CHAPTER V

Consolidation

In 1850 the mill /plant on the Brandywine was essentially unchanged from the time Rebecca Lukens rebuilt it in 1834. It had one set of rolls, two heating furnaces and a set of shears. The water powered machinery could roll iron forty six inches wide. The plant employed seventeen men and had rolled nine hundred forty four tons of plate in the preceding year, its best annual production run to that date.[1] The plant remained essentially unchanged until the partners put a new rolling mill into operation in late 1870. The changes they made were all evolutionary or supplemental in nature. They rebuilt the rolling machinery in 1854 and added a new furnace in 1853. However, the power source remained water and the technology remained fixed. The partnership changed twice in the eighteen fifties. Gibbons retired to go into banking in 1855, and after running the mill alone for four years, Charles Huston took another partner, Charles Penrose.[2] But, as always before, the partners remained related.

Lukens differed in no significant way from the other nineteen eastern Pennsylvania mills that rolled boiler plate. Of these twenty mills, only five used steam power. Half of these businesses, like Lukens, had two heating furnaces, five mills had three, and the remaining five had four furnaces. A quarter of these plants had more than one train of rolls. These rolling mills employed an average of twenty hands and their average production run for 1849 was six hundred thirty five tons of boiler plate.[3]

These employment and production averages reveal that Lukens differed from the others in one significant way. It was much more productive. The other mills produced an average of thirty one and seven tenths tons of plate per man in 1849. Lukens averaged fifty five and five tenths tons. No other mill did better; the next most efficient plant was run by Hugh E. Steele, also of Coatesville, and his average was forty seven tons per man. This accomplishment by Gibbons and Huston is remarkable for no other mill had less equipment and only six of them employed fewer men.[4]

In 1849, the Brandywine works had its best year's production at a time when the rest of the industry was depressed. The mill got orders in trying times for two reasons. First, it had a reputation for producing good plate, and second, it sold iron through a number of established agencies scattered over a very wide geographical area. In 1849 Lukens iron sold in Albany, New York, Boston, Philadelphia, Baltimore and New Orleans. The other mills sold through agencies too, so it appears that the quality of Lukens iron accounts for the high sales in a poor year.

Lukens's performance in 1849 made Gibbons and Huston confident of their ability to compete in the plate market in spite of the generally depressed condition of the industry. On February 4, 1850 they told their Boston agent that "we have given up all other kinds of business and attended solely to the manufacture of irons,...." They felt that this specialization would guarantee the quality of their iron and would secure their favorable place in the market.[5] For several years previous to 1850 the partners had run a warehouse.[6] Their assessment of the situation was optimistic, for the 1850 run was not bettered until 1862.

The mill's work force of seventeen remained stable until 1862 when the press of orders more than doubled the number of men employed. The composition of the force remained stable and several of the hands in the mill were related. Lukens paid its men by piece rate which varied with the job performed. The six rates paid in 1850 were 32, 30, 25, 20, 16 and 13 cents per heat.[7] Unfortunately no job descriptions exist for these rates, but a letter of December, 1870 indicates that the four men who worked at the heating furnaces and the rolls got the higher rates of 32 to 20 cents a heat.[8] The other thirteen were evidently semiskilled helpers. When the mill shut down for repairs the men got paid a day rate for repair and maintenance work.

A mild paternalism marked the relationship between the employees and employers. For example, the men got credit for their pay on Saturdays, but they did not always draw out their wages come payday. The journals show that the men drew their money as they needed it at different intervals. At times some of the men overdrew their pay accounts with the apparent blessing of the management.[9] Eight of the workers rented their homes from the mill owners. These rents varied from $3.75 to $10.00 a quarter-year, but the most common charge was $8.75 a quarter.[10] This kind of restrained paternalism continued until 1870.

In other respects too, the mill remained little changed despite outside turmoil. The decade of the fifties brought a series of challenges, some grave and some merely trying, that gave the lie to the partners' confident decision to specialize in boiler plate.

In June, only four months after the decision to specialize in boiler iron, the partners wrote the New York agent a bleak letter complaining that the prices offered for boiler plate fell below the cost of manufacture as "attested by the fact that iron works of this state are fast going to the hands of sheriffs, many of them already there."[11] That the pinch hit other sectors of the industry also is shown by a letter sent to a bloom manufacturer. In it Gibbons and Huston observed:

> Death appears to be inevitably mixed in the cup of the Pennsylvania Iron Masters, for if it be death to you to sell [blooms] at $57.00 at Columbia, there is just as much of it to us to pay $60.00 at that place; and yielding to the selfishness of our common nature we must candidly confess that we wish to defer our own as long as we can; and cannot therefore make any better offer than we did on the 3rd inst.[12]

Since blooms were the largest single expense of operation, their price demanded close attention and hard bargaining.[13]

Two difficulties in particular caused distress at the mill in 1850. Imported iron invaded the market and high bloom prices were keeping the costs of Lukens iron high.

The problem of imported iron appeared suddenly in the summer of 1850, and late that season agents in Boston and New York were informing the people at Coatesville that the English iron was cheap, widely used, and of high quality. They also cautioned Lukens to look after the quality of their own iron.[14] This kind of warning persisted until the late spring of the following year.[15] After this however, the problem of English competition eased and was not a serious worry again until 1858. That year, following the disastrous Panic in the fall of 1857, when iron prices had slipped badly, Charles Huston blamed the price fall on the free trade policy of the Democratic Party and complained that English plate was going into nearly every boiler being built and sold in his principal market, New York. Like Rebecca Lukens in 1844, Huston felt that the only remedy for the depressed industrial community was for the government to enact tariff legislation in order to prevent a similar embarrassment in the future.[16]

The problem of bloom prices was rather a more constant worry, unlike the episodic threat of cheap foreign iron. Bloom prices were subject to almost daily inquiry and at times, as seen before, the language was colorful and the bargaining forceful. Generally, bloom prices followed the price of plate closely. On occasion, however, blooms would push plate prices. When the market was buoyant the mill simply raised the price of plate accordingly and passed the cost to the consumer without further comment.[17] But if the bloomaries pushed too hard, the mill and its agents complained bitterly. In the summer of 1852, for instance, the New York agent, William Kemble, wrote that "the danger is that the forgemen, as soon as they find the mills in their power will press too hard and cause so great an advance in plate as to reduce the consumption."[18] Later that year the mill owners ungrammatically complained that "the fact is the men who produce the iron of Penna. are becoming somewhat wild and there is no knowing where they will put prices to."[19]

On the whole, though, the procurement of blooms at a reasonable cost was not an overwhelming problem in the eighteen fifties. Aside from the difficulties in 1852 there is only one other lamentation about the problem and it occurred in 1856 when Huston noted a sharp increase in blooms and wondered "what is to become of me?"[20] But this complaint is hard to understand, for the mill was quite busy at the time and the price of plate was rising.

