History, SC, York, Iron Works – Aera & Aetna

A Documentary History of
American Industrial
Society

Volume II

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American Industrial
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and introduction by John B. Clark

Volume II
Plantation and Frontier

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PLANTATION AND FRONTIER
1649-1863

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with Introduction by
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Volume II

2. IRON WORKS

(a) Advertisement from the Charleston (S.C.) City Gazette, May 12, 1795, describing the labor system in mining and smelting in the remote interior of the Carolinas.

SALE OF AERA & AETNA IRON WORKS, IN THE STATE OF SOUTH CAROLINA

On the first Monday and Tuesday in November next, will be exposed to sale by public auction, in the city of Charleston, to the highest bidder, by consent of the parties interested therein, those highly valuable and improvable Iron-Works, called Aera and Aetna, situated in York county within two miles of the Catawba river in the said State, together with about 15,000 acres of land lying contiguous to, and attached to the said Iron Works and on which are about twenty-five improved farms. On the settlement of the Iron Works are a good two story brick house, 40 by 35 feet, with cellars, and other necessary buildings, together with four grist and two saw mills.

There are upwards of ninety negroes attached to the works, between 70 and 80 of whom are grown, the rest are children. Most of these negroes have been employed for a considerable time at the works, and are very useful and valuable as forgemen, blacksmiths, founders, miners, and various other occupations.

The waggons, teams and every utensil belonging to the works, will be sold also; a schedule of which, added to the negroes, as also plats of the land, will be ready to . be produced in Charleston for ten days previous to the sale, and the whole may be viewed at any time on the spot.

The whole of the land, with the Iron Works, buildings, and improvements of every sort thereon, together with all the negroes, waggons, teams, and every utensil, agreeably to the schedule to be produced, will be exposed to sale in one entire lot.

The conditions of sale will be a deposit of one twelfth part of the purchase money to be paid down on the day sale, one other twelfth part when the titles are ready to be delivered, the remainder to be paid in 5 equal annual installments, with the interest annually at the rate of 7 per cent. from the day of sale, on bond secured by a mortgage of the property, and such personal security as shall be approved. For a more particular and accurate description of these works and the lands attached thereto, reference may be had to the annexed state thereof, taken a few years past by a person well qualified therefor, and totally disinterested.

WILLIAM HILL, Proprietor of one moiety.

ISAAC HAYNE] Executors of the estate of Col. **ISAAC HAYNE**, authorized
THOMAS JONES] to agree to this sale by the proprietors of the other
ED. **DARRELL**] moiety.

ACCOUNT OF THE IRON WORKS in South Carolina, made a few years ago, by a workman of skill and judgment on the spot, commonly called Hill's Iron-Works.

The high lands in general produce oak, pine, hickory, poplar, and some chestnut; the low lands generally mulberry, swamp oak, walnut, sycamore, &c, &c. 5500 acres of land were originally purchased with the works on 1785, but near 10,000 acres have been run and purchased since. The works lie centrical to the lands, insomuch that from 4 to 6 loads of coal may be hauled per day; before there will be any occasion to go to an improper distance for coal, the woods will bear a second cutting.

The farmers are at present willing to give their wood gratis where they are clearing, it being to their benefit to get it off their land, reserving fencing. The hearths contain from 35 to 40 cords, and are generally filled 3 or 4 times (saw logs and sapling excluded) from an acre; horses are usually worked, though oxen would be preferable. A cord of wood is of the following dimensions; 4 feet long, 4 feet 4 inches high, 8 feet broad; the wood may be floated to the works, but heretofore it has been hauled. Six pounds of iron are usually given to the wood cutters for every cord cut, they finding themselves. The wood is generally coaled by colliers hired by the month; the wages commonly given to colliers are 400 lbs. of iron per month to the master collier, 250 lbs. to the under colliers, and much less to green hands.

Twenty pounds of iron or castings are usually given to a team for carting coal per day, they finding forage and driver. The coaling grounds is in general level and free from stone and gravel; the hearths are made at a small expense.

There is no store now established to furnish a regular supply to the work people; if a store of goods well laid in, was established, the hands would be better satisfied to take goods for payment at 125 per cent. advance, than they are now with the present mode of payment, which is either in bar iron or castings, according to their respective branches.

