

THE GAP COPPER MINES,

Through the kindness of Dr. Wm. H. Egle, State Librarian, which I thankfully acknowledge, I am enabled to give from the official records in the Land Department at Harrisburg the earliest ownership of the land constituting the Gap mines property.

The first paper is endorsed "An Acc't Lands surveyed to divers persons, who purchased of James Steel in right of the original purchase of William Bacon," and reads: "William Penn, Esq., Proprietary and Governor of Pennsylvania, by deeds of lease and release bearing date the 11th and 12th days of October, A. D. 1681, did grant and convey to William Bacon, of ye Inner Temple (London), Gent., 5,000 acres of land in Pennsylvania, and the said William Bacon, by like deed, et al., dated 19th and 20th days of February, 1718, did release and confirm the said 5,000 acres to Humphrey Murry and John Budd, and the said Proprietary's Commissioners of Property did grant to the said Humphrey Murry and John Budd two warrants, one dated ye 5th, 3rd mo., and ye other 28th, 6th mo., 1719, for the laying out to said Murry and Budd 4,920 acres. And the said Murry and Budd by deed, dated the 26th of March, 1720, did sell to James Steel, Gent., 1,500 acres. In right whereof there was surveyed to the said James Steel-

" 800 acres sold to Samuel Gouldin.

"300 acres sold to Herman Godschalic and Leonard Henrickson.

"100 acres sold to Martin Kolph and John Ledrak.

"200 acres sold to George Rough.

"100 acres mine land at Octorara retained by said Steel, making in all 1,500 acres."

The second paper is a record of a warrant for the 100 acres mine land retained by Steel. It is endorsed " Return 100 acres Octorara," and reads: " By virtue of a Warrant from the Commissioners of Property dated the 5th day of the third month, 1719, surveyed and laid out unto James Steel, of the city of Philadelphia, in right of William Bacon's original purchase, a certain tract or parcel of land scituate in Chester county. Beginning at a corner marked Black Oak on the East side of a Branch of Octorara Creek, from thence North by a line of marked— 106 perches to a post, then West 160 perches to another post, then South 106 perches to a third post, then East 160 perches to the place of beginning, containing 106 acres. Surveyed the 21st day of December, 1722.

Certified by me,

"JACOB TAYLOR,

"Surveyor Gen'l."

It will be remembered that six acres were given with each 100 acres for roads, so that the above tract only made 100 acres.

The third paper is endorsed, "James Steel, 150 acres on a branch of the Octorara," and reads :

"James Steel's Land; situate on a Branch of the Octorara Creek in the County of Lancaster. Beginning at a Black Oak, being a corner of a tract of land surveyed for said James Steel the 21st day of December, 1722, thence by the same North 48 perches to a White Oak, thence East by vacant land 26 perches to a White Oak, thence South by vacant land 158 perches to a White Oak, thence West by vacant land 220 perches to a post, thence North 110 perches to a post, thence **East** by said James Steel's other land 194 perches to the place of beginning, containing 150 acres and the allowance of six acres per cent.

"Surveyed the 9th of 10th mo., 1730.

"JOHN TAYLOR."

This last purchase by James Steel was not a part of Bacon's 5,000 acres, but was secured from a William Markham, who seems to have owned the land adjoining the Bacon tract on the south, as will be seen from the draft and the following record in the State Land Department. In a volume labeled " Old Rights " there is in favor of James Steel this information :

"No. 42. Return of 250 acres in Lancaster county surveyed the 9th of November, 1730."

This document reads as follows :

"November 9th, 1730. Surveyed and Laid out for James Steel, of the City of Philadelphia, Gent., a tract of land on a Branch of Octoraroe, in the County of Langcast'r. Beginning at a White Oak marked for a corner, thence by a line of marked trees East 26 perches to another White Oak. Then South by a line of marked trees 158 perches to a third White Oak, then West by a line of trees 220 perches, then North by a line of marked trees 110 perches, then by a line of marked trees East 34 perches, then North by line of marked trees 106 perches, then by a line of marked trees East 160 perches, then by a line of marked trees South 58 perches to the place of beginning, containing 250 acres with allowance of 6 per cent. One hundred acres thereof in right of Wm. Bacon by a Warrant from the Commissioners of Property,dated the 21st day of December, 1722, and 150 acres in right of Wm. Markham.

Certified by Jacob Taylor."

