizes, some of them weighing perhaps half a ton. The fast ore showed in boulder heads, some of them large, and also ledges looking like regular

strata, exhibiting only their basest edges. There is certainly a large amount of ore on this land. The average quality very good, though some of it too silicious. I made up my sample of bits from all the varieties, which I thought would do for the furnace. It could be selected so as to have very little silica. The mother limestone showed its basest edges in a few places. The top line of the ore ran near half way up the Ridge, the float extending to the bottom. The mining here would be easy, also the grade for a transportation line. Water is not so abundant here as it is near the

ores in Cahaba Valley. But I think that by damming a convenient supply could be had for washing. This tract is said to be equidistant between the two railroads. Certainly it should be thoroughly tested.

The Norris land consisting of three "40^s" and two fractions, adjoins the Smith land on the North. Here I found a little ore in one place, about the middle of the tract. Some of it was float, besides which were two boulders set in the ground; the exposed face two feet in diameter.

The most Southern "40" ~~is~~ in Section 32 is the Spruiell tract. About two acres of this tract are

strewn with blocks of ore, some of it good. Besides which are some ledges of silicious ore.

Next to this comes the Drummond land consisting of three "40^s" on which the show of ore is very slight. The land is said to have been bought for the Company by Eastman, whose theory was that the Oak Ridge ore ran in a regular bed, and could be opened any where on the line even if there were no surface indications.

Proceeding Northward we reach the Goss land, 80 acres in S 29, and the Dunlap land, 40 acres in S 28. Here we have encouragement.

The Ridge is low and flat, and seemed to me to combine the characteristics of the Sub-Carboniferous and the Dolomite ore lines. Much of the ground was smooth and red, partly wooded and partly cleared; but little chert visible. Something like 20 acres are liberally strewn with small blocks of good ore. The most of it looking to me more like dolomite than Oak Ridge ore, though some of it on the North West side clearly belonged to Oak Ridge. I saw no large boulders or ledges on these tracts, but besides lumps there was considerable wash ore. I think it probable that this tract,

particularly the Goss land will prove to be valuable.

The McClellan tract of 80 acres in S 22 is so densely covered with woods and brush that I found it difficult to form an opinion about it. I saw some loose ore of very good quality, but it was not abundant. If the woods were cleared or burnt off the show would no doubt be much better.

A Dolomite &
Chazy tract.

The Waite land of 120 acres in S 34 is in the dolomite and chazy group. I saw some very good float on the chazy ridge, but the quantity was not large. On the dolomite side there was some show

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of silicious lump ore and considerable areas of shot ore. Water scarce.

Adjoining this land is the best show of float ore in the open country. It is on the land of Mr. Frame, which I visited some years ago. Frame asked \$2000. for the mineral right on his tract. The float ore on Frame's land is partly dolomite and partly chazy, much of the latter being silicious, and the area not large. There are numerous areas of dolomite ore in this neighborhood. Some of them fair to good.

The Whiting Brown ore land is so named because it is about three miles East of Whiting Sta.

tion on the L. & N. R.R. The Oak Ridge which lies along the edge of the Coosa Coal field crosses this tract diagonally. On the South West side of the Ridge there is a considerable sprinkling of good ore for, say, half a mile. Some of it in lumps and some of it in shot ore. Some small pits had been dug at intervals, but they do not seem to have uncovered much ore. This area is in S 27. The land is owned by the Company, and is of the usual quality of Sub-Carboniferous lands. Not much of it is cleared. The most of it is in long leaf pine, of which 40 acres is estim.

ated to carry good mill timber.

Most of the land is undulating, of pretty good quality and easy to cultivate.

Thus endeth the report
on brown ore lands.