At no time during the period of 1850-1860 did the mill operators seriously consider bloom sources from outside Pennsylvania. The local supplies were adequate and of known quality. Other bloom sources did exist and Huston knew of them. He could not afford to pay the outside sources the prices they asked. He could only offer $37.50 for New York and New Jersey blooms when Pennsylvania blooms were going at sixty dollars a ton.[21] Transport costs made the difference and wed the mill to local supplies.

In June, 1850 Gibbons and Huston found that all the difficulties mentioned above - foreign iron, high bloom prices, and hard times - had come together all at once. This series of challenges drove the Lukens mill to concert with other mills in an attempt to control prices. The effort was intermittent over two years and as the experiment progressed, Gibbons and Huston became skeptical of the plan.

On January 16, 1851 a meeting of iron manufacturers was scheduled in Philadelphia at the Merchant's Hotel. It was understood that its purpose was to secure a general price increase among all manufacturers of boiler plate.[22]

The meeting, held on the twentieth instead of the earlier date, found fifteen out of eighteen local mills represented. The mill owners agreed to advance prices by 1/4 cent to 4 3/4 cents a pound. The partners from Lukens found that a "good feeling prevailed," and they hoped that a "regular organization" would be established for ongoing conferences.[23] Kemble, the New York agent, pleased at the "satisfactory result" of the meeting, advanced his price as directed. However, in a postscript to that letter the agent informed the mill that one of his customers observed that it was a good thing that the price increase was only 1/4 cent, otherwise he would have bought English iron.[24]

That warning was followed by worse news almost immediately. Two of the three mills that had absented themselves from the meeting on the 20th were not participating in the price increase and so would soon be glutted with orders.[25] That, it turned out, was enough to break the ring, and the price fell back to 4 1/2 cents by late spring, 1851. There was an effort to revive the organization in August, but Gibbons and Huston declined to participate:

> The Messrs. Parke, Steel and Worth [neighboring mill operators] and ourselves have found no good to result from meeting heretofore, from the simple fact that all who are selling below market price stay away and are not bound by any of the resolutions of the meeting.[26]

That statement did not mark the end of attempts to manipulate prices. In late April, 1852 Gibbons and Huston wrote Kemble that the price of iron would have to be raised 1/8 cent to 4 3/8 cents a pound. The agent objected that the raise was sudden and confined to the Lukens mill. He asked Lukens to enter into "friendly interchange" with other mill owners.[27] But a few weeks later on May 28, Gibbons and Huston wrote the agent that blooms were becoming scarce at the old price and that they had come to believe that a general advance in the price of plate was inevitable. Therefore they put their price back up to 4 3/8.[29]

Shortly afterward, some sort of collaboration occurred and on June 8 a Philadelphia mill wrote to Lukens and urged that prices be raised in concert, but quietly and without a publicized meeting. The secrecy would, it was hoped, keep the bloomaries from raising their prices in turn.[30] Kemble thought the price increase could be supported if the advance was general among the mill operators. Further he thought that if a proper understanding existed among the mills, the price could be pushed to 4 1/2 by August. Other owners agreed with Kemble.[31]

Kemble's optimistic assessment of the situation was conservative. By early August, iron had advanced to 4 3/4 in New York with the mills still acting in concert.[32] But there were stumbling blocks. The hope that the price increase for plate would remain secret was forlorn, and by mid-August Kemble was warning that the price advance must be checked or English iron would find a market.[33]

The warning went unheeded and blooms continued to rise so that in September prices went to five cents a pound. It was still thought that "concert of action in regard to prices" would sustain the raise.[34] Prices remained at 5 cents in a fairly active market until December.

Blooms advanced to $62.50 a ton and the mills were again under pressure to advance their price.

At this point Kemble warned again:

> Demand for best plate is by no means active and the effect of an advance must be to increase the consumption of best quality English plate - I would therefore restrict the advance as far as possible.[35]

Even so, an advance came driving plate to 5 1/4. The threat of effective competition by English iron eased later in the month when the agent reported on December 21 that English iron had advanced in price and consequently Lukens iron could be raised 1/4 cent to 5 1/2 cents a pound.[36] Other mills followed and N. B. Buckley, a rolling mill operator in Philadelphia, called for united action for further advances.[37]

At this point, in spite of a series of sustained price increases, Gibbons and Huston became alarmed. They damned bloom makers as "becoming somewhat wild" and they feared the effect of constantly rising plate prices.[38] On December 29, 1852 they wrote to N. B. Buckley who had a mill in Philadelphia:

> Our own views of the state of the market are that while we feel bound to go with the current in the rapid rise we fear it will lead us to an equally rapid fall in prices: pig iron and blooms are now paying the producers full and fair profits as well as boiler plate, and the nearer we

> can keep prices to this point the better for all engaged in the trade, and while we deprecate the state of the market nine and twelve months since we fear the effects of the tendency of the existing state of things, and we think the efforts of those engaged would be wisely directed in the effort to prevent too great an advance. If however blooms advance, as it seems probable they will, we must advance plate correspondingly.[39]

The market did not break as they feared, even though bloom prices forced another raise in February, driving the price of plate to 5 3/4. The market was active in the face of rising prices, and it was suggested iron be put to 6 cents. Gibbons and Huston were hesitant about pushing the price further, and on February 1, 1853 they wrote Kemble that:

> ...this [boiler plate selling at 6] only can last so long as prices tend upwards, and sales are brisk - we do not quite like to make changes for temporary gain to us it looks like taking every advantage the case would give us which has never been our policy, we however submit it to thy judgment.[40]

In the end Kemble sold at six and the market did not ease until June when the price of plate slipped to 5 3/4.[41] In this new stabilized market there was no talk of joint action among the mills with regard to prices.