This paper is endorsed on the back : "James Steel 250 acres in Langcsst'r County,the Gap Mine Land, now belong-

ing one-sixth part to the honorable Prop' r Thos. Penn, one-sixth part to Andrew Hamilton, one-sixth part to James Logan, or assigns, one-sixth part to Wm. Allen, one-sixth part to Thomas Schute, or assigns, one-sixth part to James Steel."

Enclosed in this is a draft of these 250 acres, with the same endorsement, with the words added, "Surveyed Novemher 9th, 1730. JACOB TAY LOR. "

Known at an Early Date.

From the above it seems clear that the existence of valuable minerals on the Gap mine tract was known as early as 1720, or, at the latest, 1722, as between those years James Steel sold 1,400 acres of his 1,500 acre purchase, retaining 100 acres, marked on the record "Mine Land at Octorara." It is barely possible that the tradition printed in Everts & Stewart's Historical Atlas of this county, that some Marylanders discovered the mine in 1718, is correct ; but it seems hardly probable that Sir William Keith drove the Maryland people away and worked the mine in 1719, spending much mqney in opening it and being stopped by the proprietors. As a sane man he would doubtless have tried to secure the property before going to much expense, and it was then for sale, Murry and Budd having secured it in February, 1718, and sold it to James Steel, of Philadelphia, in March, 1720.

It would seem more likely that, while much prospecting by digging pits, etc., was done before, the first regular and systematic working of the mine was after Steel secured the 150 acres of the Markham tract in November, 1730, when the whole 250 scres was divided into six equal shares, Thomas Penn taking one share.

There can be no doubt that these six men, who were all wealthy, proceeded to work these mines as well as the limited

possibilities of that time would permit, and by themselves, their heirs or assigns continued to operate them with more or less persistence,at least until 1763, for on November 7 of that year the Hon. John Penn issued an order to John Lukens, Surveyor General, which, after reciting the above facts as to the 250 acres, directs him to survey to the "Gap Mine Company" 300 acres additional, part of which they were already using.

The reason given for this order is that "the said company have at great expense erected divers buildings and other works for the carrying on of the said undertaking and for the use and benefit thereof, as well on the said 250 acres as on the said 300 acres."

The order also directs the Surveyor General to survey both tracts and make return of the same that they may be "confirmed to William Allen and others, the said Gap Mine Company,on the common terms of 15 pounds 10 shillings per 100 acres and the quit rent of one half penny sterling per acre for the whole from the first settlement of the mine tract."

In pursuance of this order the Surveyor General reports that he surveyed the same, "including such surplus as was clear of the lives of the claimers of adjoining lands on

the 6th, 7th, 8th, 10th and 11th days of September, 1764, and found it contained 780 3/4 acres." So the surplus clear of adjoining claims must have been about 230 acres. The draft of this whole tract in the Land Office is so torn that no copy can be made. There is also a record of a re-survey of some of *this* land made March 15, 1786, which mentions William Allen (probably a descendent of the William Allen of 1730 and 1763) as an owner.

A Valuable Pamphlet.

Of the actual working of these mines in the last century, however, no written history on record seems to have been made, or, if made, was not preserved, so that our only dependence is on the uncertain and frequently contradictory traditions of the neighborhood. So much of these as seemed reliable were gathered up by Capt. Charles Doble, the active and efficient manager of these mines for nearly forty years, but his efforts were not very satisfactory to himself until he recently secured from a former owner of some of the land a pamphlet of twenty pages. For the loan of this, as well as much other valuable information, I desire to make this public acknowledgment of my thanks. I am willing that the members of the society should see this ancient book, but I want them to "handle with care," for to me it seems invaluable. It is the nature of what we would now call a Prospectus for the formation of a mining company, but gives a vast amount of the early history of the mine, which I have, so far as possible, compared with information from other sources without once finding it in error. This pamphlet is one hundred years old and, so far as I know, no part of it has been reprinted in this century. I have, therefore, deemed it advisable, in the interest of the future historians, to make copious extracts from it. The title page reads:

"A plan with Proposals for forming a Company to work mines in the United States, and to Smelt and Refine the ores, whether of Copper, Lead, Tin, Silver or Gold, by Benjamin Henfrey. The original can be seen at the Philadelphia Library, No. 91,025. Printed by Snowden & McCorkle, No. 47 North Fourth street, Philadelphia, 1797."

