

THE OLD MARKET SUGAR REFINERY

1684 - 1908

by Robin Stiles

The once rich and flourishing sugar refining industry of Bristol has disappeared, virtually without trace. It could therefore be claimed that as so few physical relics remain, it is now impossible to write an industrial archaeological account in its strictest sense. My own view is that local historical background of an industry is of such prime importance in tracing and assessing relics that it is as well not to be too rigid on the borderline of pure 'history', particularly in such cases as this where we have a 'lost' industry so meagerly documented that it does not command a true and proper place in published local history books.

Whilst sugar was a commodity known and traded in the ancient world, the general art of cultivating sugar cane on a large scale and refining its juices to a reasonably pure crystal form was primarily developed by the Arab world in their great period of Islamic expansion. Some information did gradually filter out to Europe during the Medieval period principally through the trade routes via Venice and through Arab possessions in Spain. This in turn provided the Spanish and Portuguese in their fifteenth century expansion to the Atlantic Islands, and later the Americas, with an ideal colonial plantation enterprise.. So grew the great colonial trade of Lisbon which dominated the European sugar trade for many years.

The first British refinery was established in London in 1544, followed in 1612 by one in Bristol when the great merchant magnate Robert Aldworth set up a small plant within his mansion fronting the River Avon. The few British refineries of this early period, depending as they did on Spanish and Portuguese supplies, could not hope to compete economically with the flourishing plants of the Spanish Netherlands and their virtual monopoly of the European market. British colonial expansion was however under way and, following the trade disruptions of the Civil War, expansion into the West Indies was crowned by the capture of the island of Jamaica from the Spanish in 1655. Sugar cane plantations soon proliferated throughout this island, in Barbados, and the lesser British islands such as St. Kitts and Nevis. Bristol profited from not only the resultant sugar, but also the return cargoes of plantation equipment and supplies - including slaves. With the breaking of the Spanish/Dutch monopoly, expansion of refineries throughout Europe was swift and fully reflected in Bristol as in the years 1660-95 the number of refineries grew from two to at least ten, including one set up by the Rodgers family in Old Market Street in 1684.



THE CANE HARVEST.

Refineries of this period were very simple affairs with little more equipment than was possessed by the larger sugar plantations. Unless the juice of the sugar cane is boiled to crystallisation within twenty minutes of being crushed, fermentation starts turning the juice into uncrystallisable molasses, so that even the smallest plantation had a simple copper in which to evaporate the syrup. This would then be run through a straining cloth into barrels, the crystallising mass allowed to drain, and then sealed for transhipment in the crude state known as "muscovado".

In the larger or more enterprising plantations degrees of clarification of the grey/green crude syrup took place, firstly by boiling off scum helped by the addition of coagulants, such as milk or bullocks blood, followed by careful straining and finally a curious process known as "claying". In this the crystallising sugar was run into conical moulds to solidify and drain. The resultant characteristic "sugar loaf" would be stained with thick sticky brown molasses clinging to the sugar crystals. A slurry of wet clay would then be poured on top of the moulds so that the mass of sugar took up moisture by capillary action allowing, over a period of some six days, the molasses to be diluted and drain away without dissolving too much of the sugar. For domestic purposes the whitest "clayed" or "Lisbon" sugar without taint of molasses would of course command the highest prices and it was on this fact that the European refiners could turn a profit, clarifying "muscovado"

