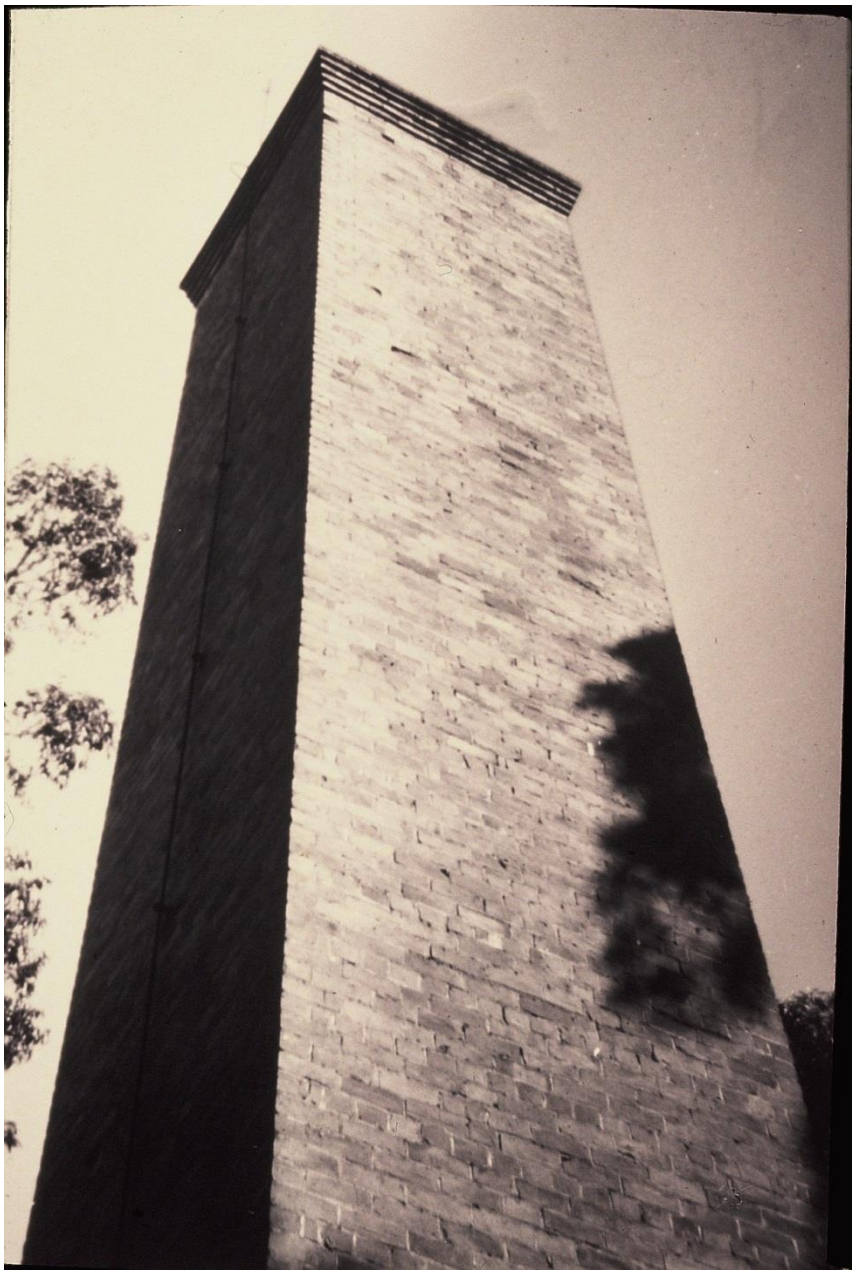
Heritage Report on the Arsenic Smelter

Near Blackalls Park

Lake Macquarie NSW



By Dulcie Hartley

A variety of developments have occurred in the Lake Macquarie district since first settled by Europeans, the most usual being farming, fishing and coal mining. But perhaps one of the most extraordinary was the Arsenic Smelter which operated in bush land west of Blackalls from 1923 until c1926.

