LABOR AND THE LABORERS.

[Under the above head we propose to publish as rapidly as convenient, a series of articles succinctly portraying the state of Labor and the condition of the Laborers in the different parts of the United States. Statistical and other information upon the subject is solicited, and when used will be paid for by *The Tribune*.]

X.

IRON MANUFACTURES IN MORRIS CO., N. J.

[Second Article.]

In a former article we described the immense mineral wealth of the upper parts of this County, and we now propose to describe the manufacture of the iron itself, and to estimate, with as much accuracy as possible, the products of the business, the number of laborers employed, the amount of wages disbursed, the condition of the laborers, the prospects of the business, and any other items of interest connected with it.

We are informed that the first bloomery forge in Morris County was erected on the Whippany River, near Morristown, close to the present track of the Morris and Essex Railroad. It is said that the ore was carried in leathern bags on horseback from the celebrated mines now owned by Gov. Dickerson; and a finer contrast cannot be selected between the carrying facilities of one hundred years ago and those of the present time, than those horses packing iron ore eight or ten miles, and the iron horses which carry their great burdens so swiftly by the site of that first forge in Morris County. And we may here remark, that within that time almost as near as the Revolutionary War, much iron was carried to market on pack-horses. The bars were put into a convenient shape for this purpose! A single horse would carry four or five hundred pounds some fifteen miles a day. The monster engine, the "Essex," on the Morris and Essex Railroad, will take fifty tons from Dover to Newark in three hours! Truly an amazing stride of progress!

Previous to the Revolutionary war there was "a "slitting mill" at Old Boonton, two miles below Boonton proper, which was carried on by stealth, because it infringed on British exclusive laws. Ostensibly it was a grist mill, but under this was the iron mill. Governor Franklin and his suite once took the pains to ride up and inspect the place, like a faithful officer of the Crown, and know for himself whether there was any violation of the laws. Mr. Samuel Ogden, who managed the works, and whose father was in part owner, was noted for his shrewdness and his choice liquors. When the Governor's party arrived, Mr. Ogden insisted on their dining, as they must be fatigued and hungry after their long ride. The dinner was spread and the liquors so freely circulated, that sagacious Governor Franklin and his officers could find no "slitting mill" after dinner! The Governor by *that* time had always known that it was an unfounded slander, and rode home "with a flea in his "ear." In justice it ought to be said that report made Franklin a partner in the unlawful property, and if so the officer of King George might be excused for not seeing what, as a stockholder, he did not then want to see.

Some years previous to the Revolutionary War "the "London Company" built blast furnaces at Charlottenburgh, Pompton, Ringwood and Winockie, and exported to England considerable quantities of pig iron. This was desirable in consequence of the failure of charcoal at home, where the bituminous coal had not yet been used for smelting ore. In 1775 it is said that Lord North induced this Company to burn their works in New-Jersey, promising to indemnify them for the loss.

As early as 1772 a blast furnace was put up at Mount Hope by John Jacob Faesch, and soon after this another one was built at Hibernia. These were employed in making all kinds of hollow ware, cannon balls, and such things as are now cast in our foundries. At that time none of the iron of these furnaces was refined by the puddling process. There were a few bloomery forges in operation previous to the war. The iron business at the time of the Revolution was carried on on a limited scale, but received a great impulse after war was declared, inasmuch as we were thrown upon our own resources for iron for balls and for mechanical uses. As late as 1826 all the merchantable wrought iron produced in this county was drawn out under the hammer, making a better iron than can be rolled, but adding to the expense of production. In 1826, Col. Joseph Jackson and his brother William Jackson, built the first Rolling Mill in the county if not in the State, unless the Old Boonton Slitting Mill be considered an exception. We may then consider the four different modes of making iron for market as here practised, viz: the smelting the ore in bloomery fires, and the hammering the iron into marketable shapes, the best iron made; the making of blooms, a process precisely like the former, except that instead of being hammered into smaller sizes, it is rolled into more perfect shapes by machinery; the process which converts the ore into pig iron and then by puddling, converts it into wrought iron to be rolled or hammered; and the iron cast by Cupola Furnaces.