and reprocessing low grade sugars and others that had deteriorated on the long sea voyage. Import duty on "clayed" sugars was far higher than on "muscovado" sugars so that many British West Indian plantations, particularly Jamaica (Bristol's major supply source) concentrated on the production of raw sugars only. A basic European refinery of this period would, therefore, consist of a series of heated vats or coppers, the first or "blow up" pan in which to dissolve the sugar and carry out scumming processes, followed by pans of diminishing size for evaporation to which, each in turn, the progressively concentrated syrup would be ladled. The last pan or "teache" was used for the final evaporation to the point of crystallisation which was judged by "touch" - taking a small portion of syrup between thumb and forefinger and drawing them apart to make a thread. A large storage area was necessary in which racks of filled sugar moulds could be allowed to drain and the claying process carried out, often two or three times, together with a heated warehouse in which the sugar loaves, after being removed from the moulds, could be fully dried out, or "stoved", over a period of three weeks. This form of refinery was to remain unchanged for the next century apart from gradual minor improvements to the processes such as the addition of slaked lime "temper" in order to neutralize the natural acidity of the syrup and assist the settling out of suspended solids.

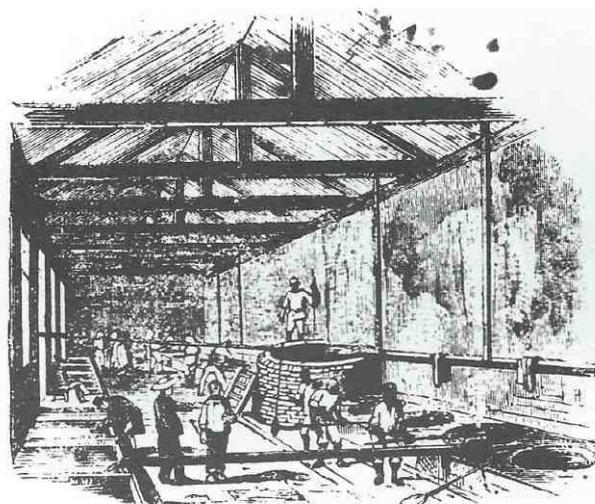
At the Old Market refinery increasing demand and competition from rival concerns demanded expansion and heavier capitalisation so in 1704 a private company was formed to run the business, William Wilcocks & Co., with capital supplied by the Freke family. In 1715 the managership of the company was taken over by Samuel Hunt (junior), the son of a local rum distiller, and a few years later he acquired the business in partnership with his brother-in-law, George Edward Garlick (a local turpentine, varnish and resin manufacturer), together with several merchant friends and the owner of the Old Market premises, William Bryan. In 1726 William Bryan died and the property was inherited by his aptly named relative, Jonah Bryan " of the City of Britoll, Mariner". New arrangements were necessary so the refinery partners took a lease from Jonah Bryan for a term of 40 years at an annual rent of £33.10.0. and a premium of £126. This lease (the original of which I possess having purchased it for the princely sum of 2/6s in a sale of miscellaneous documents held by Messrs. George's Bookshop back in the 1950's) gives us some details of the premises existing at that time which comprised a "Sugar house with Dwelling house and Appartments" occupied by Sam. Hunt (junior) and two adjoining houses, one let to "John Roberts sugar boyler" and the other to a William West. Another house, backing on to these premises, was included in the lease with its access on to Jacob Street (then known as Back Lane).

The partnership prospered and in 1728 financed William Barnes, Edward Cooper and Morgan Smith, together with

Samuel Brice, (George Edward Garlick's son-in-law), to acquire the Halliers Lane refinery of the bankrupt Benjamin Lane & Co. (now the site of the Labour Exchange in Nelson Street). Also in 1728, the partners acquired a greater interest in the Old Market site by taking a long term 1000 year lease at an annual ground rent of £40. The Freehold of the site was acquired by Thomas Fane of Bristol (gent.) Clerk to the Merchant Venturers who later became Earl of Westmorland upon the death of the 7th Earl, his second cousin. There was a close connection between Thomas Fane, Samuel Hunt (junior) and George Edward Garlick (who dropped the name "George" after his father Edward Garlick had died) Thomas Fane's signature witnesses the 1726 lease, he also bought the Halliers Lane Refinery on a similar "Lease back" arrangement with the partners in 1729, and in 1735 the trio were prime movers in an abortive scheme to extend the River Avon Navigation beyond Bath to Chippenham.

