NAILSEA AND THE GLASS WORKS Part 3

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This last article of the series is one that examines the period 1840 to the closure of the glassworks in 1873. It was a period during which Nailsea throbbed with activity, One might hear the distinctive steam whistle of the glassworks calling blowers to a glassmaking journey; the slow measured sigh of the beam engines from the coal mines; railway engines with their soft sounding chuffs, moving up and down the valley on the broad gauge lines; from all directions steam engines of all descriptions could be seen and heared chugging away at smaller tasks.

An analysis of Census returns recorded during this period shows that over one third of the total population of the district were in employment, even after the closure of the glassworks.

TABLE 1. Working Population compared to Total Population - Nailsea Census Returns.

	1841	1851	1861	1871	1881
Working Population	915	936	861	943	710
Total Population	2250	2543	2278	2337	1852
Percentage	35.8	36.8	37.8	40.4	38.4

Certain occupations listed in the 1841 Census but not thereafter suggest dying areas of employment, for example the two Mariners and two Sailmakers listed were perhaps the last representatives of Nailsea sea portage - a 'Navigator' recorded in the same year was possibly employed in routing the Bristol and Exeter Railway through the valley Two 'Excavators' that had departed by the following Census were, more likely, employed in sinking wells or mine shafts. 'Brightsmiths' recorded in 1841 and 1851, having departed by 1861 suggests another industrial phase.

Unusual occupations made brief appearances, such as a 'Striper' (bird scarer), 'Wint' catcher (moles); and reflecting Fashion trends such as a Linen Bonnet Maker and a Straw Bonnet Maker (1871). Two occupations as yet unidentified are a 'Pinchowner' and, in the glass industry, a 'Crambo keeper'.

TABLE 2. Analysis of Nailsea Employment. from Census returns

	1841	1851	1861	1871	1881
Teaching	4	12	13	15	8
Agriculture	273	230	166	103	156
Coal Miners	122	164	116	61	89
Quarrying	13	18	16	18	7
Blacksmiths	18	8	15	12	9
Sawyers	5	9	2	6	4
Tanners	9	12	7	1	3
Domestics	140	79	102	151	97
Dressmakers	9	37	33	35	28
Tailors	18	10	16	10	4
Boot makers	15	10	18	11	8
Food Trades	28	38	34	37	41
Mason	28	21	15	21	33
Labourers	57	48	84	133	69
Glassworkers	71	100	96	198	0

The number of glassworkers employed at the Glass Works are seemingly contradictory. The low figures for 1841, 1851 and 1861 can in part be explained. by their placement under the other descriptions as labourers, masons, carpenters etc. It is only from the full 1871 Census that a reasonably accurate workforce can be reconstructed.

TABLE 3. Nailsea Glassworks Workforce, 1871.

Manager	1	Glasspackers	7
Clerks	4	Commercial Clerks	2
Teasers	4	Glass Flatteners	10
Mixer	1	Glass Splitter	1
Sawyers	4	Glassblowers	9
Marker	1	Glassworkers	9
Potmakers	3	Glasscutters	14
Founders	2	Glass Obscurer	1
Labourers	14	Sheet Glassmakers	2
Spareman	1	Glasspipe Warmer	1
Boys	5	Apprentices	2
Glass men	5	Brickmakers	2
Watchmaker	1	Furnacesman	1
Glassmakers	88	Furnace Boy	1
Glass piler	1	Engine Driver	1

The Workers.

Throughout the years of its existence the Works were staffed by an increasing number of Nailsea born craftsmen. However, examination of Census records show that a remarkable proportion of the glassworkers flowed in and out of the works. Nailsea workers can be traced in many of the British glassworking areas and quite a few emigrated to America and the Colonies. In return a surprising number of workers migrated to Nailsea:-

1851
Scotland - 7 : Newcastle - 7 : Durham - 2 : Eccleston - 1 :

1861
Scotland - 4 : Birmingham - 4 : Liverpool - 1 : St Helens - 2 : Risca - 1 : South Shields - l : France - 2 :

1871 (two years before closure)
Scotland - 1 : Birmingham - 34 : Newcastle - 2 : Stratford-on-Avon - 1 : Leeds - 1 : Weare - 2 : Oxfordshire - 1 : Jersey - l : Liverpool - 9 :

Thanks to the work of a Birmingham historian - Mr. Trevor Merryfield - a list was compiled of the Nailsea born workers residing in Smethwick; 1851 = 22 : 1861 = 23 : 1871 = 21 : 1881 = 20 :

It was discovered that although a number of families remained in Birmingham, others moved out to be replaced by further Nailsea families, thus maintaining a steady level almost as if a planned operation.