The plant was situated on land owned by Frederic Robert Croft who had acquired many portions of mostly coal bearing land in the Fassifern district early in the 20th century. Vendors included Henry Copeland, WA Kingscote (this latter man owned so much land that the suburb was at one time to be named Kingscote), London man Otto Trummer, Michael Steel and the Donaldson family. FR Croft and Fassifern Coal Company owned Olstan Colliery, Northumberland Collieries Nos. 1 and 2 and later Newstan Colliery.

The original owner of Portions 18, 33 and 22 (See Portion Map) was Michael Steel who purchased considerable holdings in the district. In 1875 Steel, then of Lambton, purchased Portion 33 of 120 acres for £120, Portion 18 of 320 acres for £320 and Portion 22 of 40 acres for g40. This land was in the Parish of Awaba, County of Northumberland(1). Michael Steel also owned other holdings in the Blackalls district, some fronting Fennell Bay where there was a sawmill and Steel's Wharf. (2)

It is therefore likely that these extensive lands were worked by Steel's timber cutters, felling timber for saw logs and pit props to be loaded at the Wharf. Michael Steel also had a steam sawmill at Jesmond (3). However, Steel fell upon hard times and eventually the Mortgagees, exercising their Power of Sale, sold in 1917 Portions 33, 18 and 22 to Edward Hughes & Patrick James Farrell, both Contractors of Waratah who immediately sold to Frederic Robert Croft (4).

However, FR Croft had earlier operated a coal mine in the area. In 1900 the NSW Annual Report on Mining mentioned that FR Croft had appointed his brother Herbert Claude Croft as Manager of Lineside Colliery situated between Fassifern and Awaba. There was a mention of Croft's Railway Siding in 1915 which probably serviced this early mine (5).

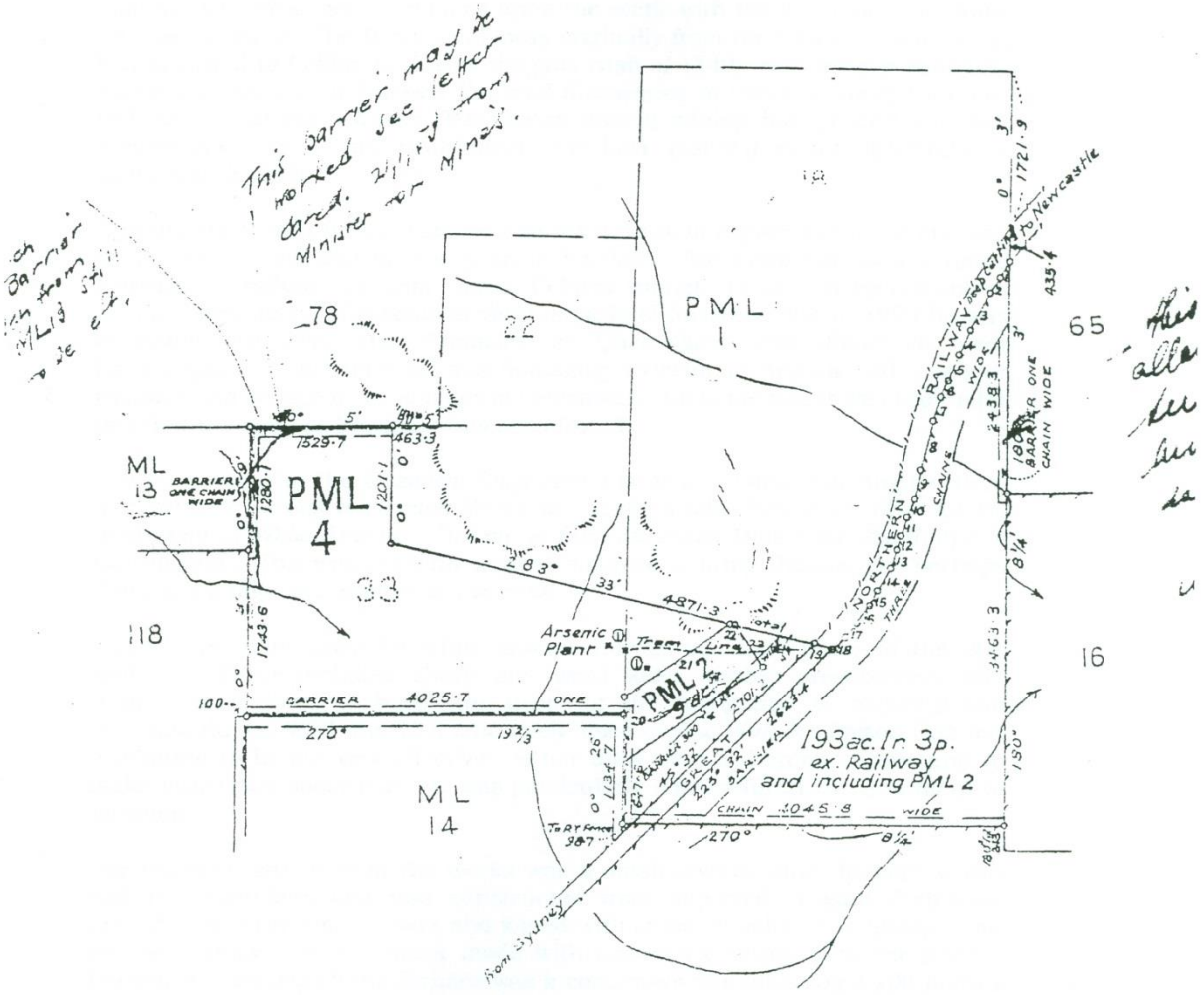
PLAN.