Some time about 1760 Samuel Brice left the Halliers Lane refinery to acquire the Old Market premises and run it in partnership with his son Edward, a family business that was to last for three-quarters of a century. When Samuel Brice died some ten years later, Edward was joined by his relative Nathaniel until Edward's sons, Samuel, Edward and Durban, could take on the business and relieve their father to concentrate on an interest in local government - he became Mayor of Bristol in 1782.

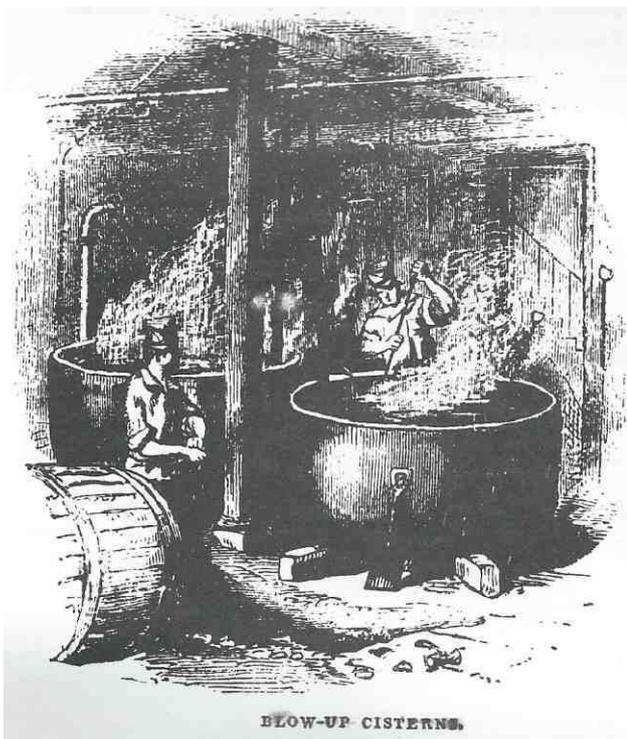
With the West Indian trade in full operation bringing great riches to the City of Bristol, sugar refiners entered into the higher echelons of local society. Young Samuel Brice consolidated the family fortune by marrying into the leading sugar refining family of the period when in 1792 he married Susannah Daubeny whose father owned a refinery in Bridewell Lane and who also had been an M.P. of Bristol between 1781 -84.



THE BOILING-HOUSE.

At the turn of the century conditions began to change rapidly with the effects of industrialisation becoming apparent. Steam power was beginning to be applied to sugar processing and the restless enquiry of the period brought forth a flood of new ideas and patents, such as the use of wood charcoal for decolourising the syrup, followed shortly after by the more efficient animal charcoal. Other portents for the future were Edward Howard's patents of 1812 and 1813 for the use of vacuum pans for rapid evaporation at low temperature, and on the Continent, blockaded during the Napoleonic Wars, experiments were deliberately started to obtain sugar from beet. Samuel Brice, in partnership with his brothers, set to and cleared the old refinery that had remained basically unchanged from the earliest years. Incorporating the adjoining house sites which they owned, a much bigger, more up-to-date refinery was built with improved living accommodation for Samuel's growing family.

Lean times were however ahead. The ending of the Napoleonic Wars left the whole of British industry in a state of depression. As to sugar, not only were French and Spanish plantations again producing cheap sugar, but the continental sugar beet industry was growing fast. Anti-slavery legislation began to have a real effect in reducing the profitability of British West Indies plantations in comparison with the neighbouring islands governed by nations more tardy in anti-slavery laws. The economic situation had a dramatic effect on the number of refineries in Bristol as the various concerns in turn either amalgamated for more efficient production or went out of business. At first the effect was slow but soon gained momentum so that in the twenty years following 1818 the number of refineries in the city dropped from 14 to 6.



BLOW-UP CISTERNS.