The experiment at controlling prices was never repeated. Kemble asked twice again if an agreement could not be worked out among the mills in regard to prices or if production could not be allocated among them. The first request came in January, 1854 and the second came in September, 1858 when the market was very flat indeed.[42] In neither case did the owners react to the query in any systematic fashion and Kemble's proposals died.

It would seem logical that Gibbons and Huston concluded that collusion with other producers was a failure. The association of mills was voluntary and had no mechanism to enforce its decisions. Therefore any producer could effectively break the target price. In a stable or declining market this is precisely what happened. It was also obvious that in an active market with high demand cooperative action was not needed to push prices. In fact, just the opposite, some sort of collective action ought to have been applied to prevent the market from going bust. Finally, Gibbons and Huston had ethical reservations about pushing prices to their outside limits as seen in their letter to Kemble of February 1, 1853.

While the owners of the mill may have become disenchanted with cooperative pricing activities in the early eighteen fifties, this did not prevent cooperation with other mills in other areas of common interest. The mills at different times shared agents, orders, equipment and technological news.

William Kemble and his successor, Kemble and Warner, later A. B. Warner and Son, were agents for the three major Coatesville mills throughout the period 1850-1870.[43] Some of the orders that came from this agency were split among the mills by the agent or were divided up by the mill owners themselves.[44] When an order sent one mill was handed by that mill to another, it was usually the result of a break in the first mill's machinery. The order was transferred so that the agent's delivery committments could be met. Also, Lukens often subcontracted part of its orders because they could not roll iron as wide as was wanted and their neighbors could.[45] This kind of mutual help between the Coatesville mills continued on through 1870.

The mills also shared technical information. Often an agent ran across news of a new method or process. He then apprised the mill of the idea and what it seemed to be worth, as in the case of corrugated iron cited above.[46] However the news of a new product or process came, it was usually accompanied with an invitation to see the thing done, as in 1859 when Moorehead and Company of Pittsburgh wrote: "If the inclination should prompt you to come down to see us and our mode of making boiler plate we should be happy to receive you."[47] In no place does the correspondence show a reluctance to share technological information between the mills in any matter whatsoever.

Finally the mills of eastern Pennsylvania cooperated in refusing to hire away each other's men. No man could hire out to another mill without the consent of his previous employer. Three examples illustrate this perfectly. On August 10, 1854 Joseph Pennock of Coatesville wrote Gibbons and Huston:

> On my return home last evening I found Joseph Gross [a Lukens employee] had applied for the birth of Catcher at this place and for a house to live in stating that he wished to leave Brandywine on account of its being so inconvenient to him and that he was looking out for another job.
>
> George Harvey has left us and we can give Jos. both the job and the house but will not do so if you have any objections.
>
> I have not spoken to him on the subject and will await your answer to this which Dr. Huston can bring with him this afternoon when he comes for Isabel [Huston's wife].
>
> Yours
> J. P.[48]

On December 21, 1854 Gibbons and Huston got this application for a job from one of the men who worked at Hibernia, a nearby mill at Wagontown.

> Mr. Abraham Gibbons Sir -
> i understand you wanted a hand in the

> rollmill in the Spring if you do please send me a few lines to waggontown post office and i will come down and see you i will take a most any kind of a birth but i would prefer rolling before any-thing else i have nothing against mr. Brook only that he dont keep his mill running study a nuff i have lived with him a bove twenty years and i must have a study birth next year if i Can get it i am a Sober indrustrust hand as you can get in Chester County no more at present.
> Yours Respectfully John Carson[49]

Joseph Gross left Lukens but John Carson was not employed.[50]

Finally on March 20, 1863 Huston berated another mill owner, George Coates, for improperly enticing a hand away from Lukens. Coates offered to send the hand back. But six days later the man was still in Coates's employ and he telegraphed Huston and begged, "Can't Barnes [Lukens's employee] stay with us one week more will have to stop if not."[51] Coates got the extra week but afterwards Barnes came back to the Brandywine.

In spite of the rather unsettled conditions of the early eighteen fifties, Gibbons and Huston remained confi-dent of the future. In January, 1853 they added a new furnace to the mill which increased their capacity by fifty per cent.[52] One year later Gibbons and Huston set about rebuilding the water wheel and machinery of the mill. The overhaul of the mill shut it down from July to October of 1854 and the entire job cost over seven thousand dollars.[53]

When it was finished, the water wheel was more powerful and iron could be rolled in widths up to sixty inches.

As it turned out, the plate market was not ready for the additional capacity of the mill. In fact, the rest of the decade would be an unsettled time for Lukens. In 1855 the market was down. 1856 saw the men at the mill tormented by a series of breaks in the machinery and after a good start 1857 proved to be the first stage of a disaster that lasted until 1859. 1860 would see the business community made cautious over the political situation in the nation.

Though the capacity of the renovated mill was not taxed in any way, 1855 proved to be an interesting year. A Philadelphia agent ordered some boiler plate from Lukens and informed them that the iron was for a boiler that was to be exhibited at the World's Fair in Paris, thus demonstrating the reputation of Lukens iron. Even so, the agent exhorted Gibbons and Huston to do their best.[54]

E. C. Stotsenburg, who had manufactured the machinery for the improved mill, early in 1855 invited Gibbons and Huston to join him in a speculation in Philadelphia. He proposed that they buy a large shop with a sixty horse power steam engine. The asking price was $9400. Stotsenburg said that the place was well adapted for a cotton mill or machine shop. The idea was to purchase the place and sell it in better times. He suggested that three years from 1855 would be a good time.[55] The partners were apparently uninterested for the correspondence shows no response to this proposal.

In February, Abraham Gibbons got a letter from the Lancaster Locomotive Works asking for a loan of $20,000. The loan could not be secured by a first mortgage as Gibbons requested and this external investment was declined too.[56]

The caution displayed by the partners stood them well in these two instances. The machine shop could not have sold at a good price in 1858 due to the depression that followed the Panic of 1857; the Lancaster Locomotive Works went bankrupt in the fall of 1857.