By inquiry and examination we find that a large amount of iron is made annually in the county in blowery fires, a small part of which is drawn out into the small sizes under the hammer. The Forges are to be found on such streams as the Rockaway and Pequannock River, Beaver Brook, Horse Pound Brook, Green Pond Brook, &c. The most of these are located with reference not merely to a supply of water for driving the machinery, but easy access to the charcoal. The most of the buildings are quite inferior and unsightly. Exposed constantly to fire, these buildings are usually constructed admirably to burn down. Only a few of them have fire-proof roofs, pine shingles or boards being the roofing in common use. Some of them are neatly enclosed as if to provide for the comfort of the workmen in winter and stormy weather, but the most of them are not as comfortable as a good cow shed. An old forge roof is perforated thoroughly with holes burnt by the sparks which are constantly flying from the chimney, and it would seem to have no safety but in the vigilance of the workmen. Many of the streams on which these forges are placed are not sufficient to drive them more than from seven to nine month in the year, which must be a great drawback to their productiveness, and we wonder that the experiment has not been tried of driving these forges by *steam*. We think, although we have no accurate data, that the heat which vanishes up the chimney of a fire must be nearly sufficient to generate steam for driving the bellows and hammer for manufacturing all the iron which that fire can produce. The introduction of the hot blast pipes in the forge stack has saved much of this waste heat, but it seems to us that enough is still lost to drive properly constructed machinery the whole year through. It is our impression that this improvement would save thousands of dollars annually to the country. This opinion is confirmed from the fact that Mr. Edward DeCamp, at his model forge, Charlottenburg, has put up two blowery fires, so that the heat which escapes from them is employed in heating an oven connected with a stand of rolls. In that oven thus heated, the iron is made hot enough for rolling with but a small additional expense. Such an improvement as we suggested would also furnish labor the whole year through, instead of the present evil of stopping work for want of water. This is a very important want to the physical and moral condition of the workmen, and deserves to be looked into. Many workmen lose just about the sum they ought to lay up for "a rainy day" by these vacations caused by drought, and it can hardly be doubted that many of them contract habits which they might escape if they had constant and profitable employment.

The working force in a forge is usually two men to each fire, viz, one to smelt the ore, "a blower," and the other "the hammerman." In some cases an athletic, hardy man will hammer for two fires, thus reducing the force of a forge with two fires to three men. In a very few cases, men of such extraordinary endurance have been found that they will do all the hammering for two fires day and night the week through. This is made possible by the fact that the hammering takes only a part of the time, although the exercise is violent while it continues, thus allowing the man frequently three hours of uninterrupted sleep. The Blower must be at his fire all the time, and of course in that department of the work there must be a change of men as often as once in twelve hours. In most of these forges the week's work begins at midnight immediately after the Sabbath, and closes about noon on Saturday. Usually the day's work is measured by the loops of iron, that is, the mass of iron as it is taken from the fire. To make one of these from the ore requires about three hours, so that four loops are a day's work. These loops weigh from one hundred and fifty to two hundred pounds, and the hammerman will handle that mass under the hammer with as much ease as a blacksmith does a nail-rod.

We have taken some pains to ascertain the amounts of charcoal and ore necessary to keep a single forge fire stocked for a year. The estimates of iron masters are quite different. Mr. Freeman Wood lays in a stock of charcoal for his forge with two fires at Rockaway per year, amounting to seventy thousand bushels and five hundred and fifty tuns of ore. Mr. B. K. Stickle, who rents the forge but a short distance from the former, uses one hundred thousand bushels of charcoal and eight hundred tuns of ore for two fires. The reason for this difference is that the last forge is worked the year through, while the former one is idle during the time of low water in summer, all the water being needed for the rolling mill. Mr. Thomas C. Milles, at his Powerville forge, which is at work pretty constantly, and uses ninety thousand bushels of coal and five hundred tuns of ore. Mr. Edward De Camp, whose forge at Charlottenburgh, just over the line between Morris and Passaic Counties, is one of the most complete in the State, reckons seventy five thousand bushels of coal to a fire annually and six hundred tuns of ore. These forges produce, (we give the estimates of the owners,) in bar iron annually as follows: Wood's forge, 200 tuns of octagon bars and blooms; Stickle's forge, 200 tuns finished iron; Milles's forge, 200 tuns finished iron, and De Camp's forge (four fires), 1,200 tuns of blooms, equal to 800 tuns of bar iron, if not more.

If we take these four establishments embracing ten fires, and average the estimates given above, we shall have 56,000 bushels of charcoal consumed per year in each fire, and 420 tuns of ore. The average of charcoal we have no doubt is nearly correct, but the average of ore we imagine is too high. Three hundred and fifty or certainly four hundred tuns will be all that one fire can smelt in a year. If we average the product of these fires in bar iron, we may allow 100 tuns of bar iron per year to each fire. The two forges at Rockaway, the Splitrock, Hopewell, Washington, Charlottenburgh and Middle forges, and perhaps some others will produce in this measure.

In order to see what an amount of wages is disbursed through this community by the iron business, we may trace out the following statistics: In Morris County or on its immediate borders, are some fifty different forges, with about 90 fires. Some of these are on small streams, and good judges say it will be a fair estimate to consider the average amount of stock used and iron produced at all these fires at about three-quarters of these set down to the best works, such as the Powerville and Rockaway; that is, that each of these fires will use annually about 42,000 bushels of charcoal, about 250 tuns of ore and produce about 75 tuns of bar-iron. As many of these forges produce their iron in blooms for rolling, we cannot speak of this with accuracy, but the stock consumed will be be very nearly correct. The amount of charcoal consumed in this county at the present state of the iron business, is more than 3,500,000 of bushels, and a little short of 24,000 tuns of ore. The labor expended on this ore is principally represented in the article on mines, except the expense of carting it, which cannot be short of one dollar per tun. The ore at the forge costs four dollars a tun, making an aggregate of $96,000.