Glassworking 1840-1860.

The Glassworks functioned. well under the Management of the Coathupe Brothers and, thanks to a remarkable schoolteacher of the time - James Davis Waymouth - we have a glimpse of production statistics of the time. Waymouth was a man of many talents; he introduced photography to the village, charging one shilling "for a 1ikeness"[1]; he also became a Stationer and an Insurance Agent; but his main claim to fame was the preparation of an Arithmetic book used quite extensively during the Mid-Nineteenth Century. His work was brilliantly constructed[2] and many of his questions were based on genuine 1841/2 statistical information. Particularly he gleaned practical facts and problems from the Glassworks office, as may be judged from the following set questions:-

1) Required, the neat weight of 168 crates of glass, each weighing gross 1cwt 22lbs, the weight of the crate is 23½lbs.

2) If 6 men in 9 hours can cut 12,000 panes of glass, how many men cut a million panes of glass in 30 hours?

3) If two sets of men can make 5,340 tables of glass in 5 days, how many can 7 sets make in 27 days?

4) Required, the value of 168 panes of glass, each 14½ inches by 10⅝ inches, at 2 shillings 7 pence halfpenny per foot.

5) How many feet of glass are there in 20 crates, each containing 12 circular tables, and each table 50" in diameter?

6) How many circular pieces of glass 9⅜ inches in diameter are equal to 100 square feet?

7) At the Nailsea Glassworks there are 50 circular tables of glass manufactured per hour.
(a) How many tables can be made in 21 years, if the men work 48 hours every week (reckoning 52 weeks 1 day per year)

(b) What will the duty on the glass amount to at £3:l2s:6d a hudredweight plus 5% , admitting the weight of each table to be 9 ponds?

(c) What will be the superficies of the glass in acres, the diameter of each table being 50 inches.[3]

In 1844 the manufacture of shades commemenced, the partnership Capital was quoted as £48,000; less than the Capital of £60,000 mentioned in the partnership agreement of 1807 which then included the Stanton Wick glassworks.

At the Great Exhibition at Hyde Park in 1851 the Nailsea Glassworks exhibited glass-tubing, thought to be intended for use as curtain rods, but was not a sucessful operation.

During 1854, Richard Hadlem became a partner for a few months, and in 1855 Oliver Coathupe sold his rights to Isaac White a Nailsea Coalmine owner; the much respected Oliver died the following year. In 1857 John Rodbard Bean, grandson of John Robert Lucas the founder, disposed of his shares in the company to his brother Henry L. Bean.

In 1858 the works were producing 160 crates of Sheet glass and 104 crates of Crown glass per week. The production of Rolled plate and Cathedal glass commenced in 1860, but by 1861 Isaac White was in financial difficulty and for a time the works were closed until Leased to, and reopened by, Samuel Bowen in 1862.

The Childrens Employment Commission.