The middle of 1855 was marked by difficulty in maintaining the quality of Lukens iron. The new wide rolls created problems that the mill had to solve, apparently by trial and error.[57] There was also a spate of complaints about the quality of blooms coming to the mill in the summer.[58] In time these difficulties were solved and Lukens iron continued to enjoy a good reputation.[59]

The fall and winter found the mill short of orders and the owners complaining of poor profits.[60] By December conditions were so bad that the mill was let stand idle for a week.[61]

The next year was better for orders but the mill suffered a series of breakages and delays that drove everyone frantic. Ice clogged the mill race in February and low water in July and August and October through December. Equipment breakdowns occurred in June, August, September, and November. Even the coal was not burning as hot as it used to; Huston said that he had "been harassed beyond description with the coal I have been getting" because it yielded only half as much heat as before.[62] All this shook the agents who sold iron for Lukens. From New York, Kemble and Warner blasted Huston:

> Please advise us as soon as your mill is in operation - because we are going to make you do something for us - the amount of iron from your mill this year is not the same as we intend to have the next!![63]

There was one other event of consuming interest to Charles Huston in 1856 - the upcoming national election. He corresponded to several men about the political issues and was advised in one case to vote for Buchanan because "the iron interest is more deeply interested in his election than any other interest in the land" and that if "Mr. B. is defeated that is the first axe laid to the root of the Union."[64]

Huston was not convinced by that argument and thought the man to be "infatuated" with his favorite.[65]

For himself, Charles Huston confessed that in the conditions that existed then he felt like a "lost sheep."[66] Despite the fact that he had been an old-line Whig, Huston could not vote for Fillmore, saying that the Whigs could not meet the "new issues."[67] Huston chose Fremont in the end because he thought the Republican was free of party and sectional bias.[68] Further, Fremont had adopted the old Whig high tariff stand. However, in Pennsylvania all candidates assumed pro-tariff positions. Huston unfortunately did not comment on the outcome of the election.

By early 1857 all the bedevilling problems of the two preceding years seemed to be safely behind and things looked decidedly better. The mill had a large backload of orders and boomed along at record rate until October. Huston, brimming with confidence, sold a large lot of iron to the Norris locomotive works for $12,000 worth of Allegeheny Railroad bonds.[69] Prior to this, the partners had spurned similar offers.

Lukens further demonstrated its feeling of confidence when, along with other Chester County mills, it issued a circular guaranteeing their boiler plate. From March 1 forward, all best boiler plate was warranted to be free from manufacturing defects. If a plate was found defective, the purchaser could return it for a refund or replacement.[70]

Other efforts by Huston seemed to be going well too. He wrote his Philadelphia agent telling him that "we" are going to apply to the legislature for a bank. His old partner Abraham Gibbons was behind this effort. By way of justification, Huston claimed that Coatesville did three million dollars in business every year, yet the nearest bank was fourteen miles away in West Chester.[71] In February, Huston's brother Samuel wrote that he had heard that the prospects for the bank were good. The list of applicants was impressive, "being many of then broad brims [Quakers] and in fact the kind of people that would take stock."[72]

There was no visible cloud on the horizon in 1857 up to the summer. The market tightened slightly in June but production was running well ahead of the previous year.[73] But the Panic of 1857, when it came, would prove to be a very serious threat to the Lukens mill, and it pressed Charles Huston close to his financial limit.[74] Before the debacle was over, Huston found himself helping to save one agency, he was greatly helped by another agency, he tried to sell a 32 ton locomotive, and finally he was driven to insulting pettiness against one of his neighbors.

Huston noted the Panic for the first time on September 16, 1857. He observed to one of his suppliers that as a consequence of the Panic the demand for iron had slacked off and prices had fallen.[75] For ten days following this observation all remained quiet. The first real difficulty appeared on September 25 when Huston heard from the treasurer of the Lancaster Locomotive Works. The works were in a state of "present embarrassment."[76] The locomotive works owed Lukens $13,569.12, and it was 16 long months before Huston would see any of that money. In the end he compromised his account and settled for $11,533.76.[77] In the interim, of course, Huston got nothing, while his own committments had to be met. Worse was to come.

Kemble and Warner of New York were still the mill's most important agency in its most important market area. On September 26, the agency noted that money was hard to get, but observed that the suspension of the Philadelphia and Baltimore banks should relieve the situation soon. Three days later, Kemble and Warner wrote that the money market was still tight and that many notes were being protested. Still, they thought that the situation would probably ease in eight or ten days.[78] Kemble and Warner were obviously making excuses for not paying their debts. Huston however could not wait for his money and asked Kemble and Warner for all the notes they could spare so that he could meet his own obligations, which were heavy.[79] On September 30, Kemble and Warner reported that they would not be able to remit September collections until mid-October but then added, "We consider ourselves good and shall do our best to scratch through the present state of things which is so embarrassing to the whole country."[80] Three days later, Kemble and Warner suspended payments due to the collapse of parties indebted to them.[81] Kemble and Warner owed the mill over $18,000 and had over 135,000 pounds of the mill's iron on hand in New York.[82]

Huston's response to this information was sympathetic and generous. He promised to give all the time and credit that he could.[83] In fact he had no other alternative. On the twentieth of October, the New Orleans agency called for extra time to meet its debts also.[84]

There was one bright spot in the debacle: the Boston agency of Curtis, Bouve continued to make remittances on request and were able to give the mill $3400 on October 8.[85] They would help Huston again before the dust settled.

While this helped, it did not cure the panic for Lukens. By mid-October the mill was at a stand waiting for business to improve. It remained idle until the 15th of November.[86] There was some iron to be made at that time, but Huston declined a bid from the Norris locomotive works because the payment was offered in bonds and notes. Huston counter-offered to start the order only if the payment would be half cash and notes for the balance.[87] This counter-offer was not taken up, and the mill waited for better times.