As for the charcoal, it will be a fair estimate to allow three cords of wood as necessary to make 100 bushels of coal, so that we ascertain that about 11,000 cords of wood are converted into coal per year. This wood, standing, is worth about $1 a cord; the cost of chopping is fifty cents, so that the wood choppers receive $5,500 as their share of the wages. And here it ought to be stated that the chopping is all done late in the winter or early in the spring.

The cost of converting the wood into coal is about $2 per 100 bushels, which operation will annually disburse some $70,000 among laborers as wages. The cost of carting this coal is about $1 per 100 bushels, which disburses some $35,000 in wages.

When a forge is stocked with coal and ore, the general rule is that these must then be converted into iron, whether blooms or bars, for one-fifth of the market value of the iron. That is, if draft iron is worth $70 per tun, the forgemen receive $14 per tun for their wages. If octagon iron, hammered for rolling, is worth $85 per tun, the workmen receive $11. If blooms are worth $44, the workmen receive $9 per tun. In this they are at no expense for repairs, tools, or anything necessary to keep the works in operation. This is the reward of their labor.

As the four rolling mills at Dover, Rockaway, Powerville and Charlottenburgh, about 4,750 of blooms and octagon iron are rolled annually, and as all the forges in the country produce 6,750 tuns of iron a year, it will be safe to say that 2,000 tuns are finished under the hammer, worth $70 per tun, making the sum of $140,000 for this item. The iron that is rolled, is principally blooms, and reckoning the octagon bars, it will be fair to estimate this kind of iron delivered at the rolling mills at $50 per tun, making the value of 4,750 tuns to be $237,500. That is the draft iron, the blooms and the octagon bars manufactured in the bloomery fires of this county, are worth about $377,500.

If we sum up these items and allow $139,500 for coal delivered, $96,000 for ore delivered, and $75,500 for making the iron, we have $311,000 as the cost of making the iron, which is worth $377,500, leaving $66,500 as the reward of the capital invested in the business, only excepting the cost of repairs, which it is impossible to estimate.

The bloomery forges of Morris County contribute a very considerable sum to the laboring classes, amounting to something more than $200,000.

It may here be remarked that many of the iron-masters own large tracts of woodland from which they obtain large quantities of coal, on which they of course receive an additional profit.

Taking one of the most productive forges in the county, having two fires, the owner must make the present year a clear profit of $3,000. Several of the best situated and managed forges are doing at least as well, but the majority must fall considerably below this.

If we reckon two men to a forge fire, there are about 180 blowers and hammers-men whilst not less than 350 or 400 men have a part in chopping the wood, coaling and carting it. Perhaps it will be within bounds to say that in all the different departments, these Bloomery Forges give more or less employment to some 600 hands or more, whose average wages for 312 days in the year may be about one dollar a day.

If we examine the condition of those who are employed in furnishing these forges with coal and ore, we find a large proportion of them living in small and not very comfortable houses, and many of them in mere huts made of logs, in Western phrase, "chinked and daubed." The most of them are not the owners of any land, and of course pay rent, and very many of them are never found statedly in any house of worship, and do not seem to care whether their children receive or not a good common school education. It is not an unfrequent occurrence to find those who can neither read nor write. Only a few of this class lay up any property, yet these are scarce. With here and there an exception, they enjoy some of the plainer luxuries, such as tea, coffee, sugar, and so long as health holds out, and the iron market is good, have no difficulty in securing good substantial food, such as is impossible to the mass of laborers in the countries of the Old World. Our impression is, that with here and there an exception, they lay up little or nothing of their wages for hard times, sickness, or unforseen calamities.

The tap-root of their difficulties as a class, is the use of intoxicating liquors; the strictly temperate, those who do not use these liquors on any occasion or in any form, being the small minority of the whole. There are no more willing or laborious workers in the world than they; but this single leak in the ship keeps them in constant danger of sinking. After much observation and reflection, we have been forced to the honest conclusion that could all intoxicating drinks be banished from these mountains, where we find huts and mere shanties we should find neat and comfortable houses; where we find mere shelters and rented *stopping places*, with their badly tilled patches of ground, we should find pleasant homes, owned by their occupants, and surrounded by productive gardens and farms. The labor expended by these men with so much hearty good will, would make the most of them lords of the soil, were rum entirely away. As it is, they live a hard life, rear families inadequately educated, and usually trained to tread the same hard, weary road they themselves have followed. But on this subject we shall speak more at length in another place.