The first paragraph of the preface reads :

"I conceive that it is totally unnecessary for me to make any comment upon the great advantages it would be to this country to be supplied with all the useful metals from its own mines, to purchase which an immense sum, every one knows, is annually sent to Europe." (A terse statement of the great American doctrine of protection, which he evidently wrote for the especial benefit of Brother Hensel.)

The preface is dated, "Gap Copper Mines, Lancaster county, Pennsylvania, March 27th, 1797."

Then follows what he calls "Proposals, &c. :"

"The first mines I would recommend are situated in Lancaster county, Pennsylvania, five miles from Strasburg, thirteen from Lancaster, thirty-five from Wilmington, fifty from Philadelphia, and only two miles from a turnpike road.

"They were discovered by a German by the name of Tersey, in or before the year 1732, and in that year Hon. John Penn made a grant of the land where the mine was found to the following gentlemen, for the express purpose of having it worked, viz : Governor Hamilton, Judge Allen, James Logan, James Steel and Thomas Schute, Esq., and it also appears that Mr. Penn joined in the expense of opening the mine, etc., in doing which they discovered one of those uncommon vitriolic springs called by the Germans *Ziment wasser*, e., water strongly impregnated with the vitriol of copper, or, as some writers have called them, copper springs ; but, notwithstanding this invaluable discovery, it does not appear that any of the gentlemen were acquainted with the value of the water, as no attempt appears to have ever been made to turn it to account after the European manner, which I shall have occasion to describe.

But previous, I will, for the satisfaction of those who may wish to forward my plan, state the proofs I have obtained of such a spring having been actually discovered in the Gap mines when first opened. These proofs also fortunately report the quantity and value of the water, and, from the great ability as well as respectability of the men, leave no doubt of the truth of the discovery. The report is as follows :

"An account of the copper springs lately discovered in Pennsylvania, by John Rutty, M. D., of Dublin, communicated by Mr. Peter Collinson, F. R. S. See volume 49, part 2, page 648. Read May 20, 1756.

"In the Province of Pennsylvania is a copper mine which affords a Spring that appears to have the same effect as that Irish water lately described by Dr. William Henry and Dr. Bond in the 47th and 48th Volumes of the Philosophical Transactions, but is much sharper, for it will dissolve iron in a quarter part of the time, and we are assured by the accounts transmitted from the proprietors of it of the trials they have made, that it yields the same copper—mud or dust—as our Crone Baun water of the county of Wicklow, Ireland, in this Kingdom (being the water above mentioned), which, being collected from the bars of iron immersed in it for the purpose of extracting the copper from the Pennsylvania water, it produced above half pure copper on being melted in a crucible ; an experiment that requires to be repeated in order to ascertain the proportion of copper obtained with accuracy ; our copper spring of the county of Wicklow yielding a proportion considerably larger than this, viz., 16 parts of copper out of 20 of the mud.

"In the neighborhood is a great abundance

aim of the ores of vitriol and sulphur and the Spring comes through an immense body of vitriol ore and the supply of water is very large, 700 to 800 hogsheads flowing in 24 hours. The water is of a pale green color of an acid, sweet, austere, inky and nauseous taste.

"But the genuine quality as well as large proportion of the impregnating salt will further appear by the following analysis of this water, viz., a pint of it exhales by a slow fire left 400 grains of solid contents, which were partly green and partly ochre colored, with an intermixture of bluish and a rough sweetish taste like that of Sal Martis and appeared to be chiefly saline, not leaving above four grains indissoluble matter on dissolving 196 grains of it and filtering.

"Thus it appears that the proportion of vitriolic parts in this water is very large, viz., six drachms to a pint or 3,200 grains to a gallon, and consequently it is a stronger solution of vitriol than sea water is of marine salt, and, moreover, is truly considered the strongest of all the vitriolic waters that have yet occurred to my observation, for our Crone Baun water in the county of Wicklow gives but 256 grains from a gallon ; Haigh in Lancashire, the strongest in Britain, 1,920 grains ; Shadwall, 1,320; Kilbrew in the County of Meath, 1,530 from the same quantity, so that besides the copper to be obtained by immersing bars of iron as in our county of Wicklow water, this water offers to its proprietors another peculiar advantage, viz., an opportunity of erecting a copper works or manufacture of vitriol, especially the vast supply of water and plenty of fuel in the place considered."

Mr. Henfrey now brings great names to his aid, namely, the certificate of Dr. Logan respecting the copper springs at the Gap Mine, Lancaster County :

"I do certify that Dr. Benjamin Franklin, a few weeks before his death, informed me that at the time the Gap copper mine in Lancaster county belonging to James Logan and others was worked, a spring of water was discovered in the same highly impregnated with copper. A bottle of water was sent to him, with which he frequently made experiments with his knife, which, being for a short time immersed in the water, would assume the appearance of copper.