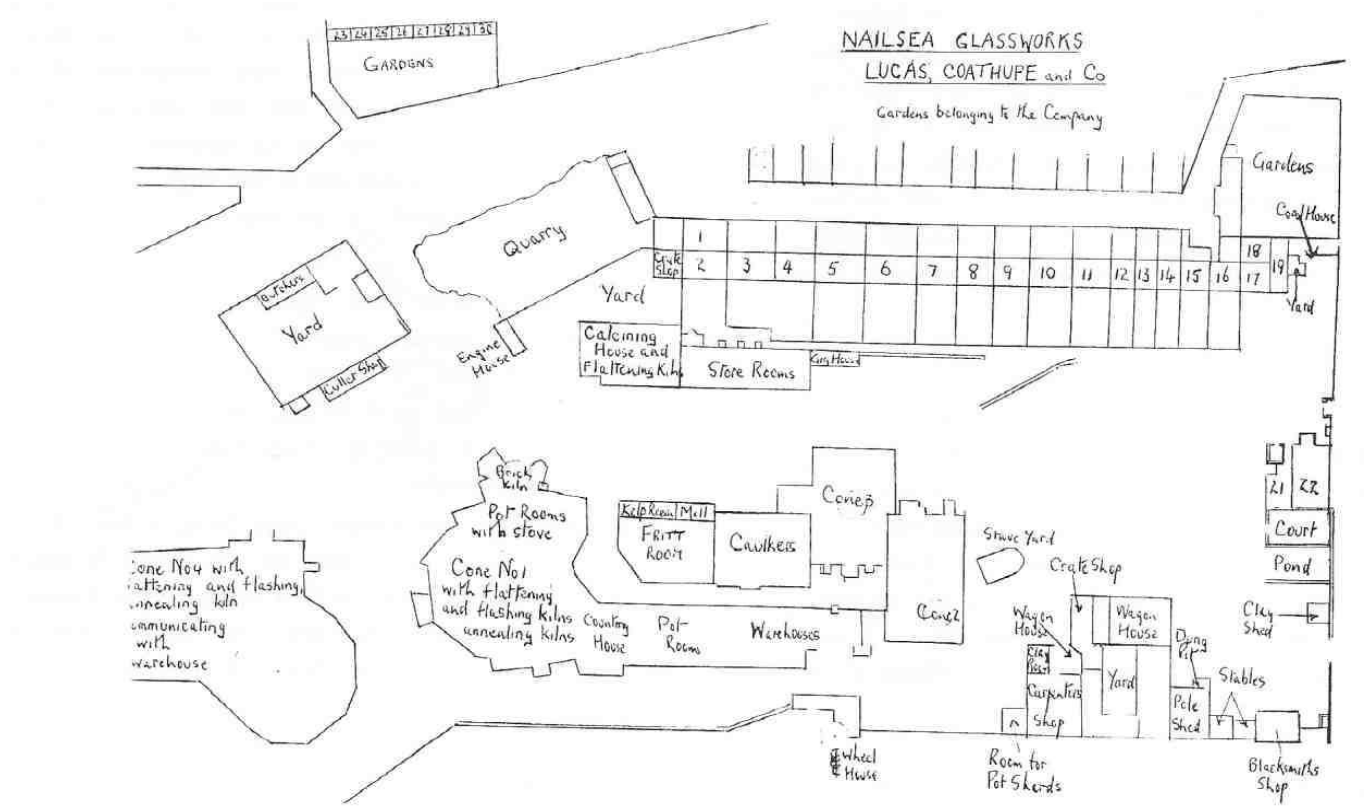
The Childrens Employment Commission of 1862 was headed by Commissioner J.F. White and its report contains an interesting account by Samuel Bowen on the employment of children at Nailsea[4]. However White made a detailed set of notes on conditions he discovered throughout the industry and the following extracts add an extra dimension to the Bowen report:-

"The heat to which the workers are actually exposed for more or less of their time depends greatly upon the construction of the houses, the size and relative position of the different furnaces and annealing kilns, the stage of manufacture that is going on, and still more on the part of the works in which a person is engaged. Whereas as I have occassionally noted, owing to the want of space, furnaces and kilns are crowded together, the heat is reflected back instead of escaping, and is much accumulated."

"Men who have charge of the metal and furnaces during the preliminary process of founding or melting before the actual working have the hottest tasks, and the heat near the furnace in crown glassworks are placed between 300-330°c

Heat encoutered by a shovel boy at the furnace
130°c
Heat encountered at the mouth of a furnace
172°c-220°c
Heat encountered where the blowers stand
98°c-118°c"

The effect of heat on workers was described :-



Nailsea Glassworks, circa 1825.

"At 75°c the worker could work 8 hours comfortably,
At 95°c-100°c he soon tires,
At 100°c those unaccustomed would feel short of breath and uneasy with a sensation of heat, and tremendous thirst, you cannot sweat and when that stops you begin to suffer."

"Apart from heat there were tasks requiring physical effort, blowpipes in crown and sheet houses weighed 16 pounds or 20 pounds, and sometimes boys carried two 20 pound pipes at a time."