In an effort to spur some kind of activity, Huston, in mid-November, gave the Boston agency the right to sell iron at whatever price they could get.[88] At that time Huston believed that "money matters" were improving in the cities and evidently anticipated a turn for the better.[89] His efforts were rewarded with an order from Boston which was especially timely because the employees at the mill had winter coming up and some had no money to meet it.[90] But there were few other orders that fall and the mill idled along at one third of its capacity. During the last quarter of 1857 the mill averaged only forty tons a month. The future would not be much better, for 1858 would see an average of only fifty five tons produced monthly. From this it is obvious that Huston's flicker of optimism was a bad guess. As Huston later put it, it was to be a "long night of Egyptian darkness" before it was all over.[91]

The stress caused by the slow market, the failure of the New York agency, and the bankruptcy of the Lancaster Locomotive Works could have made anyone frantic. Yet, through most of this, Huston remained, reasonable, generous, and even-tempered. But once the man was driven to petty anger. On December 19, Huston levelled a blast at his neighbor S. and M. Pennock and Company and said: "Are you still too poor to raise $23.85 Amt. due me for gongs [sic]. I have my own payments to make and I must ask all who are at all able to pay their dues."[92]

Huston's ire at this point is a little difficult to understand. His previous month's prediction that things would get better was being realized. On the first of December, Kemble and Warner reestablished their credit and began to clear some of the protested notes held by the mill.[93] The Boston agency of Curtis, Bouve continued to be very helpful. On December 11, they sent $3096.80 to Huston, of which $2000 was an advance against the next quarter's sales.[94] Everything was not going smash after all. The mill would survive, but full recovery of trade would be slow.

The recovery of the New York agency was very important to the fortunes of the mill, yet the negotiations that went into the resumption of business between Lukens and Kemble and Warner were marked by a hesitance that mirrored the times. Initially Huston offered the agency all the time it needed to meet its obligations. Still, he never lost sight of his own interests. William Kemble took charge of the affairs of Kemble and Warner while the agency was in difficulty. He was an old trusted friend committed to the survival of both his son's agency and his friend's mill. Yet when he asked for authorization to sign notes for Huston, the denial from the mill was quick. Huston felt that under the circumstances he could not allow another man power to increase his liabilities, even though Kemble's intent was to make it possible to "get you out of this scrape as soon as possible."[95] In fact, Huston, along with the other Coatesville mills, intended to tighten the screws on their ailing agency by forbidding Kemble and Warner to sell English iron. Huston and the other mill owners thought that the exclusion of English iron would increase their own sales and would "also secure the confidence of purchasers and builders of steam engines."[96] Further, it was argued that buying and selling English plate would strip the agency of capital. Finally, Huston observed that if these suggestions were not acceptable, the problem would be resolved by changing agencies in New York.[97]

This attempt to eliminate English iron failed. The agents observed that if they could sell foreign iron it would be easier to meet their debts to the mill. It was also noted by the senior Kemble that some buyers specified the use of English iron for parts of their orders and that an agency that failed to handle English iron would also find that its sales of American iron would fall off.[98]

The counter-argument made sense. The mill abandoned its threat to go to another agency and resumed business with Kemble and Warner. The terms of business were spelled out in a letter from Huston dated December 30, 1857. They were essentially what they had been before the panic, but in a concluding proviso in the agreement, Huston took a final jab at the despised English iron by allowing the agency to sell the foreign iron they had on hand but claimed that it ought not buy any more of that iron until it met its liabilities to the mill.[99]

That last observation about what Kemble and Warner "ought" to do produced a huffy reply and Huston had to write them a conciliatory letter advising them that he wanted them to be his agents and that they had all their old discretionary powers as well as his confidence and friendship.[100] With that, the mill's most important agency was restored to activity in a vital market. Its revival marked the end of the worst part of the crisis.

There remained, however, other difficulties which had to be resolved. The most important was the claim against the Lancaster Locomotive Works. On January 5, 1858 Huston proposed that Lancaster should settle its debt by paying fifty per cent cash and the balance by a note endorsed by its stockholders.[101] Nothing came of this proposal. Instead, Huston became a locomotive salesman in an effort to help the firm's recovery. In February of that year, he wrote to a railroad superintendent to find out who to approach if the railroad was interested in buying a thirty two ton locomotive.[102] Nothing seems to have come from these queries, and his curious career as another company's salesman came to an end.

By November, the mill indicated a willingness to compromise the account with Lancaster. Huston proposed to discount the debt by ten per cent, noting that since he was a material creditor, his claim was safe.[103] This evidently interested the Works and after some further negotiations, it settled. Huston got $11,533.76 of the $13,569.12 owed him. Of the settlement he said: "I may not have done as well as I might perhaps but my Quaker blood gives me a great distaste for law suits with all their attendant vexation and loss of time."[104] With that, the last of the wreakage of the Panic was cleared away.

The mill made it through the crisis with very little outside help, with the single exception of the advance payments made by the Boston agency. But Huston did not go it alone by choice. Early in the Panic, Huston looked to the state to provide a remedy for the situation. On October 5 he wrote his hard-pressed New York agents:

> Our banks in Pennsylvania are completely bewildered with no unity of action, and as a necessary consequence are not able to help their customers. How long this will last it is impossible to say but I hope next week the Legislature will do something to get things to right.[105]

What Huston wanted to see was suspension of specie payments. He got his wish, but too late. Huston also thought that some sort of cooperative measures might help alleviate the depressed condition of the market in the year after the Panic. There is one line in a Huston letter of September 16, 1858 which indicates that price fixing was being considered: "I am glad to hear that you are likely to effect some arrangement with Abbottin Prices."[106] The letter was to Kemble and Warner, and Abbott was the largest producer of plate in the New York market. The correspondence does not indicate whether any price adjustments were in fact made. The price series show no change. In the end, then, Huston was disappointed and got no help from the state or other producers.

In November, 1858 a state committee which was inquiring into the depressed condition of the industrial and manufacturing interests of the state, invited Huston to comment on the causes of the depression and proposals for remedying that condition. Huston's reply is interesting.

> I think it is a self-evident fact that when any nation or individual makes its purchases largely exceed its sales that bankruptcy must inevitably follow and such has unfortunately been the case with the United States. At the same time that our imports have been so great many of our citizens have been engaged in large heavy speculations from which neither they nor the country have derived benefit and the whole nation, Pennsylvania especially, now lies paralyzed until those who broke down a year ago close up their affairs by paying up their extended debts either wholly or in part.
>
> I think the proper and only remedy is for the General Government to pass such laws as shall prevent an excess of imports over exports and for individuals to be more cautious in future how they trust large corporations without having security sufficient to insure them against loss.[107]

It is apparent that Huston did not know precisely what caused the Panic. He recognized some evils: deficit spending, speculation and excessive imports. These were all condemned in a general sort of way. Huston tacitly admitted the necessity of corporations. They made up much of his market. And yet he warned against them. Out of this rhetorical broadside comes only one specific proposal. Huston wanted a tariff. While he may not have been certain of the interests of the rest of the community, he certainly knew his own.