The distance of the ore from Aera furnace is 1¾ , from Aetna furnace 1½ mile; the ore appears to be inexhaustible. The ore works easy and well in the furnace; the metal is good for hammers, gudgeons, or any kind of machinery and hollow ware and will make good bar iron. Some trial has been made of it in steel, and it promises well: nothing is necessary in preparing the ore for use but burning. The ore is generally raised by monthly wages at 300 lbs. of iron per month, and one good miner can keep one furnace in blast. A team can draw four loads of ore per day, at the price above mentioned for a team.

The ore consists of large rocks above the surface, the depth not yet known; in cavities between the rocks lie an oker and feed ore. There will be no occasion to sink shafts or drive levels for 50 years to come.

The Aera furnace is built round, the thickness of walls at bottom 10 feet, the height from the bottom of the hearth to the tronnel head 35 feet, the cavity 11 feet above the boshes, 22 inches diameter at the tronnel head. The Aetna furnace is built square, and nearly of the dimensions of the Aera; it was built in 1788, and lately built put in blast. The inwalls of both furnaces are round.

Formerly the hearth stones were procured 25 miles distant from the works; they were of a yellow colour, hard quality, and stood the fire well. The longest blast ever yet made was 8 months, then blowed out from causes not owing to failure of the stones.

The stones now in use were lately discovered; within one mile of the works there is a large bed of them: these are yellow mixed with red, of a coarse grit, resembling a coarse grindstone; they dress easy; how long they will stand cannot be told, but they promise well. The inwalls are made of the same kind of stone last mentioned. No great inconvenience was ever experienced from frost; in some very uncommon seasons, it may be necessary to cut away the ice from the wheels, but there is never any need to keep fires near the wheels.

A small quantity of lime stone is necessary for fluxing the ore, but there is an oker and sud ore in the ore banks, which is used together with the running cylinder, which makes the consumption of lime stone small. The distance of the lime Stone from the works is 22 miles; there is a prospect of getting lime stone much nearer in a short time.

The demand for hollow ware is so great (and having but one forge to supply with pigs) it has been necessary to keep the furnace upon a low burthen for that purpose, whereby 17 or 18 tons per week has been made; but, the furnace raised higher, it is supposed by founders, would make 25 tons per week, and the metal still be of a mottle. The greatest part of the iron is made into ovens, pots, flat irons, gudgeons, machinery, cranks, and at present there appears to be a great demand for machinery for rice-mills, grist, wind and saw-mills. The large extent of country to be supplied, the distant prospect of an other works being built, and the Charleston market (to which there will be speedily a navigation from the works) afford a prospect of a consumption of all that can be made. The current price per pound for flasked ware is 4 3/8 , open castings 3 1/2 sterling; all pieces under 20 lbs. are sold by hand. It is probable that hands of all professions may be procured to carry on the works, and that goods would answer them better than cash in payment. The demand for bar iron is so great, that it cannot be told how many forges would be necessary to supply the country. The proprietors have a great number of good seats for forges within a convenient distance of the furnaces. One of the furnaces takes on an average 20 and the other 25 half charges in 24 hours, 5% feet deep. The furnaces each take 20 bushels of coal to a half charge. The ore boxes weigh 55 lbs. and it takes a box of ore to three bushels of coal. Three tons of ore produce 2500 lbs. of pig metal. Aera furnace is blown by two wooden cylinders 5y; by 5% feet. Forge bellows ditto. Aetna furnace is blown by four wooden cylinders, worked by a cast iron cog wheel, wallowers and cranks.

The heads of water are sufficient to command the wheels. The Aera furnace wheels is full breast; Aetna furnace wheel low breast. Some of the wheels in the forge are overshot, and the hammer wheels high breast.

Aera furnace wheel is 26 feet high, 4 feet wide.

Aetna furnace wheel	"	28	"	"	4 1/2	" "
The forge wheels	"	16	"	"	"	" "
The hammer wheels	"	11	"	"	5	" "

If all the wheels in the forge were overshot, there would be water sufficient for forge and furnace all the year round, there being a head of water 19 feet; nine months in the year, there is water for two forges.