As for the houses occupied by the forgemen, only a small part of these belong to those who live in them. This class of men when at work are able to make from nine so twelve dollars, and in some cases more a week. Their way of living is plain and ought not, under any ordinary circumstances to exhaust their means. We know several men who have saved enough to purchase comfortable farms, but with scarce an exception these are temperate men. The most of them do not lay up any considerable part of their wages, and many of them are described in the language used about the choppers and colliers. As there are some thriving, saving men in that class, who are gaining property, and prize the means of religion and education, so there are a few forgemen who are independent, and are valuable men in society; but here also intoxicating liquors are the bane and curse of these hard workers. As skilful workmen, and proud of their skill, they will not fear comparison with any in the land. With a quick sagacity they learn just the combination of the different ores to make the finest iron, and they can make iron which is a great deal better than any that can be imported from England; they will make the loop, "shingle" it, and then hammer it with a skill which it is admirable to behold, and yet the most of them "bloom" and hammer on, hard and earnestly, without rising to be iron masters, as some ought, by reason of their natural abilities, or even securing a competence for the evil day. To the forgemen of Morris County intoxicating liquors are a very costly luxury, altogether, aside from the physical, social, mental and moral bearings.

As illustrations, we might name several persons, who, for some years were intemperate. Although excellent and industrious workmen, they were always poor until they abandoned the use of liquor. They are now the owners of very good farms, and are constantly saving money. A number of cases like this prove the position.

There is but one blast furnace in this county, but there are several just outside of its boundaries, which are supplied with ore from the mines of Morris. There are two blast furnaces in Passaic county, and one in Sussex, near the line of Morris. The only blast furnace in this county is at Boonton, the seat of very extensive rolling, nail and spike mills. This furnace has proved a most successful venture, as the following statistics will show. When we visited Boonton some weeks ago, the furnace had been in blast 119 weeks, commencing with February 13, 1851. During that time it had consumed 20,995 tons of Anthracite coal, valued at $94,477. It smelted 21,728 tons of ore, valued at $56,500. It had used 6,606 tons of limestone, worth $9,200. The number of barrow loads of coal, ore and limestone wheeled into the furnace during this time was 108,716, which will give some idea of the labor necessary to keep the furnace charged. The product in iron during these 119 weeks was 11,755 tons of pig iron, which is nearly 20 tons a day the whole time. This furnace gave employment to 28 men, whose wages during that time amounted to some $25,500, which is a little more than an average of one dollar a day to each man, counting every day in the week. The pig iron run at this furnace in that time at $25 per ton is worth $293,875—a splendid advance on cost.

This furnace alone has added to the productiveness of the coal beds of Pennsylvania, the iron mines of Morris, and has given wages to laborers, that is, coal diggers, miners, boatmen, carmen, and furnace men, to the amount of nearly $200,000 in a little more than two years. All these classes of laborers are represented in the above tables. If we reckon pig iron only at $20 per tun, we perceive that this investment has done well for the capitalists, but we suppose that using, as they do, large quantities of their own iron in the puddling furnaces, to be converted finally into spikes and nails, that the pig has been worth more than $25 per ton, on an average.

In the former article we stated the fact that in all probability two furnaces will soon be erected at Rockaway, and the statistics just given will serve to show to what an extent such establishments are likely to give employment to men and distribute wages in the community. They would be felt by the colliers, the miners, the boatmen, as well as by those immediately at the furnaces. Each of these furnaces would consume not less than 10,000 tuns of coal annually, and smelt as many tuns of ore. The facilities for such an operation in Morris County are very great, since here is the ore, and it is cheaper to bring the coal here and make the iron than to carry the ore to Pennsylvania and then bring back the iron to the great market at New-York.

The Pompton Furnace, under its enterprising manager, Mr. Wallace, is doing a fine business, but we have not the statistics.

As for Rolling Mills, if we include the Charlottenburg Mill, which is on the opposite side of the stream which divides Morris and Passaic, there are five Rolling Mills in this County, viz: at Dover, Rockaway, Powerville, Boonton, (all on the Rockaway River,) and Charlottenburgh. If we take these in the order named, the following statistics are of interest:

At the Dover Works, leased by Mr. Henry McFarlan and managed by Mr. G. M. Hinchman, from April 1, 1852, to April 1, 1853, the following is the statement:

Octagon bars rolled into rivet rods ⅝ to 1 inch round, and various sizes of merchant iron	393½ tuns.
Boiler rivets made from the above, 755,748 pounds, a little more than	328 tuns.
Anthracite coal consumed	1,000 tuns.

This octagon iron is worth $55 per tun, making the raw material used worth $21,287½. The coal costs about $4,200. The amount of wages paid is about $11,000 among twenty five hands, and the product of the whole work may be valued at $56,000.

In addition to the rolling mill and rivet factory, Mr. McFarlan has furnaces for converting Swedes and English iron into steel. The following is the list for the year above specified:

Converted and rolled into spring steel from Swedes and English iron	1,600 tuns.
The cork or shoeing steel	324 tuns.
American bar steel	16 tuns.

As to the management, these works are a credit to the beautiful village of Dover, and as to their income they are among the most profitable in the county in proportion to the capital invested.