Huston had damned the Democrats for their free trade policy earlier that year, in March, and claimed that English iron was going into nearly every boiler made in New York.[108] He was still railing at that policy in the summer of 1859 when he observed that:

> ...the heavy shipments of gold to pay for Mr. Cobbs beautiful free-trade imports has sickened the enterprise of our country and every one is holding aloof to see what the next move will be.[109]

The iron market had been "aloof" for nearly two years by that time. In the summer and fall of 1858, Huston wrote that he was running the business at a loss in order to preserve a place in the market. Under these conditions he observed bleakly that "blessed is he that holds out to the end."[110]

Charles Huston worked at "holding out." Early in 1858 he sought to establish a new agency in Baltimore, but his nominee for the job apparently declined.[111] In 1859 Huston took a trip into the south in an attempt to extend his trade.[112] This trip was more successful. He got an agency to represent him in Mobile and another in Cincinnati. Huston had also taken a partner into the business in May, 1859. His name was Charles Penrose, and he was a cousin of Huston's. Perhaps the money or talent Penrose brought in helped Huston hold out.

Lukens expanded its market in 1859 by another means also. The mill began to sell iron direct to stationary steam engine manufacturers. Earlier Lukens had sold direct to locomotive manufacturers like Norris, Baldwin and the Lancaster Locomotive Works. All other iron had been dispatched through agencies, but by December 1859 Lukens was driven to direct sales to some manufacturers. In a letter to the New York agents, Huston and Penrose explained:

> When we see other mills selling at such low prices direct and at the same time as we have reason to believe trying to entice our best workmen away from us it behooves us to look to our own interests and keep the mill going.[113]

As it turned out, the direct sales to the Corliss Steam Engine Company in Providence, Rhode Island had little effect on the New York or Boston agencies.

In the period after the Panic, two new ventures came to the attention of Huston. The first was an invitation to become a stockholder in an unidentified locomotive works. Huston assured his correspondent that locomotive manufacturing, if well conducted, was a profitable business, but he declined to join the enterprise, saying that after carrying a rolling mill through the crash, he was disinclined to go into any other part of the iron industry.[114]

Curiously, a second venture appealed to him. In early 1859, Huston, with others who were not identified, considered getting up a line of screw-driven ships to serve between Philadelphia and New Orleans. He asked his New Orleans agents for their views on the proper size of vessel and asked if such a line could compete with sailing ships. Huston also said that the line was to be financed by subscription. Finally he asked if any New Orleans people would be interested in subscribing and whether the agents thought such a line would increase sales of iron.[115] In spite of the interest Huston had shown, there exists no further correspondence on this matter, and it is not known exactly why this venture was still-born.

1860 turned out to be a good one for the mill, but Huston was nervous at the beginning of the year: "Is daylight about to appear for the night seems suddenly to have grown much darker."[116] In line with this cautious attitude, Huston considered and rejected a proposal to add steam power to the mill because of the apparent necessity of relocating.[117] He also refused a large contract early in the year because he feared to commit himself to a fixed price over a long period of time.[118]

After a very lean production run in April, the mill averaged over eighty tons a month until the end of the year, but there was bad news at year's end. Orders became very scarce.[119] The business community was again standing aloof in the face of national political events. President Buchanan's equivocation in the face of threatened secession had some Pennsylvania iron makers up in arms. W. M. Watts wrote Huston and Penrose and querried:

> What think you of National Affairs? Oh! for an honest Brave energetic Executive who would faithfully maintain the Constitution and enforce the law. There might and ought to be some hanging done to purify the body politic and teach all sections and all classes of men that obedience to authority is especially necessary of a good citizen.[120]

Huston replied that "We have a perfect baby for president and he and Mr. Cobb have brought us to the verge of ruin."[121] On that harsh note the correspondence for the period of 1850 to 1860 ended.

It had been an interesting eleven years. The management of the firm had changed twice and the mill had been rebuilt. The owners at different times in that period had considered proposals to modify their mill or to enter into various outside ventures. Finally, they had seen their firm safely through good times and bad. However, in spite of the various challenges, alarms, and possibilities for change, the business emerged from the period essentially unchanged, as indicated by a comparison of the descriptions of it given by the Census of Manufacturers in 1850 and again in 1860.

1850

Owners: Gibbons and Huston

Capital invested in the business: $60,000

Raw Material costs for 1850: $61,675

Number of hands and wages: 16 men at $480 per month

Production: 950 tons of boiler plate valued at $80,000

1860

Owners: Huston and Penrose

Capital Invested: $65,000

Raw Material Costs: $54,189

Number of hands and wages: 18 men at $600 per month

Production: 1,000 tons of boiler place valued at $80,000

Lukens was a model of stability in other ways too. The management remained bound by kinship. The labor force in 1860 still had exactly half the men who had been working there in 1850. The technology Lukens used to make iron in 1860 was identical to that it used in 1850. The mill remained water powered, and while the machinery was replaced in 1854, the new wheel and roll train represented evolutionary refinements of the old pattern.

The market for Lukens iron was little changed by the events and decisions of eleven years. The best markets were still Philadelphia, New York and Boston. The two new agencies acquired in 1860 as yet sold very little iron, and the new policy of selling direct to the Corliss Steam Engine Company did not signal a greatly changed sales policy. Direct sales remained marginal affairs.

Nor did the attitudes of the mill operators change in that period. A vigilant skepticism marked their consideration of suggestions for radical mill changes or for participation in outside business ventures. Most importantly, the sunny, optimistic decision to specialize solely in boiler plate manufacture in 1850 had been severely tested by the harsh events following the Panic of 1857. Though the Panic hurt, it did not change Charles Huston's mind. He stuck to the decision he and Abraham Gibbons had made in 1850.