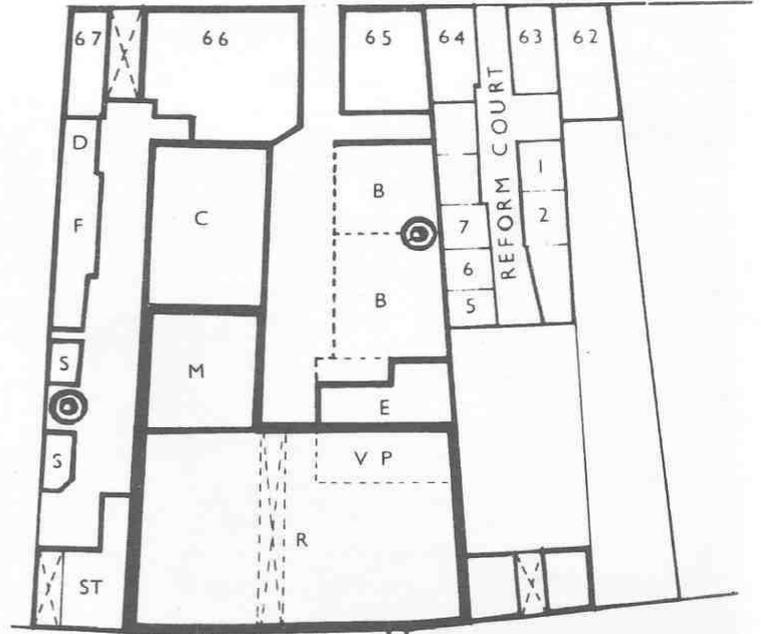
The Old Market refinery survived by amalgamating in 1823 with the firm of Stock and Fry who had a refinery in Lewins Mead. Processing plant and capital were transferred to the Old Market premises and a sales office set up in the heart of the city in St. Stephen's Street. Personal tragedy had also struck Samuel Brice as all his three sons died young and with his own death in 1841, the family connection was finally severed. The remaining partners, William Stock and Thomas Hier, continued with the business but closed the St. Stephen's Street "counting house" as a further economy measure.

By the nature of their trade all early refineries were very prone to fire hazards and on the 11th May, 1854, a fire broke out at the Old Market Street premises completely gutting the refinery. Even though times were hard William Stock did not give up, heavily mortgaging the leasehold site and taking Henry Mirehouse into partnership, he followed the example of his nearby rival, Conrad Finzel, who following a similar fire in 1846 had rebuilt the Counterslip Refinery and was currently expanding the plant by installing the very latest equipment. Finzel's new machinery with improved vacuum pans to his own design and the innovation of centrifuges to "spin dry" the molasses off the crystallised sugar to form pure white loose crystal sugar in a matter of minutes, was soon to make the Counterslip works the leading refinery in the country. New machinery of this sort naturally was very expensive and William Stock rapidly exhausted his slender capital and in 1863 he personally went bankrupt. The refinery, being in joint ownership with Henry Mirehouse, was sold to a specially formed public company "Bristol Sugar Refining Co. Ltd." The company was incorporated under the terms of the recently enacted Companies Act of 1862 and had an authorized capital of £100,000 in £10 shares. The promoters were Henry Mirehouse, John William Miles, Francis Adams, Odiarne Coates Lane, Thomas Terrett Taylor and Thomas Wright Rankin as Managing Director. Henry Mirehouse was the main shareholder, putting £6,000 of his own capital into the business. The company appointed Frank Moline as Works Manager and immediately began a policy of site expansion by buying a small house to the rear of the premises with frontage on to Unity Street and in the following year cancelled their liability for paying the site ground rent by acquiring the remnant freehold interest. The following year a patent licence came up for renewal in respect of the animal charcoal reburning device and the annual fee to George Torr of Bucks Row, Whitechapel, the patent holder, shot up from £80 to £360 a year. Finzels were by now at the peak of their production and, with the almost complete collapse of the West Indian sugar supplies in the face of free trade policies, buying their raw sugar from all over the world. Investment funds did not flow into the Old Market Company but undeterred the Directors seized the opportunity of buying the adjoining shop and house, No. 67 Old Market Street, when it became available in 1867. Further major site acquisitions took place