The Rockaway Rolling Mills, owned in part and managed by Mr. Freeman Wood, are now in a state to be driven without hindrance the whole year. During the summer, the water is not sufficient to drive the mill more than ten hours out of the twenty-four; but this difficulty is now remedied by a steam engine, which will enable Mr. W. to push the business as thoroughly as he desires. Should he meet with no serious "break-downs," during the present year, he will use 1,500 tuns of blooms and octagon bars, out of which he will manufacture 1,400 tuns of merchant iron, a part of which will be converted into railroad spikes on the spot. The raw material will be worth some $74,000. Fifteen hundred tuns of Anthracite coal will be used, worth at the mill, $6,450. Thirty men and boys are employed, at an average price of $1 13 a day, for five days in the week, if we deduct Sundays, holidays and lost time by accidents, making the yearly average nearly $300 to a man, and the aggregate amount of their wages about $9,000. The actual outlay for materials and labor, not reckoning repairs, will be for the year, some $89,450. The finished iron will be worth in market, if we include the spikes, a little over $70 per tun, and the whole will amount to some $100,000.

At Powerville, six miles below Rockaway, on the same stream, is the Rolling Mill of Mr. Thomas C. Willis, an establishment which is conducted with admirable economy and yields a rich income. Perhaps no mill in the county pays better in proportion to the capital invested, which Mr. W. estimates at $50,000. The profitableness of the concern is owing to careful management and also the kind of iron made, hoop iron being very profitable.

We suppose this mill uses about 500 tuns of blooms a year. The coal consumed amounts to 600 tuns, and the product in hoop and rod iron is 450 tuns. The raw material of iron is worth some $23,500, the coal $2,580, the wages of sixteen laborers about $7,000, making a sum total of $33,080, not including repairs, which it is difficult to estimate. Probably the iron here made now averages at least $100 per tun: making the value of the product $45,000, which must leave some $10,000 clear profit, which is twenty per cent. on the capital. This mill is very rarely run more than ten hours in the twenty-four. The above statistics are made on this basis, so that the mill is in reality capable of twice the work it now does.

The laborers' houses around this establishment are very good, and the families look as if, for the present at least, they are enjoying a very comfortable living. This is true of all the rolling mills.

One mile below this is the great iron manufactory of Morris County, at present owned by Fuller & Lord of New-York. The Boonton iron works are a great curiosity, and well repay a visit. The Rolling Mill and Puddling Furnaces must cover more than an acre of ground, exclusive of the large Nail and Spike factory and the Coopering mill. At night when the Blast Furnace, the Puddling and Heating Furnaces are all at work, the sight is most beautiful. The village itself occupies a charming site on the brow of a mountain, which overlooks a vast basin hemmed in with mountains, and divided into landscapes of surpassing beauty. The river at this point makes a descent by a series of rapids from the highlands of Morris to the level of the Passaic, which it enters a few miles to the south. The lover of natural scenery can find but few such charming views as this around Boonton.

The works were put up some years ago at immense cost—not less than half a million of dollars, and some rate the outlay much higher. But it is supposed to have been a losing investment, even under the sharp management of Mr. William Green. Last summer it was sold under a foreclosure of mortgages to the present owners, at not more than a quarter its original cost. Taking the cost of it under the Sheriff's hammer as the capital invested in works, there can be no doubt of its being made profitable. Mr. Lathrop is now the manager, and his long experience in the business will not be wanting to accomplish an end so desirable to his employers.

The following statistics of the mills will show the amount of material and labor employed, and the great outlays necessary to keep the business in motion. The statistics reach from October 1st, 1852, to May 1st, 1853, a period of seven months:

Pig iron puddled 3774 tuns, nail plate rolled 3,869 tuns, spike rods rolled 885 tuns, scrap iron used 784 tuns, ore used in the puddling furnaces 1660 tuns, and the anthracite coal consumed 5656 tuns. The amount of wages disbursed is about $36,000.

The actual product of the Rolling Mill is represented in the rail and spike factories. During the seven months above specified, six spike machines, employing 22 men and boys, made 1,874,000 pounds or 836 tuns of railroad spikes. The wages disbursed amount to $5,000.

During the same period seventy three nail machines, worked by one hundred hands, produced 56,179 casks of nails of two hundred pounds each, making a total of 5,617 tuns of nails. Total of nails and spikes 6453 tuns, which is at the rate of more than 11,000 tuns per year. We have no means of accounting for the difference between the amount of nail plates and spike rods rolled in that time and the amount of nails and spikes made, but conjecture that during the time of low prices a large amount of plate was rolled but not used until after the 1st of October last, or the company use Scotch and other pig iron to mix with their own. The wages paid during this time in the nail factory amounted to $20,000.

An important part of the works is the coopering mill for making nail and spike casks. The amount paid out for timber, hoops, &c., for manufacturing casks, was $11,321. The saw mill employs ten men, and their wages for seven months were $1,300. The cooper shop employs twenty-two hands, whose wages for that period were $3,360. About 120,000 casks are made per annum. Wherever ingenuity can fix a machine to save or facilitate labor it is done.