The present founder has 1250 lbs. of castings per month for his wages; he finds himself and pays his keeper's wages. fillers wages 154 lbs. castings per month; boarding is generally 50 lbs. iron per month; the price of good beet is 30 lbs iron, pork from 35 lbs. to 40 lbs. iron per 100 nett; wheat is 8 lbs. iron per bushel, West India rum 2 dollars per gallon, country rum from 1¼ to 1½ dollars; wages given to labourers is from 100 to 130 lbs. iron per month, they finding themselves; 4 lbs. of iron is given per bushel for corn, 2½ ditto for oats; hay never has been bought, there being sufficient meadow land belonging to the works to supply them with hay. The business is usually carried on by teams belonging to the works; but teams can be occasionally hired. Wheelwrights are paid 250 lbs. of iron per month, also carpenters; blacksmiths, 175 do., they finding themselves. The forge consists of 4 fires, 2 hammers under one roof and close to the furnace. The forge is capable, single handed, to make one and a half ton of bar iron to one fire (if kept in good repair) per week.

The present hammerer is bound to make 2000 lbs. bar iron, out of 2200 lbs. anchonies; he is paid 2½ dollars per cent. for his over yield, and 150 lbs. iron for drawing 2000 lbs. finers are paid for making 2240 lbs. anchonies, 200 lbs. bar iron. Iron is sold at short weight. Iron in the greatest demand is waggon tire, mill iron and plough shares. Coal generally used to make a ton of iron, is from 4 to 500 bushels. It takes generally from 26 to 28 hundred weight of pig iron to make a ton of bar iron.

At present the nearest landing is distant 70 miles, viz. Camden. The proprietors of the works and 7 others, have obtained a charter to open the Catawba to the North Carolina line, and a charter from North Carolina to open the river 80 miles higher in that state. A considerable part of the navigation is finished, and 'tis expected that boats will come within forty miles of the works this summer, as there are boats already built for the purpose, which are to carry 30 tons; and in the course of another summer, will be brought within 2 miles of the works. The works are within 2 miles of the river, and the creek can be made navigable up to the works. It is 6 days work to go and return to and from the landing (at Camden) at 20 lbs. of iron per day, for carrying 2300 lbs. of iron. The price of bar iron is £37, IOS sterling for 2000 lbs. nett iron.

There are two dams, one at the Aera and the other at the Aetna works. The dam at the Aera is a strong frame on a flat rock, extending across the creek, the bottom plank jointed to the rock, so that it is impossible for it to blow; when the water rises it falls over without the trouble of drawing gates. It is 150 feet in length, and 10 feet high; it overflows to the tail race of Aetna furnace, which is two miles by water. The Aetna furnace dam is on the same construction, and nearly on the same kind of foundation, the same length and height as Aera. They are both in good order.

Both of the furnaces are new and in good repair; as there are two hammers in the forge, any repairs that might be wanting may be done without much loss of time. As to the general expense of carrying on the works, it has been so blended with building and enlarging the works hitherto, that it cannot be so readily ascertained.

No coals have ever been procured from the neighbors, nor application made for any, consequently the price cannot be ascertained.

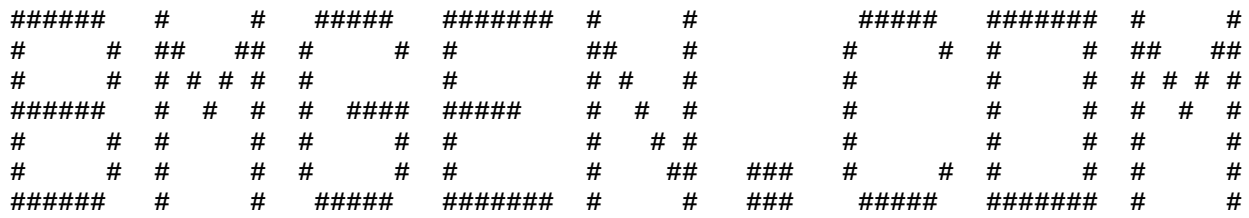
April 29, 1795, by information of Mr. Hill, the foregoing remarks may be corrected, viz.

The hearth stones which at that time had not been proved, have been since sufficiently tried, and prove very good.

The navigation has not been completed as was then expected, but from the forwardness of the Santee Canal, and the revival of the company for improving the navigation of the Catawba, it is now expected that it will be accomplished in a few years.

Mr. Hill has since contrived a method, by means of a fall of water, of blowing all the fires both of the forges and furnaces, so as to render unnecessary the use of wheels, cylinders, or any other kind of bellows, which method, by experience already had, is found to produce a better and more regular blast than any heretofore used, and is also not liable to the accidents of freezing, or machinery giving way in time of blast, as the others are, as well as being very simple, and the expense but trifling.

Charleston, May 12, 1795.



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