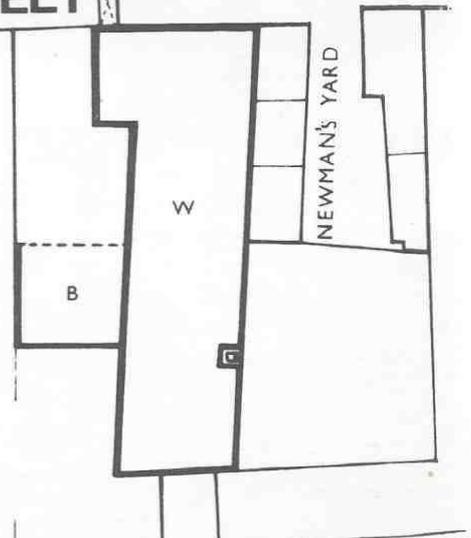
key to plan

- R refinery (6 floors)
- M melting house
- VP vacuum pans
- E engine house
- B boilers
- W warehouse
- S smithy
- F fitting shops
- D domestic offices
- C charcoal house

OLD MARKET STREET



JACOB STREET



UNITY STREET



OLD MARKET SUGAR REFINERY 1885

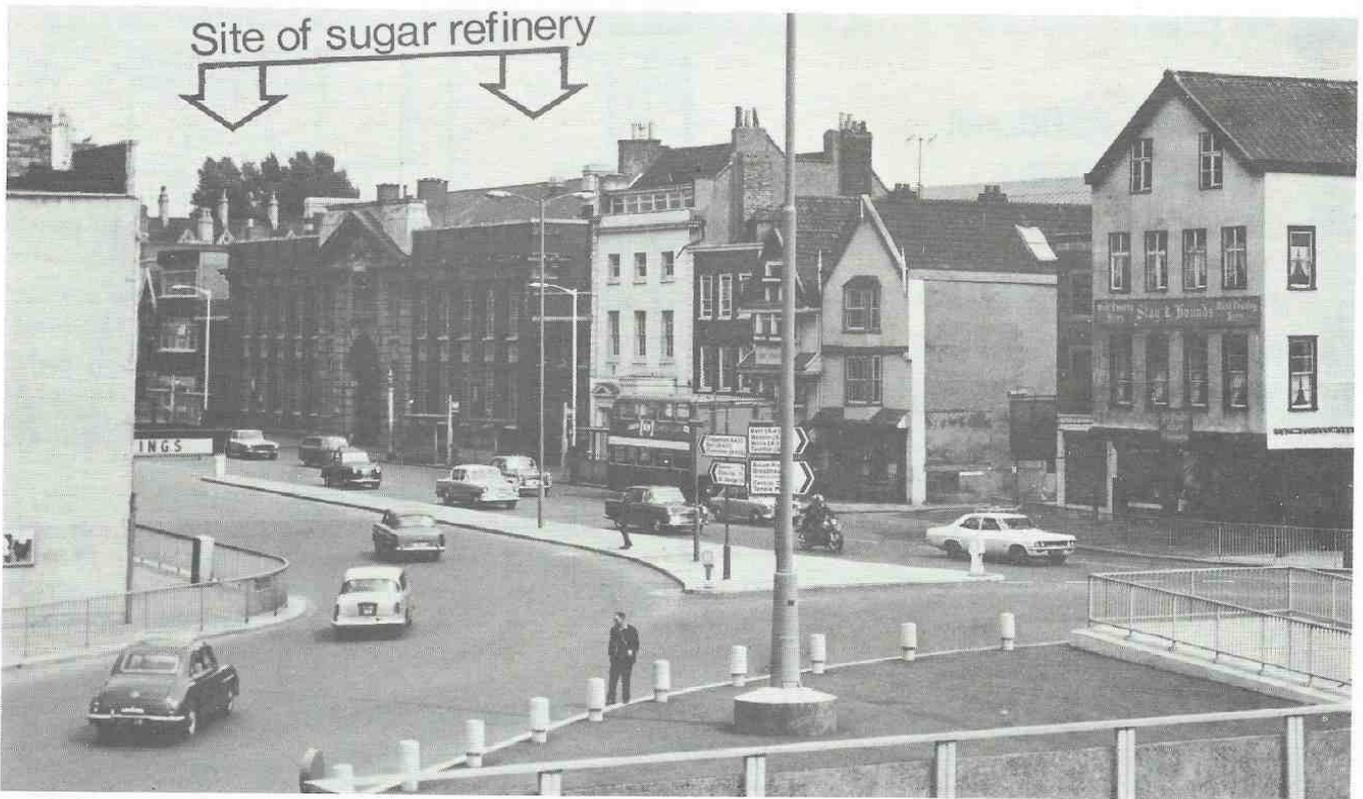


COMPANY SEAL 1863



BRISTOL SUGAR REFINERY COMPANY LIMITED SHARE CERTIFICATE 1866





OLD MARKET STREET 1969



JACOB STREET 1969 looking West

in 1874 when they acquired the pair of adjoining shops on the other side of the refinery (Nos. 63/64 Old Market Street) together with an associated block of small cottages known as "Reform Court", and the rear land stretching from thence up to, and including, two houses fronting on to Jacob Street. Three years later another Old Market Street property was bought when they acquired the former vicarage of the parish (62 Old Market Street). This last purchase was quite remarkable as it followed the third year of trading losses! Competition had become so fierce that Finzel's mighty Counterslip factory had been forced into liquidation that very year. With the opening of Avonmouth Dock