The whole establishment, including the blast furnace, rolling mill, the spike, nail and cask factories, gives employment to 400 hands, whose annual wages amount to $120,000, or an average to boys and men of $300 each.

If we except the the home-brewed beer, so common among Englishmen, there seems to be less intemperance among the Boonton workmen than in any of the iron establishments of the county, if we except the Dover works. The houses occupied by these workmen are neat and commodious, and in many instances are owned by their occupants. A large number of these men are saving money, and this number is mainly graduated by the prevailing temperance of the men. Temperate operators, unless prevented by unavoidable hindrances, such as sickness, accident, or want of economy in the kitchen, are usually not merely making a good living, but are educating their children and getting a little property besides.

The statistics of the Charlottenburgh Rolling Mill we are not able to give accurately, as separated from the forges of the concern. As much of the heating of the blooms for rolling is done by the escape heat of the forge fires, the amount of anthracite coal used is not great. It will not be far out of the way to say that some fifteen men are employed in this mill, and that some 600 tuns of finished iron are rolled annually, using 650 tuns of blooms, worth $27,000. The finished iron is worth $42,000. The labor to produce this may be not far from $4,000, and the extra fuel for the furnace about $1,000, leaving a handsome profit to the capitalist.

If we sum up the statistics of these five rolling mills, we have the following aggregate: They furnish constant employment to 500 hands, whose aggregate wages per year are $150,000; they use pig iron, blooms, octagon bars and scrap iron, to the amount of 16,000 tuns worth some $800,000; they produce, in the form of bar iron, hoops, nails, spikes, &c., 13,789 tuns, worth, in market $1,000,000; they consume over 9,000 tuns of anthracite coal, worth nearly $40,000, (if we include the blast furnace at Boonton, about 20,000 tuns of coal are used to make iron in Montgomery County, worth, at the mills, $80,000.)

We have next to speak of Cupola Furnaces, and Machine-Shops attached:

There are four cupola furnaces in the county at which castings for machinery, hollow wares and like articles are made from pig-iron, viz.: One at Dover, two at Rockaway, and one at the Speedwell works, near Morristown. We are not aware of there being any others in the county. Of the Dover Furnace we have no account, but suppose not much is done there. To each of the others are attached machine shops for finishing work, by the use of lathes, planing machines, &c.

Mr. N. D. Berry has rented the fine establishment of Mr. Freeman Wood in Rockaway, and during the last year has employed a force of some forty two hands, disbursing among them some $15,000 wages annually. He has used 500 tons of anthracite coal, and 500 tons of pig iron, the coal costing him $2,200, and the iron $17,500. Allowing five per cent. for waste, the foundry has turned off about 475 tons of castings, more than 100 of which were for the Crystal Palace. If we reckon these castings as they come from the foundry at three cents a pound, they will be worth in that State $21,020. But a large part of them pass through the Machine Shop, and of course are subject to additional cost. The only way of estimating the income of this department is to take the lathes at the average wages of $11 per day, the planing machine at $4, and the boring machine at $6. This last runs two thirds of the time. The income of these machines will not be less than $6,000 a year. In addition to this are separate contracts for machinery, which will make the total products of the foundry and shop annually some $40,000 at least.

This establishment is driven by steam, and is fitted up to do a thriving business.

The foundry and machine-shop of Mr. Righter at Rockaway are finely adapted to do a good business, at the cheapest outlay. The machinery is prepared to do all kinds of turning, planing, drilling &c. common to such an establishment. We regret that we have not the accurate statistics of the materials used, the men employed, and the marketable products. A large amount of work is done here and wages distributed.

On the road from Rockaway to Morristown, about one mile from the latter place we came to one of the most beautiful spots in the country, and somewhat noted as the place where Judge Stephen Vail began his fortunes in earnest. The Speedwell Iron Works, now owned by George Vail & Co., are on the Whippany River. The Judge has left the concern, and his son George, an M. C., elect, from this District, has taken his place, with a grandson, Mr. Isaac Canfield. The house and grounds of Mr. George Vail have few rivals and no superiors in elegance and beauty in this region. The house is built of a peculiar field-stone, the pudding-stone, which is composed of a purple material with white quartz beautifully intermingled, making one of the most tasteful walls that it has been our fortune to see. The grounds slope easily toward the Speedwell Pond, which spreads itself between the tree-covered hills in a most picturesque manner. Judge Vail occupies a plain but elegant house directly opposite.

At the Works a great variety of articles are made, such as heavy and light forgings, Press screws, car wheels and axles, the machinery for various kinds of mills, saw, grist, paper mills, &c., &c. The foundry, in which six moulders find constant employment, turns out the castings which are used in the shops, so that the expenses and income of this are represented in the general balance sheet of the Works. Eight men work in the blacksmith shop and ten in the machine shops, and six common laborers, making a force of 45 hands, whose wages will amount to some $14,400 per year.