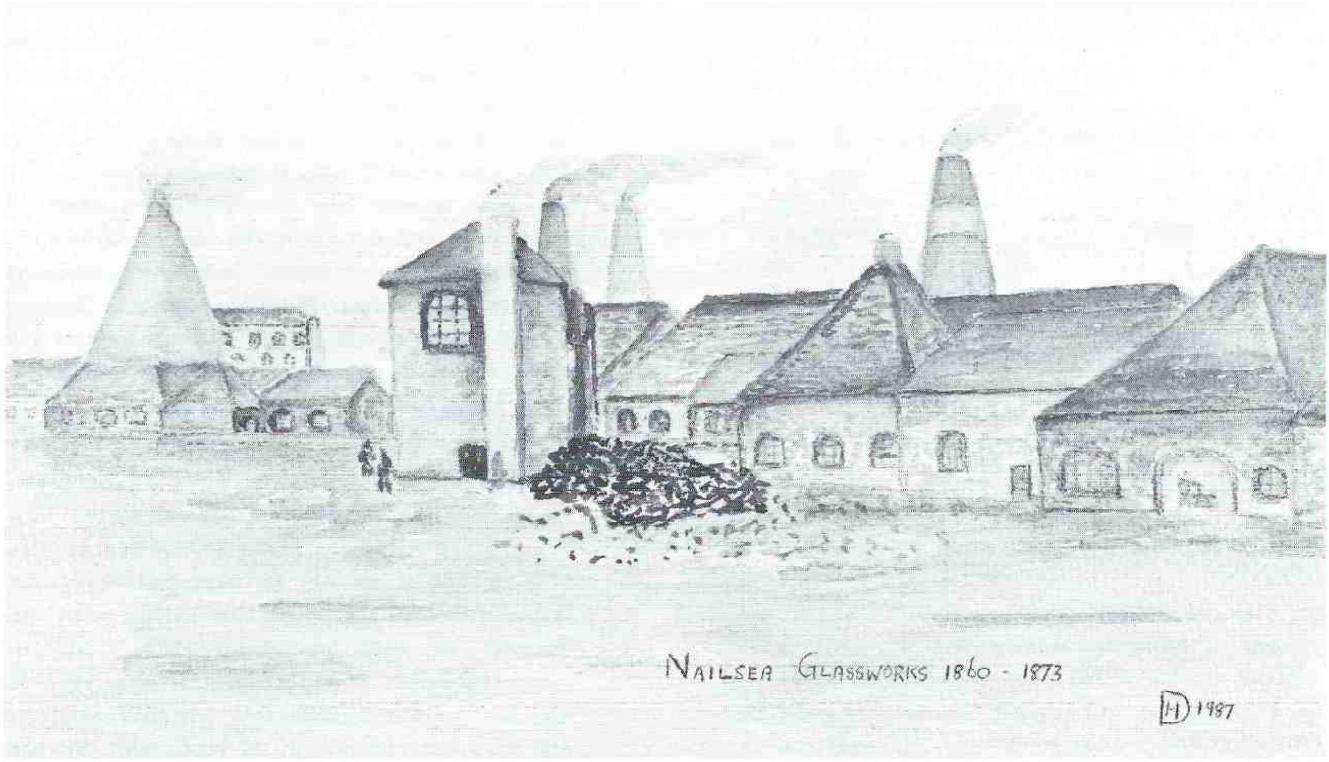
Although the Bowen report is concered with the employment of children, a youngster regardless of age was a member of a team; therefore a great deal of information on the works functions emerge :-

"There are about 200 persons employed in these works, all males but one, and about 50 of them are under the age of 18. We make four journeys in a week, both in the two sheet glasshouses, and in the rolled plate glass house.

In the sheet glasshouses the journey for the men is on the average 10 or 11 hours, or if the pots are in full work it may be 12 or 12½ hours, but never more. The boys however come before the men to get things ready, and so work on the average 13 or 14 hours in each journey. Each blower has a gatherer who is a man, and a boy usually between 13 to 18 who helps by carrying the pipes, holding them in the furnace etc. The few youngest boys who are perhaps from 11-13 are called spare boys, and holds shovels at the furnace to screen the gatherers. In the rolled plate house the journey does not average more than 9 hours; in that are all, but one or two, are men.
The work falls about equally in the day and night. As near as any fixed time can be named, the first journey begins some time in the afternoon of Thursday on which day our week begins; the second from midnight on Friday to 2 or 3 p.m. on Saturday; the third from midnight on Sunday to 2. p.m. on Monday; the fourth on Tuesday afternoon. The times of begining however vary considerably , and the two sheet glass houses are seldom together. The difference is caused by the delay in setting pots.

It is quite a chance when new pots may be needed, a little carelessness in the men who have charged the furnaces might spoil the whole set of pots. When the working journey has once begun, it is not liable to be interupted or hindered by accidental causes. The pots break only in the founding when the heat is much greater. The weather, unless it is very extraordinary does not affect us. When the working has once begun it must be finished, or the expence of preparing the metal, which is great, would be wasted. Hence it has happened, but very rarely, only once or twice I think in three years that I have had at these works, that the glass blowers have been obliged to work on Sunday. As a rule we contrive to finish a good time on Saturday afternoon.