opportunities for local trade improved somewhat and, within two years, Counterslip reopened on a reduced scale. Trade conditions however were still poor for the sugar trade in general and Bristol in particular. Its great rival, Liverpool, with superior dock facilities could unload raw sugar at half the cost, and Henry Tate & Company's new refinery set up in Love Lane in 1870 together with similar concerns in London and Greenock were steadily capturing all of Bristol's refineries' traditional markets. By the spring of 1881, the Counterslip refinery had again exhausted its capital and was forced to close, leaving just The Bristol Sugar Refining Company and a similar concern, Wills, Young & Company at the nearby Castle Sugar Refinery, still in operation.

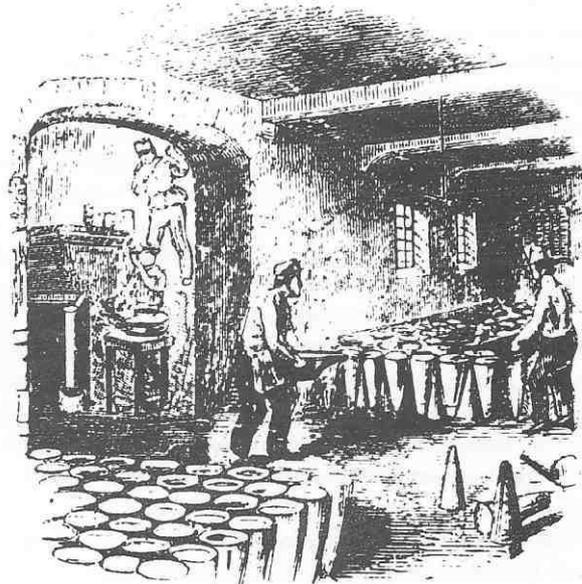
The Old Market concern, rather belatedly, became anxious about its own financial stability - only £40,000 of its authorized capital of £100,000 had been subscribed - so in 1885 the Directors ordered a valuation of the refinery property. This valuation is a most interesting document, as it fully sets out the layout of the buildings at that time and does give some indication of the plant in use.