The works use 200 tuns of anthracite coal and 100 tuns of bituminous coal, worth not far from $1,500; also 100 tuns of Scotch pig iron and 100 of American pig, worth about $7,000; also 25 tuns of English wrought iron and 70 tuns American, worth about $5,700; also 1,400 pounds of English cast steel and 1000 pounds of brass, copper, zinc, &c., for boxes, worth some $500. The annual product of the establishment in finished work is $50,000, proving it to be one of the most profitable investments in the country.

If we now sum up the business of Morris County, including the miners, we have the following striking results: In the northern half of the county, comprising a population by the last census of nearly 14,000 souls, 2,207 hands find employment directly from the iron business, and receive $560,400 in wages; 16,600 tuns of iron in some form are sent to market as merchant iron, castings, machinery, &c., worth $1,240,000; 100,000 tuns of ore are raised worth $300,000; 21,000 tuns of hard or soft coal are used worth $90,560; 3,500,000 bushels of charcoal are used worth at a very low estimate $140,000; 35,000 tuns of ore are smelted in the county worth $120,000.

We have used great exertions to make these estimates correct, and have relied on the judgment of experienced iron masters. It will be seen that about every sixth person in the iron district is laboring in some one of the departments of the iron manufacture. This is *the* business to which all others are auxiliary. It furnishes a great market for produce from abroad. The grain raised in the region is a mere moiety in giving the people bread, and the teams feed. Last year these mountains looked all the time as if it were Sunday. Houses were unrented, stores badly patronized, produce from abroad found but little market, and the whole community were lamenting over the scarcity of money. If no other reason than the large amout of wages disbursed by it, the people of Morris ought to insist, so far as their votes go, that the iron business shall be kept flourishing and active, and in the community at large, whose merchantable commodities are increased one and a quarter million of dollars from the Morris iron manufactories, ought to show some interest in the same protection.

Having thus finished the statistical part of our task, we propose to take a hasty glance at the condition of the large class of population which are directly dependent on the iron business. In this we can do but little more than give impressions without details. This view may excite some wonder and some feeling, but the truth is a wholesome medicine. We have already spoken of the population which are dependent on the forges, as choppers, colliers and forgemen. Let us now take a more general view, to which it is true there are some exceptions, especially in the kinds of houses tenanted by operatives in the rolling mills and furnaces. Some of the forges also have good houses, but in the main we think the following remarks hold true.

The scenery of the iron region is beautiful, and large bodies of excellent land are found, although it must be owned that the agricultural interest has suffered in its competition with the manufacturing. The mode in which this has come to pass is found in the value of the iron mines and manufactures transcending the means of any who have not considerable capital. The possession of iron ore calls for the erection of forges, which consume large quantities of charcoal. To supply this demand iron masters seek to buy large bodies of the mountain lands, and suffer them to grow up to timber. We suppose ourselves safe in asserting that two thirds of the land in the townships of Rockaway, Jefferson, Randolph and Roxbury are occupied with wood, which is to be cut off as often as once in about twenty years for the purpose of iron making. The consequence of this is that a very large proportion of the inhabitants are not owners of the soil. Many of them live in temporary and cheap dwellings, and even in this old county, hundreds live in log huts. Attached to these are badly cultivated gardens. The cows feed in the woods, which usually afford plenty of pasturage. As for feeding any interest in developing the agricultural resources of the soil, much cannot be expected of the people, since they neither own nor lease the land, and do not pretend to look to this source for their subsistence. That thrift and energy, the improvement of soil and buildings, which constitute the charm of a community which own and depend on the land for a living, are found to but a limited extent in these iron regions. There are many exceptions to this rule, and many finely cultivated farms might be named; but the proportion of acres thus cultivated to those which are owned in large tracts of wood land, we imagine to be quite small.

The effect of this state of things is very noticeable in the habits of the population. To some extent they are nomadic, going from one place to another as caprice or interest may move them. They do not of course keep up good common schools. A very large proportion of them do not attend any Christian Church regularly to a great extent. They "live from hand to mouth," and are liable to be reduced to great straits by sickness and accident. In the absence of educational and religious influence, they have a strong tendency to indulge in the use of intoxicating drinks and its associated calamities. There are many exceptions even in those districts which are inhabited principally by woodchoppers and colliers, but in the main the picture holds true.

To make these facts more impressive, we may quote a few passages from a discourse preached in one of the old churches in this part of Morris County. The statistics apply to one township, and from this we may make a fair judgment of several others.

"In this township, as the Superintendent of Common "Schools informs me, are 1,093 children between the ages of "five and sixteen years. You will agree with me in the opinion that sixteen years do not make an age too great for the profitable study of the Bible in Sabbath Schools, and yet "of these 1,093 children only 350 are members of the Sabbath School at any time of the year. The most of these "350 children are from families religiously inclined. The remaining 743 belong to families which have very little means "of religious instruction, or none at all. It will be but fair, "however, to say that a part of this number belong to Roman Catholic families, who receive some instruction according to the rules of that Church, and I will not pretend "here to say how much such instruction aids to the intelligence of the children who enjoy it. Taking the best view "we can of it there is more than half of the children in this "township who do not receive regular Sabbath instruction "out of the Bible, and who are growing up ignorant of all "but the simplest facts pertaining to Christianity.