CHAPTER V

[1]Convention of Iron Masters, _A Detailed Statement of all the Rolling Mills in Eastern Pennsylvania, in the year 1850_ (Philadelphia, 1851). Also Lukens 341. March 22, 1851. The rolls were 48 inches wide in length but were never used to roll iron to that width. The last inch on each end of the roll was not used because the iron would be deformed if it was squeezed past the edge of the roll.

[2]Lukens, 346. May 4, 1859. Huston and Penrose to Kemble and Warner.

[3]Convention of Iron Masters, _ibid_.

[4]_Ibid_.

[5]Lukens, 341. Feb. 4, 1850. Gibbons and Huston to Curtis, Bouve & Co.

[6]_Iron Age_, (July 4, 1835), 35-50.

[7]Lukens, 23. p. 14.

[8]_Ibid_., 354. Dec. 22, 26, 1870. Huston and Penrose to John Denny.

[9]_Ibid_., 23, 24, 25. _Passim_.

[10]_Ibid_., 23. p. 14.

[11]_Ibid_., 341. June 20, 1850. Huston and Penrose to William Kemble.

[12]_Ibid_., 341. June 11, 1850. Huston and Penrose to William Morris & Co.

[13]Throughout the period of this study, blooms cost typically ran about five times the cost of wages, repairs, and fuel combined.

[14] Lukens, 414. Sept. 5, 17, 1850. Curtis, Bouve & Co. and William Kemble to Gibbons and Huston.

[15] Ibid., 414. March 21, 1851. William Kemble to Gibbons and Huston.

[16] Ibid., 345. March 22, 1858. Huston and Penrose to William Watts.

[17] Ibid., 342. Feb. 1, 1853. Gibbons and Huston to William Kemble.

[18] Ibid., 414. July 13, 1852. William Kemble to Gibbons and Huston.

[19] Ibid., 342. Dec. 28, 1852. Gibbons and Huston to E. Pratt.

[20] Ibid., 343. April 30, 1856. Huston to Kemble and Warner.

[21] Ibid., 345. Feb. 9, 1859. Huston to William Jackson.

[22] Ibid., 341. Jan. 13, 1851. Gibbons and Huston to E. Pratt.

[23] Ibid., 341. Jan. 22, 1851. Two letters of the same date cited. One to William Kemble of New York, the other to E. Pratt of Baltimore.

[24] Ibid., 414. Jan. 23, 1851. William Kemble to Gibbons and Huston.

[25] Ibid., 341. Jan. 25, 1851. Gibbons and Huston to William Kemble.

[26] Ibid., 342. August 25, 1851. Gibbons and Huston to N. B. Buckley.

[27] Ibid., 414. May 1, 1852. William Kemble to Gibbons and Huston.

[28] Ibid., 342. May 10, 1852. Gibbons and Huston to William Kemble.

[29] Ibid., 342. May 28, 1852. Gibbons and Huston to William Kemble.

[30] *Ibid.*, 414. June 8, 1852. N. B. Buckley to Gibbons and Huston.

[31] *Ibid.*, 414. June 19 and 21, 1852. William Kemble to Gibbons and Huston.

[32] *Ibid.*, 342. August 4, 1852. Gibbons and Huston to Rowland and Hunt.

[33] *Ibid.*, 414. August 17, 1852. William Kemble to Gibbons and Huston.

[34] *Ibid.*, 414. Sept. 10, 1852. William Kemble to Gibbons and Huston.

[35] *Ibid.*, 414. Dec. 1, 1852. William Kemble to Gibbons and Huston.

[36] *Ibid.*, 414. Dec. 21, 1852. William Kemble to Gibbons and Huston.

[37] *Ibid.*, 414. Dec. 27, 1852. N. B. Buckley to Gibbons and Huston.

[38] *Ibid.*, 342. Dec. 28, 1852. Gibbons and Huston to E. Pratt.

[39] *Ibid.*, 342. Dec. 29, 1852. Gibbons and Huston to N. B. Buckley.

[40] *Ibid.*, 342. Feb. 1, 1853. Gibbons and Huston to William Kemble.

[41] *Ibid.*, 191. June 3, 1853. William Kemble to Gibbons and Huston.

[42] *Ibid.*, 192. Jan. 24, 1854. 196. Sept. 16, 1858. Kemble to Gibbons and Huston.

[43] The other two mills were Steel and Worth and Pennock's. In 1850 they and Lukens had similar capacities.

[44] Lukens, 342. and 190-91, *passim*.

[45] *Ibid.*, 342. April 5, 1854. Gibbons and Huston to Curtis, Bouve & Co.

[46] Chapter IV. pp. 6-7.

[47] Lukens, 346. Nov. 28, 1859. Moorehead & Co. to Huston and Pennock.

[48] _Ibid._, 192. August 10, 1854. Joseph Pennock to Gibbons and Huston.

[49] _Ibid._, 192. Dec. 21, 1854. John Carson to Gibbons and Huston.

[50] _Ibid._, 23. The entries after August and December do not show any wages for Gross or Carson.

[51] _Ibid._, 342. March 20, 26, 1864. George Coates to Huston and Penrose.

[52] _Ibid._, 342. Jan. 11, 1853. Gibbons and Huston to Curtis, Bouve & Co.

[53] _Ibid._, 23. This journal shows entries charged to the overhaul from June 24, 1854 to Jan. 19, 1855. The bill for machine castings came to $5198.24. The water wheel cost $1000 and labor came to $2308.05. Gibbons and Huston got a credit of $1254.68 for their old castings. Other building materials, stone, brick, and lumber are not included in the costs. These items are impossible to trace with any certainty. The builder of the machinery was E. C. Stotsenburg of Wilmington, Delaware.

[54] _Ibid._, 193. Feb. 1, 1855. Churchman and Roberts to Gibbons and Huston. The builder of the engine and its subsequent career is unknown.

[55] _Ibid._, 193. Jan. 20, 1855. E. C. Stotsenburg to Gibbons and Huston.

[56] _Ibid._, 193. Feb. 6, 1855. Lancaster Locomotive Works to Gibbons.

[57] _Ibid._, 343. April 21, 1855. Gibbons and Huston to M. O. Kline.