"Signed. GEORGE LOGAN. STENTON. March 10. 1797."

Dr. George Logan was quite a prominent man of that time. He was intimate with Dr. Franklin, a member of the American Philosophical Society, and in 1801 was elected United States Senator from Pennsylvania. His home was at Stenton, near Wayne Junction, just north of Philadelphia.

What Old Residents said.

"The following is the certificate of some old people who remember the first opening of the Gap mines and are still living near them and who are persons of good character and in good circumstances :

THIS IS TO CERTIFY, to whom it may concern, that we, the subscribers, were frequently at the copper mines in Lancaster county, known by the name of Gap mine, during the time the said mine was working by James Logan & Company, and from hearing the people often talking of the water put the blades of our knives into the water as it came from the pumps, which in a few minutes would be covered with copper. And we further certify that we have often seen quantities of the ore got in this mine and frequently heard the miners say that it was a very rich mine if the water could be kept down so as they could work constantly. At

this time there were eight pumps working *in* this pit, which turned out so much water that it overflowed a meadow and destroyed the grass so effectually that most of the places the water used to cover are barren at this time. Given under our hands severally this 19th of November, in the year 1793.

her

ELIZABETH X ROCKY, mark

JOHN SHORTS,

Witness: JOHN BRACKBILL.

ABNER BUFFINGTON.

John Hoar."

Then follows a letter to Mr. Honfrey, dated Clay Hill, December 27, 1796, from R. Howell, who seems to be the owner or at least to control the property, and who regrets his financial inability to erect machinery to properly work the mine property and accedes to a sale of shares for a portion of the money needed. Mr. Honfrey then proceeds to give his plans for working the mine. He says: " The works are now in such a state as to require only the aid of a machine of sufficient power to raise the water so as to keep the pits clean. A steam engine of moderate power would be capable of doing this. But there are many objections to erecting a steam engine in this country : 1st, the great expense of erecting one ; 2d, the consumption of fuel ; 3d, the frequent repairs, and 4th, the high wages you must give to an engineer to attend the machine. I would recommend that a level should be brought up through a meadow to the mine by which a fall of 25 to 30 feet may be gained and a water wheel of 25 feet diameter will be sufficient to work as many pumps as will clear the mines of the common and raise the copper water for use. There are three small streams in the mine lands that may be conducted into one reservoir, which would then, I am cer-

tain, give as much water as the machine will require to keep it constantly going. The machinery on this plan will be simple and such as may be made at the mines.

"Nor will it be so liable to get out of order as the works of a steam engine. If this plan is put in practice the works may much sooner be made productive, for when the level is brought up, the bed of poor ore before noted will be laid dry, and may be worked to immediate profit much sooner than if we have to wait ;or the erecting of a steam engine, and at much less expense to the company.

Extent of the Improvements.

"I will now for the information of those persons who may be disposed to join in forwarding the proposed plan acquaint them with the present state of the work at the Gap mines.

" We have built a saw mill, made two dams, and cut a head and tail race. "There is a large log house for the copperas works and a large lead boiler. Several ley tubs, cisterns, &c. There are a carpenters' and smiths' shops and two log houses for workmen. There is a variety of tools, with pit ropes, windlasses, buckets, &c. Also, a complete set of boring rods, 100 feet long. The two main shafts have been cleaned out, which was attended with great trouble and difficulty, as we were obliged to work night and day on account of the water.

"There is a machine to work the pumps, which will be of great use in getting the water out until a mere powerful one can be completed. There are eight tiers of pumps, two tiers deep, all in good working order.

"About fifty tons of ore have been raised and a great deal of other work done. I shall, therefore, only further note that a small part of the level is driven and that two men are now **at** work on it.

"These various works have cost our company a considerable sum, as will appear by our books, and the company who first opened the mines must, I **am** certain, have expended at least \$30,000, so that the proposed company will come in on very advantageous terms, as by these expenses the mines have been put in a state that they only require a steam or other engine to make them pay the profit I have stated and with the probability of much greater.

Condition of the Mine Itself.

"I will now describe the works below. One of the pits is seven feet square; the other is seven by five. The wide shaft is only about sixty feet deep, but the other is much deeper. The vitriolic water rises fifteen feet from the bottom of the wide shaft, and there is forty feet of common water over it. This I have proved many times by my boring rods.