Besides the boys in the glasshouses there are others, about seven of the age called ‘push boys’ who push the cylinders into the kilns in which they are flattened out by men. They work from 6 to 6, days one week, and nights the other, except on Mondays and Saturdays. On these two days the two sets work less, dividing only 18 hours between them, viz. from 12 on Sunday night till 6 a.m. on Monday, and on Saturday from 6 a.m. to 6 p.m. They have usually no work on Wednesday night, a push boy could not properly work over to take the place of a boy in the other turn. Our loss would be too heavy to let them do so. They would be tired, and if a boy broke even one piece of glass that would be as much as a good bit of his wages. Indeed in all parts of glasshouse work, the principal thing is to have a good supply of hands. Nothing is so fatal to a manufacturer as to be short handed. The workers will take advantage of it directly as an excuse for not working if a chance arises, so that it is necessary to have some surplus. A woman and a few boys help at pot making, and there is an engine for the clay mill.
The glass blowers stop about half an hour in the middle of their journey for a meal. The flatteners have no fixed meal times, but take meals when they stop to put fuel into the kilns which takes a quarter of an hour or so, three times in 12 hours."
Elsewhere in the report John Urch, a boy of 15 years of age, stated that he was about 7½ years of age when he first held a shovel at a furnace in the St. Helens factory. He once worked 24 hours without stopping and without sleep, then went off work to return six hours after for another stint. William Day aged 15 was employed to push cylinders into a flattening kiln and once worked 36 hours without a break. The 1861



Nailsea Glassworks 1860-73

Census records George Mountain working as a glass worker aged 11, William Napolean Smethwite a sheet glass worker aged 10, and George Thomson a glass worker aged 10. It is of interest to note that a youngster aged 9 was listed as a coal miner, and aged 8 a boy working as a farm servant.

Education in Nailsea.

Samuel Bowen's report to the Commission contained a good deal of criticism not only of local children but of their parents, - that the mass of children in Nailsea were rough and untaught - "the children appear to be taken but little care of and may be seen idling about in crowds despite the glassmakers earning good wages, blowers from £2 to £4, and gatherers from 24 shillings to 30 shillings" [£1.20 - £1.50]. Research has proved that Mr Bowen was far from accurate in this, for although it cannot be denied that a proportion of children were as described, analysis of the 1851 Census shows that education was not neglected. In that year twelve teachers were teaching children ranging in age from four to seventeen. The following table is considered to be of some significance in the appreciation of educational levels in a nineteenth century industrial area. It suggests that adults and children were far from the cloddish image presented as representing working class families.

TABLE 4. Analysis of Children at School and Working. Nailsea 1851.

Age	Total		Working		Scholars		Non-Sch		Non_S
	B	G	B	G	B	G	B	G	as %
3-4	40	31	0	0	5	6	35	25	85%
4-5	47	37	0	0	14	11	33	26	71%
5-6	34	28	0	0	14	18	20	10	48%
6-7	35	28	0	0	26	20	12	8	30%
7-8	28	30	0	0	16	19	12	11	39%
8-9	38	30	1	0	27	20	10	10	29%
9-10	37	30	2	1	24	21	11	8	28%
10-11	32	38	2	1	24	21	6	16	31%
11-12	32	32	5	3	20	17	7	12	30%
12-13	22	25	7	2	10	17	5	6	23%
13-14	20	25	12	3	4	10	4	12	35%
14-15	32	23	16	7	12	4	4	12	29%
15-16	25	22	19	9	3	3	3	10	28%
16-17	22	24	21	23	1	1	0	0	-

From this it can be seen that the majority of the children were being taught (or were being claimed to be) by the age of five, that less than one third were receiving no education, and for most of them employment had started by the age of 13 for boys and 16 for girls - the latter also having ceased education at 13 and no doubt having had to work in the home in the interim.

There was of course at this time no such thing as free education other than for the lucky few who were in ancient boroughs with educational charities. The largly Nonconformist working population appear to have ignored the National Society school set up beside the new Anglican Christ Church in preference for self-help groups employing their own teachers. Following in this tradition the Nailsea Mechanics Institution of Mutual Improvement Society had been established in 1845. Not to be outdone the Anglicans in 1856 built Nailsea Library and Reading Room alongside the School and by 1858 it possessed over 400 volumes.

Stained Glass Working.

J. F. White in his Commission Report of 1862 wrote :-

"The so called manufacture of stained and ornamented glass for windows and other pictorial designs is not a distinct and independant kind of glassmaking, but rather an art employed in finishing and making of glass. The business is carried on chiefly by manufactories who do not make glass at all, but get it from those who do. Colour is added in a variety of ways as by means of a solution or an enamel or paints applied on the surface and burned in. Now however glass of a given tint can be made in the crucible or pot in just the same way as common uncoloured glass thus having the colour interest in its own substance. This is regarded as a great improvement on staining as securing permanent and brilliant colour, and indeed the excellence of the old glass is attributed to its having been made in this way though the art was lost till lately."