"As to the educational view of this subject, it is a fact "which ought to arrest our attention strongly, that during "the last year (1852) only 473, out of the 1,093 between five "and sixteen years of age, have attended the Common "Schools for three months. The remaining 620 have been "at work or at large, but in either case destitute of mental "training. Inspection will also show that but few of these "620 attend any Sabbath School, thus bringing us to the fact "that a mass of children are growing up in this township "without education for the mind or heart. I will not pre"tend to say who is to blame for this state of things, nor can "I say how it is to be changed, but one thing I feel com"pelled to say after much reflection, that so long as igno"rance of the common elements of learning and of the Bible "prevails, we need not look for any permanent improvement "or prosperity. You may revive the iron business until your "principal staple reaches its former prices; your iron mas"ters may employ operatives in all the departments of their "business, and give them large wages, yet if the minds and "hearts of our population are not better cared for, an exam"ination of their houses a year hence will show no corres"ponding improvement, no addition of property among the "masses, to better preparation for the days of adversity. "Nay, so far from this, I am certain that any impulse which "our iron business may receive, will only increase the means "of intemperance, the tap root of our ignorance and godlessness, and thus hasten a series of *industrial catastrophes, which might be retarded by a straight policy.*"

The prediction of this quotation has begun its own fulfillment since our iron mills and mines have been put into active operation by the late rise in the price of iron. There is one other class of statements in this discourse, which also confirm the view already expressed. Out of a population of some three thousand, not more than 1,500 attend the churches in the township. "Reflection "and facts," says the writer of this discourse, "convince "me that the meeting-house and the school-house "are to be taken as the infallible signs to the character "and condition of any community. The school is the "offspring of the sanctuary, and education is the child of "religion. Just in proportion as a community is imbued "with religious feeling, opening the eyes of men to their "relations to God and to one another, will the intellects "of that community crave knowledge and insist upon "ample provisions for educating the young."

The remarks would be incomplete without one more quotation from this discourse:

"With much labor and diligent inquiry, from every source "of information within my reach, I have compiled a table "which is worthy of your inspection and your most serious "reflection. Taking 612 taxable male inhabitants residing "in this township they may be arranged into the following classes, viz.:

Temperate drinkers of intoxicating liquors	215
Occasional drunkards	140
Confirmed drunkards	50
Strictly temperate	177
Total	612

"By occasional drunkards I mean those who become intoxicated occasionally, for instance, on a 4th of July, on election day, or some similar occasion.

"To be clearly within the bounds of truth—and I firmly believe the above classification to be such—let me deduct from the number of those who are reckoned as users of intoxicating liquors and add them to the class of strictly temperate, as follows, viz.:

Temperate Drinkers	215	Confirmed Drunkards	50
Occasional Drunkards	140	Strictly Temperate	237
Total			612

"The proportion among these 612 taxable male inhabitants concerning whose habits we have made inquiry stands in the ratio of 375 drinkers of intoxicating liquors to 237 who abstain entirely, and one in every fifteen among these 612 is a confirmed drunkard. These must to be pitied men are the ripe fruit of the present state of things, and when we consider that this class is constantly thinning out by death, and that the number is kept good notwithstanding, by victims crafted from the ranks of the occasional drunkards and temperate drinkers, you will agree with me in the assertion that Intemperance is an alarming and awfully practical evil among us. It is no fancied evil for a sentimental lot to cry over, but the evil of evils for good men to exterminate.

We have quoted these remarks to show what is the tendency of things in large portions of the iron districts of Morris County. The basis of an agricultural and fixed population, owners and cultivators of the soil, is wanting in a large measure; and out of this simple fact, in our opinion, grows the consequence that a very large proportion of our population are no more intelligent, or religious, and no better livers than their predecessors on the same mountains were a hundred years ago. In fact we have reason to believe that they are behind their predecessors in these advantages. Some families, no better than those left behind, have emigrated years ago to the West, and have become independent and intelligent, because they have become cultivators of their own land, while those left here have made no advancement as a general thing. The land and climate are more favorable than large parts of the mountainous States of New-England, and yet there they have the best of free schools, the most temperate and well-living population in the country, while the iron mountains of New-Jersey and Pennsylvania are inhabited by a population, the majority of which evince but little interest in the education of their children, in exterminating the master evil which is destroying them, and in laying up a portion of their earnings for the time when sickness or misfortune may come upon them.

We have spoken of intoxicating liquors as the great evil of the iron regions. We have conversed with operatives and iron masters, with those who use and those who do not use these liquors as a beverage, and we have yet to find the first man who does not fully endorse our sentiments on this point. In several establishments we have made particular inquiry as to how many workmen were laying up wages. The reply has been made in several of these establishments that not more than one sixth of the men saved anything. With scarce an exception, these economists either drink none or very little. As to the others, we were invariably assured that intoxicating drinks