The refinery itself is described as follows:-

- A. *"All those Two Messuages now used as Counting Houses and Sale Rooms situate and being Nos. 66 and 67 Old Market in the Parish of St. Philip & Jacob containing Ground and Three Floors over with Cellar under the same together with Ground, First and Second Floor Warehouses fronting Old Market Street and the premises in the rear thereof extending back to Jacob Street containing Boiler Shed, Engine House, Sugar House (one portion containing Ground Floor and six lofts with a gangway on principals erected circa 1855 and another portion Ground Floor and seven lofts over) Charcoal House (Ground Floor and four lofts over) Workshops, Smithy, Hauling Ways and Two Chimney Stacks.*
- B. *"All those premises situate on the southern side of Jacob Street (and immediately opposite to A) Containing Ground First and Second floor Warehouses (recently erected) Ground First Second and attic warehouse, Boiler Shed, Chim-*

ney Stack, yard and hauling way to Unity Street.

- C. *"The whole of the fixed plant and machinery in A and B (The secondhand machinery and stoves lying about the premises, the loose contents of the smiths shop, tinmens rooms and fullers shops are not included"*



FILLING THE MOULDS.

I believe it is reasonable to presume that the second-hand machinery mentioned above originated in the Counterslip refinery which was auctioned off some years after its closure. The remainder of the buildings belonging to the refinery, including shops cottages and stables, are described together with details of their tenants, rents and outgoings which in all produced the useful net income of £168 per annum. In addition there is mention of a riverside wharf in Queen Street (Castle precincts) rented from Bristol Corporation since the 25th March 1851 on a 75 year lease at a rental of £8.13.6. a year. This wharf was of course necessary for the landing of the enormous quantities of steam coal consumed in the refinery which lacked any river frontage of its own or any rail connection.

This valuation does not unfortunately give any details of the process machinery apart from its apportion value of £27,800 (out of a total valuation of £39,500) and this figure was a year later reduced to £6,130 on the basis of forced sale at auction (scrap value). However, in a later valuation in 1902 the machinery is listed as follows:

"Four Copper Vacuum pans with condensers, vacuum pumps, etc. blow-up cisterns, charcoal reburning plant, bag filters, syrup and liquor tanks and pumps, a range of five turbine driven hydro extractors with Worthington pump, steam hoists

Engines, 10 Lancashire Boilers, Economisers, etc. the whole being equal to an output of about 400 tons per week. "

From this slender information it is possible by comparison with printed accounts of both Counterslip and Castle refineries at about this time to build up the following picture of the Old Market refinery at the turn of the century.

Raw sugar would arrive in carts at the haulingway entrance in Jacob Street - from here the casks and bags would be winched by steam hoist directly to the top of the towering seven storey main block of the refinery. Here, on the "receiving floor", the packages would be opened for inspection and emptied into vast storage hoppers on the floor below. Charges of sugar would then be weighed out as required from the base of the hoppers and conveyed into the "Melt House" extension to the main building and there emptied into steam heated water tanks to be dissolved. When the full amount of crude sugar was fully dissolved, cocks would be opened in the base of the tanks, allowing the hot liquid to flow down to cylinders housed on the floor below containing cloth "bag" filters, the filtrate gradually accumulating in reception reservoirs on the next floor below again. Provision would be made for the periodic removal of the bag filters for steam cleaning. After "tempering" settling and blending the syrup would then be pumped to an upper storey of the main block into the top of a group of strong metal tubes about five feet in diameter and stretching through four storeys of the refinery. These tubes would be packed with animal charcoal, through which the syrup slowly percolated to storage tanks at their base. From here the clarified syrup would be pumped to one of the four fully enclosed steam heated pans for evaporation under carefully controlled vacuum conditions. When the syrup reached the correct consistency it would be run into open cooling vats to crystallise. The resultant sticky mass would then be transferred to the centrifuges and spin dried at about 800 revolutions per minute.