John Ayres, a Nailsea employee, wrote of local stained glass, "Kelly was the man who introduced the undulating interlocking principal , unfortunately very few orders ever came in for these goods. He was a clever mixer however, and he would be very proud of getting you to hold a piece of his handiwork up to the light when he would show you what a fine Cathedral tint it was."

John Ayres and Francis Mountain.

Frigged items are those articles produced by glassmakers and their apprentices to sharpen their skills. Not normally production pieces they emerge in many unusual forms, and by the end of the first decade of the present century had raised considerable interest as collectors pieces. The then Curator of Taunton Museum, H. St.George Gray, was prompted to investigate the history of the glassworks and his correspodence contains replies from John Ayres, a former Nailsea Glasshouse clerk who provided interesting information not only of its history but also its closure. Apparently unconnected with the Taunton correspondence, the Curator of Bristol Museum was about the same time receiving information on techniques from Francis Mountain, a retired Nailsea glassmaker. These seperate accounts[5] do so complement each other that I set them out in the form of a joint presentation :-

(John Ayres) "Isaac White could not make the concern pay its way, and it came to a standstill in the year 1861. Early in 1862 Samuel Bowen a bankrupt glass merchant of West Bromwich made a fresh start under the title of the Nailsea Glass Company. First of all he just had the Central House furnace lit where as before they made ‘crown’ as well as sheet glass, and this continued until September of the same year when the roof of the furnace fell in; most of the men and boys were thrown out of employment for about a month.

During that month the New House, the one nearest the Royal Oak Inn, was put into working order and commenced in October for the manufacture of sheet glass only. A year or two later the Lily, the smallest of the three houses, was got ready for the making of plate glass. Another year or so passed and the Central House was working again. Not content with all this, Mr Bowen had taken another two large factories at work, and established three agencies in London, and one in Glasgow."

(Francis Mountain) "About 1858 sheet glass blowers came from France and Belgium. They made no small stir but after coming to an under-standing they were allowed to start work with the English. As regards their workmanship it was not up to the standard of our Nailsea men. Sheet glass is swung and blown at the same time until it is the required length - it is made in cylinders, and when cold split with a glaziers diamond, and taken to a flattening kiln to be made flat by a man called a Flattener, it is then piled up in the kiln."

(J.A.) "One French glass blower only, Lars Amede, was at Nailsea during my time, tall and ungainly but a good plain workman on sheet cylinders, he never attempted any fancy 'blowing' . There were three French flatteners, two brothers and a cousin called Desquin; Emile and Jules were the brothers, but Jules went away

and his cousin Oliveur came to take his place. Emile, who was short of stature, spoke English capitally and he and I struck up a close friendship. He had been in a Hussar Regiment, and had fought against the Austrians at Montabello where he received a sabre scar upon one of his wrists."

(F.M.) "Cone 'Lily' was on a smaller scale than the others and only plate was made in it, the furnace held four pots only. After the roller had passed over it, it was drawn on to a pair of wheels faced, up with plaster of Paris, and conveyed to the annealing kiln. When the kiln was full it was closed up for a while until the metal was cool enough to handle, and taken to the warehouse .

Crown Glass is made in the shape of a plate with the bullion in the centre. In the early part of the century a patent to do away with the bullion was tried but this proved a failure.

The New House had a large cone capable of holding eight pots in the furnace. This furnace was from 30 to 40 feet in length, and was fed with coal at each end when melting the metal was in progress. It would take from 18 to 24 hours to melt the metal fit to be blown into glass. This was a sheet glass cone only, no other kind was made.

When the pots were broken they were taken out of the furnace by a large machine on two wheels which would raise them up and draw them out of the furnace, new ones were put in their places by the same machine.

The furnaces were worked underground - caves leading from one end to the other. Bars of iron from four to twelve in number. Surrounding the cones there were, in the yard, sheds for crate making, stables, saw mill, roller crushers, warehouses, weighbridge and offices.

All goods were taken to Bristol, by the well known vehicle called the dilley. Salt cake was also brought from Netham Chemical Works to Nailsea, likewise coke from the Bristol Gas Works. Sea sand was brought from Portishead to Bristol, then by road to Nailsea, and dried in kilns for use.
The number of kilns in use in the factory was about thirteen with about five pot arches. There was about ten other furnaces used for heating before the metal was made into sheet or crown glass.