[58] _Ibid._, 417. August 6, 24, and Oct. 25, 1855. _Passim_.

[59] _Ibid._, 346. May 5, 1860. A test of Lukens iron by the Corliss Steam Engine Company of Providence, Rhode Island showed that Lukens iron had a better tensile strength than any other lot tested to that time.

[60] Ibid., 343. Oct. 25, 1855. Huston to Kemble and Warner.

[61] Ibid., 343. Dec. 18, 1855. Huston to Kemble and Warner.

[62] Ibid., 344. August 2, 1856. See also 343, 344, and 194 passim.

[63] Ibid., 415. Nov. 21, 1856. Kemble and Warner to Huston.

[64] Ibid., 344. July 17, 1856. Huston to William Watts.

[65] Ibid., 344. July 28, 1856. Huston to William Watts.

[66] Ibid., 344. July 8, 1856. Huston to Jacob Weidman.

[67] Ibid., 344. Sept. 23, 1856. Huston to E. C. Stotsenburg.

[68] Ibid., 344. July 28, 1856. Huston to William Watts.

[69] Ibid., 344. Jan. 8, 1857. Huston to Richard Norris.

[70] Ibid., 415. March 1, 1857. Gibbons and Hilles to Huston.

[71] Ibid., 344. Jan. 10, 1857. Huston to J. M. Weidman.

[72] Ibid., 415. March 1, 1857. Gibbons and Hilles to Huston.

[73] Ibid., 344. June 22, 1857. Huston to Kemble and Warner.

[74] Ibid., 344, 345. October to December, 1857, passim. The correspondence here shows Huston's difficulties in meeting his own obligations to his suppliers. There is evidence however, that his wife had resources which would have been available to him. See ibid., June 27, 1863.

[75] Ibid., 344. Sept. 16, 1857. Huston to Shoch Sons & Co.

[76] *Ibid.*, 416. Sept. 25, 1857. A. O. Kline to Huston.

[77] *Ibid.*, 345. Jan. 25, 1859. Huston to Duane Williams.

[78] *Ibid.*, 416. Sept. 26 and 29, 1857. Kemble and Warner to Huston.

[79] *Ibid.*, 344. Sept. 29, 1857. Huston to Kemble and Warner.

[80] *Ibid.*, 416. Sept. 30, 1857. Kemble and Warner to Huston.

[81] *Ibid.*, 416. Oct. 3, 1857. Kemble and Warner to Huston.

[82] *Ibid.*, 416. Oct. 20, 1857. At four cents a pound, that iron was worth $5400.

[83] *Ibid.*, 345. Oct. 7, 1857. Huston to Kemble and Warner.

[84] *Ibid.*, 416. Oct. 20, 1857. Slark, Stauffer & Co. to Huston.

[85] *Ibid.*, 416. Oct. 8, 1857. Curtis, Bouve & Co. to Huston.

[86] *Ibid.*, 345. Oct. 14, 1857. Huston to Charles Cloud.

[87] *Ibid.*, 345. Oct. 21, 1857. Huston to Richard Norris.

[88] *Ibid.*, 345. Nov. 16, 1857. Huston to Curtis, Bouve & Co.

[89] *Ibid.*, 345. Nov. 18, 1857. Huston to Shoch Sons & Co.

[90] *Ibid.*, 345. Nov. 21, 1857. Huston to Curtis, Bouve & Co.

[91] *Ibid.*, 345. Dec. 8, 1858. Huston to Slark, Stauffer & Co.

[92] *Ibid.*, 345. Dec. 19, 1857. Huston to Pennock & Co.

93 *Ibid.*, 416. Dec. 1, 1857.

94 *Ibid.*, 416. Dec. 11, 1857. Curtis, Bouve & Co. to Huston.

95 *Ibid.*, 416. Nov. 24, 1857. William Kemble to Huston. And 345. Nov. 26, 1857. Huston to William Kemble.

96 *Ibid.*, 345. Nov. 27, 1857. Huston to William Kemble.

97 *Ibid.*

98 *Ibid.*, 416. Nov. 25, 1857. And Dec. 14, 1857. William Kemble to Huston.

99 *Ibid.*, 345. Dec. 30, 1857. Huston to Kemble and Warner.

100 *Ibid.*, 345. Jan. 8, 1858. Huston to Kemble and Warner.

101 *Ibid.*, 345. Jan. 5, 1858. Huston to M. O. Kline.

102 *Ibid.*, 345. Feb. 5, 1858. Huston to O. N. Lull.

103 *Ibid.*, 345. Nov. 25, 1858. Huston to M. O. Kline.

104 *Ibid.*, 345. Jan. 25, 1859. Huston to Duane Williams.

105 *Ibid.*, 345. Oct. 5, 1857. Huston to Kemble and Warner.

106 *Ibid.*, 345. Sept. 16, 1858. Huston to Kemble and Warner.

107 *Ibid.*, 345. Nov. 10, 1858. Huston to S. Morton, J. Welsh & Committee.

108 *Ibid.*, 345. March 22, 1858. Huston to W. Watts.

109 *Ibid.*, 346. August 6, 1859. Huston to W. Watts.

110 *Ibid.*, 345. June 22, 1858. Huston to Kemble and Warner.

[111] Ibid., 345. March 1, 1858. Huston to Stocking & Co.

[112] Ibid., 346. Nov. 4, 1859. Huston to Albert Root.

[113] Ibid., 346. Dec. 23, 1859. Huston to Kemble and Warner.

[114] Ibid., 345. Nov. 27, 1858. Huston to R. Clarkson Co.

[115] Ibid., 345. Feb. 9, 1859. Huston to Slark, Stauffer & Co.

[116] Ibid., 346. Jan. 20, 1860. Huston and Pennock to Kemble and Warner.

[117] Ibid., 346. Feb. 14, 1860. Huston and Pennock to I. P. Morris & Co.

[118] Ibid., 346. March 31, 1860. Huston to Kemble and Warner.

[119] Ibid., 418. Dec. 13, 1860. Kemble and Warner to Huston and Penrose.

[120] Ibid., 418. Dec. 24, 1860. W. Watts to Huston and Penrose.

[121] Ibid., 346. Dec. 27, 1860. Huston and Penrose to W. Watts.