From the centrifuges the dry sugar would be carted over the small bridge spanning Jacob Street into the warehouse for storage and eventually packaging and dispatch. Returning to the main group of buildings, in an extension to the main block would be housed the heated rotary kilns, necessary to reburn the animal charcoal to reactivate its decolourising properties, together with the main coal stove for the Lancashire steam boilers located on the opposite side of the yard. This sticky black area must have been carefully isolated from the other parts of the refinery and all coal carts limited to the entrance between Nos. 65 and 66 Old Market Street.

In spite of the poor trading conditions and the eventual closure of their one remaining local rival, The Bristol Sugar Refining Company pressed on with their policy of site expansion acquiring a group of six cottages, Newmans Yard, in Jacob Street in 1888 and two pieces of void land fronting Unity Street in 1891. By 1902 however the company was in serious financial difficulties and a further valuation was called for. The result, giving a figure of £25,000 for the land and buildings and £26,065 for the plant, exceeded the existing capital debt so they tried to mortgage the business for £10,000 paying 4% interest and redeeming the amount by annual payments of £1,000 after five years. They also tried to get more capital by reconstructing the company's finances and issuing £1 shares. All to no avail: too much money had been lost on the Counterslip works and investors were just not interested. Increasing periods of inactivity settled on the Old Market refinery until in 1908 the doors closed for the last time and the following year the buildings were sold off to recompense the remaining shareholders.

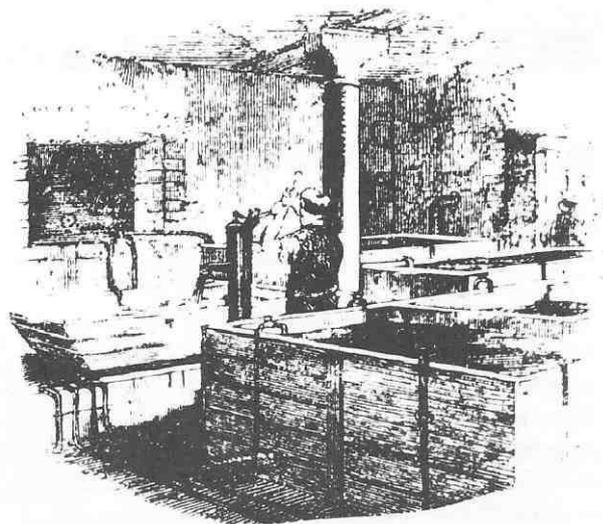
The major portion of the premises fronting Old Market Street were demolished for redevelopment as the Territorial Army drill hall and H.Q. The Jacob Street portion was used as general warehousing up to the Second World War when the building was gutted by fire. Until recently it was still possible to see the basic shell of this latter building, but the front and rear elevations have now been demolished as a prelude to the general redevelopment of the area. At the moment it is used as a car park so one can clearly see the two side walls, built of local pennant stone, with some blocked window openings. Soon it will be gone forever.

There remains the question why the Bristol refineries, after such a successful start, failed to maintain their position and were unable to continue to the present day. The reason commonly given at the time - subsidized foreign competition - is only part of the story. In the 1870's and 80's consumption of sugar in this country increased at a fantastic rate. For those who could mass produce sugar at the right price unlimited trade was available. I believe the main signifi-



BAG FILTERS.

cant fact was the Bristol refiners' lack of foresight by keeping to their traditional city sites with very poor transport connections. Even those which had river frontage were located on portions only navigable by barge, involving costly transshipment, and similarly no attempt was ever made to build a plant with direct rail connection. Symptomatic of this outlook is the curious absence of mass advertising even on a local scale. If Finzels Refinery after its first closure had been rebuilt at Avonmouth, we might have had a very different story to tell.



CHARCOAL FILTERS.

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