" When we had cleared the pits of earth and stones, and had the waters out, I went down. I found the main shaft in most excellent order, the frame consisting of squared logs laid close upon each, as in building a house ; in short, I never saw such strong work and so well secured in any mine I ever was in before.

"I have now only to beg leave to recommend my estimate and plan to the serious consideration of my readers, and to assure them that the views contemplated by this scheme are fair and honorable."

Estimate of Expense to Complete the Works at the Gap Mines.

1797. To expense of level \$4,000
To machine to work the pumps. 1,200
To troughs for copper water 2,000

To finish copperas works. 1,000

To incidental expenses 500
To manager's salary . 1,000
To clerk's salary 300
\$10,000

Estimate of the Expense and Probable Profit In Working the Gap Mines the First Year.

1798. To expense of completing works as above \$10,000
To cash for 200 tons bar iron 20,000
To 25 workmen at \$200 each 5,000
To 2 smiths at \$300 each.. 600
To 2 coopers at \$300 each. 600
To 1 clerk.. 800
To 1 manager 2,500

To incidental expenses ... 600
To of the net profits to be paid to the lessees of

the mines. 11,612

\$51,712

Contra Credit.

By 300 tons of fine copper to be precipitated from the ziment water which I will value at \$400 per ton \$120,000

By 300 tons copperas at \$30 per ton. 9,000

By 10 tons fine copper precipi-

tated from ore 4,000
\$133,000 Less expense 51,712
Profit \$81,288

A similar calculation for the second year, 1799, makes out a net profit of \$256,726.

Tried, But Unsuccessfully.

With this astounding display of profits it seemed to me that Mr. Henfrey must surely have raised his company, and accordingly wrote to Captain Doble to ascertain whether his subsequent examinations gave evidence of Mr. Henfrey's plans having been put in operation and received the following reply :

NICKEL MINES. January 15, 1897. It. J. Houston, Esq.

DEAR SIR : In answer to yours of the 12th inst., I have to say that there is strong evidence that Mr. Henfrey's plans or a part of them at least were carried out. The old water wheel that we discovered was about 25 feet in diameter and 20 inches wide, located right on the edge of the old east shaft. This is the shaft Mr. Henfrey spoke of as being so well and strongly secured with squared timbers laid one upon the other and is the one farthest east on the mineral range.

There was a level or tail race some 300 yards in length brought up from the meadow below direct to the water wheel. The bottom of this tail race is about 25 feet below the surface at the point where it reached the wheel. The first 200 yards from its outlet was an open ditch and the other 100 yards was tunneled.

The water to drive the wheel was collected from the springs of three little valleys into a dam one hundred yards north of the wheel, viz., from the springs at the head of the same valley that the wheel was in, from the springs of a little valley eight hundred yards west brought to the dam in an open race, and from the springs in a little valley over a half mile east, brought to the dam in the same way ; parts of these dams and races can still be seen. The springs from these three little valleys are the source or head of this branch of the Octorara.

I never saw any signs of the old mines having reached a depth of over sixty feet from the surface, and only in one place, viz., the East shaft, where the wheel was located, did they reach a depth of sixty feet. But to the depth of from twenty-five feet to forty feet from the surface, they did a great amount of work in the way of sinking pits, tunneling, etc. Much of this work seems to have been done with natural drainage (I mean without pumping), consequently the vertical depths of these workings varied according to the natural rolling surface.

How much, if any, of Mr. Henfrey's plans for the treatment of the "vitriolic" waters were carried out, I do not know. Yours truly,
CHARLES DOBLE.

It would seem from this letter that Mr. Henfrey doubtless organized his company and about equally certain that it was not successful. The difference between the estimated and actual profits of his operation probably did not differ widely from many similar estimates and results of the present day, and Mr. Henfrey, as a promoter of mining companies, need not occupy a hack seat even with the experts in his line of a century later.

His operation was the last previous to the recent working which began in 1849, but, as this sketch is already too long, I must reserve that for another paper.

Up to 1785 two parties are named as having operated the mines, viz., "James Ramsey & Co." and later "William Allen and others." Both of these names are among the six original owners. This would seem to render it probable that while some of the six originals had sold out to either their partners or outsiders, others of the originals, or their descendants, were willing to renew the work, and that some of them were the immediate predecessors of Henfrey's company.

[TO BE CONTINUED.]

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