Some little distance from Nailsea Glassworks two large ponds were dug for the storage of water for the works. While digging operations were going on a large spring of water was met with, also a large bed of valuable clay. This clay was taken to the works, a pottery was formed and built, and a gentleman named Paget was appointed to manage it. All kinds of articles were made, such as bricks, pipes, bends, plates, cups and saucers, and other things too numerous to mention. The work went on as long as the clay, of which there must have been several thousand tons, lasted.

Fluted glass was also made at Nailsea, oval and round shades, jugs, decanters, fish bowls, bottles and all kinds of fancy work. Cut glass was also made; glass was cut with sand and water and wheels worked by machinery."

<u>The Problems mount.</u>

As early as 1862 Samuel Bowen reported to the Commission -

"The English manufacturers are already at a great disadvatage as compared with foreigners. They have been over to France this year to try to get the import duty to France taken off. This presses very heavily upon them, while the French can send their glass here without any import duty. The Belgians however are the greatest sheet glass manufacturers, and owing probably to the greater cheapness of their labour, can send their goods and sell them here cheaper than we could supply, at 1 penny what I could not make under 1½d ; and in another case I found a still greater difference. Since the American War [American Civil War 1860-65] has to a great degree cut off one principal market of the Belgian goods, these have come to England in still greater quantities than before."

In 1868 a Bristol newspaper reported -

"The difficulties with which some branches of English trade have to contend when brought into competition with foreigners have recently been exemplified with reference to a contract taken for covering with glass the roof of the new Metropolitan Meat Market. We are informed that the lowest English tender was that of the glassworks at Nailsea near the city which offered to supply the requisite quality of glass at 11½d per square foot, but a Belgian House obtained the order, their terms being for precisely the same material 4½d per square foot."

Such was the intensity of competition during this decade that the main British glassmaking concerns (Chance Bros. of Birmingham, Hartleys of Sunderland, and Pilkingtons of St Helens) entered into an Association or Cartel to try to combat the threat to their existence. It was reported of Nailsea - "This firm began to sell rolled plate glass, a branch in which Belgian competition was not severe, at prices below that of the Association. They gained a considerable number of large orders ,immediately, including one for 100,000 feet for glazing the roof of London Road Station at Manchester. The Association machinery went into action, and other manufacturers cut their prices so that they undersold Bowen and Powis."

The Col1apse,(as recalled by John Ayres).

"Changes were taking place at the works some time before Midsummer [1869] but neither of the Office Staff had any suspicion that anything was wrong, until one day the Manager from Brock and Bruces, Timber Merchants, Bristol, came down and gave Mr Gill the Head Clerk a big order; but when Mr Bowen returned the game leaked out. He was owing Brock and Bruce £90, and they having had notice of a creditors meeting were anxious to take the debt out in goods. They were trying to steal a march on the other creditors, and Mr Bowen knew he ought not to let them have the glass.

However it was a case of 'diamond cut diamond' , so Mr Bowen instead of refusing to supply, hoisted them with their own petard. He happened to see me in Nailsea on Sunday evening and sent me round to tell the packers to be at the works early on the Monday morning, and he was there to meet them. He gave them orders to alter the marks on a lot of crates of 'diamond quality' 15 ounce glass, to 'thirds' 15 ounce, thus promoting the coarsest glass by two degrees, charging threepence a foot for what was usually sold for three-halfpence. A lot of small sheet ends, we called them, which used to fetch 1½d per foot delivered on Glasgow Quay was similarly treated.

The consequence was Messrs. Brock and Bruce invoice ran up to £190, i.e. £100 more than the Glass Company owed him, and to be quite plain Mr Bowen had cheated them out of quite the full amount of his own indebtedness to them.

Supposing the other creditors knew all about it, they would not be likely to complain at the £90 being wiped out in that way, there was much more to divide between them. I have often heard it said at Nailsea that there was 'roguery in every trade but glass, and that you could see through'. Within a very few days after the above incident Messrs. Denning, Smith and Company, Accountants of Bristol was placed by the Creditors in charge of the books, and their clerk, a Mr Brown, was constant attender at the office.

On Saturday, July 3rd 1869, we held our last pay day, and on Monday morning July 5th about 300 men and boys were standing idle, including the office staff. The net result of all this was that in July 1869 Mr Bowen succeeded in failing for £30,000 out of which his creditors managed to squeeze two shillings and sixpence [£0.l2½] in the pound."

The Begining of the End.

Within a year of the Associations intervention in the glazing of London Road Station, Manchester, negotiations were afoot for the purchase of Nailsea works by James Hartley; William Ruby Pilkington and R.L. Chance acting as 'Arbitrators' - the Freehold of the factory site was in fact purchased before the bankruptcy of Samuel Bowen.

In due course, as a result of an Indenture dated 19th May 1870, the works became the property of Chance and Company. A Mr Stonier was appointed to take charge. Long after closure Stonier revealed in newspaper correspondence that Chance Bros. did not buy the Nailsea works as a good speculation, but to keep other operators out. Whatever the reason, the works were discovered to be in such a dilapidated condition that a sum of between £30,000 to £40,000 was invested in order to recommence production[6]. The firm manufactured only sheet and rolled plate glass, of which they kept a large stock, and sending it as far away as Ireland and Scotland, the works returning a trading profit to the end.

The Final Closure.

A variety of reasons have been offered to account for the final closure - further dilapidation of the buildings and equipment; its size and location did not justify modernisation; the coal at Nailsea was expensive to mine and of indifferent quality compared to other locations; the Association were seeking economies of scale in proximity to their main sources of materials and sales in the expanding markets of the North and North Midlands - possibly a combination of all these, providing better advantage elsewhere

of an assured cash flow to enable continual investment in changing technology. The Nailsea works finally closed mid-March 1873[7] not by reason of abject failure, indeed it was making a small profit, it died because it was old and had simply outlivrd its usefulness.

Conclusion.

Although at one time Nailsea Glassworks was ranked amongst the top three most productive in Britain, and had a reputation for quality window glass, its importance in glassmaking history is not related to its manufactured items, nor the workers frigged pieces so prized by collectors, but rather the position it held as a vital link between the technology of the 18th century Bristol glasshouses and the modern high technology of the present day.
It was a factory founded by a man of vision and integrity, John Robert Lucas, who nurtured the massive talents of Robert Lucas Chance and John Hartley. The traditions of loyalty and trust created by John Robert Lucas were continued by the Coathupe Brothers, Isaac White and Samuel Bowen.
Admitted there were men who reflected the hell-raising early days of the 1790's but in the main the workers took full advantage of the cultural facilities available to them through the works management or their own initiatives. Victorian Nailsea was vibrant, it hummed with activity and the closure of the works at first was a crushing blow to the village - not helped by the local coalmining industry that was also in terminal decline[8]. Glassmen and Miners moved away taking precious memories with them, memories passed on from generation to generation as family tradition. Agriculture, always the major employer, again became the mainstay of the village economy, and those with industrial experience tended either to move to Bristol or commute there daily by rail.
The social demarcation set by the glassworks end and the old village continued until well after World War II. Even now following the post war boom in housing expansion of the area, families whose ancestors were glassworkers and miners still reside in Naisea preserving its industrial memory. The family traditions of those who left the village for far away places lures descendants from all over the world to discover what magic the village held for their forefathers. That they are compelled to do so can offer no greater compliment to the golden age of Nailsea industry.

Notes and References.

1) In the 1861 Kelly's Directory John Davis Waymouth is described as a Photographer, Artist, Teacher, Bookseller, Land Surveyor.

2) 'Arithmetical Exercises' for the use of Schools and Private Students consisting of 430 Practical Questions in Three Parts, Whole Numbers; Vulgar and Decimal Fractions; Evolution; Duodecimals and Mensuration. Printed by H.C. Evans, Clare Street, Bristol. 1844
.
3) Answers

(1) 207 cwt.3 quarters.

(2) 150

(3) 100,926

(4) £23:11s:9½d

(5) 327½ feet

(6) 208

(7) 2,678,000 tables.
£803,798: 8s: 8¾d Duty.
822 Acres,2 roods,21 perches,6 sq.yds.

4) Childrens Employment Commission (1862). Fourth Report of the Commissioners, Printed 1868 by Eyre and Spotteswood.

5) Letter from John M. Ewres to H. St.George Gray, Curator, Taunton Museum, dated 10th July 1911. Letter from Francis Mountain to Curator, Bristol City Museum (approx. same date).

6) "The Nailsea Glassworks Historical Background". Clevedon Mercury 17th June 1911. Mr Willimn Stonier was stated to be living at Walton, Clevedon, at the time.

7) Clevedon Mercury lrst March 1873 - "We understand that the Nailsea Glassworks are about to be closed. All the hands employed there have received a fortnights notice."

8) White Oak Colliery was one of the last to close in 1884/5.