2

COPY

Parish of Awaba

County of Northumberland



① Sheds

Note: Surface & to
within por. PM

In 1919 Frederic Croft opened up a new Colliery called Olstan, a combination of the names of his two sons, Oliver and Stanley. This was a small mine, only employing a few men and with never a large output. Croft leased nearby land for a quarry to the Shire of Kuringai in 1921 and the gravel was used to form streets in that district. This lease was surrendered in 1929, after which Donald Robertson, a Newcastle Contractor, took over the lease of the quarry and worked it for some years6. In 1925 there was a change of ownership of Olstan Colliery from FR Croft to Croft Bros, his two sons Oliver and Stanley. Stanley was later accidentally killed at the mine.

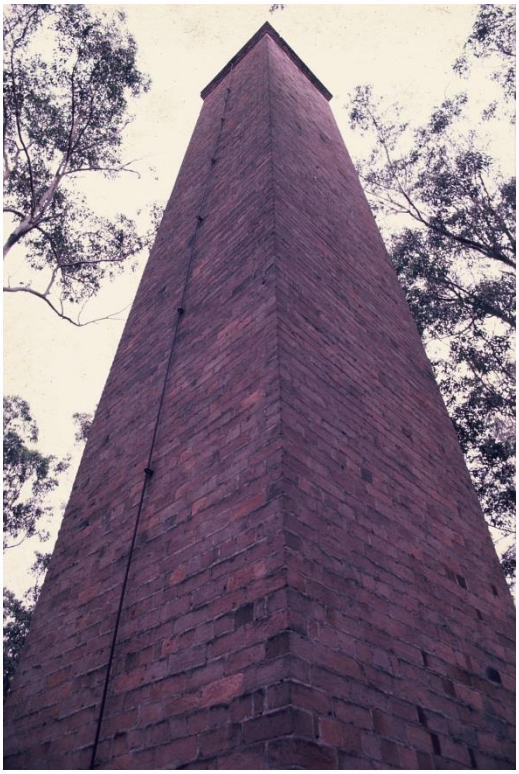
Thus there was a coal mine, Olstan, and a quarry on the site when Walter Aldolphus Le Messuier Pezet came upon the scene with the intention of building his arsenic plant. The Pezet family was originally from the Channel Islands but had migrated to California during the gold rush of 1849. Not being particularly successful, they then followed the gold discoveries to Victoria where they met with more success. Walter Pezet came from a mining background and had mining interests7. This involvement may have resulted in his acquaintance with Frederic Croft.

It seems likely that the nearby brick works were built especially for the erection of the stacks and kiln for the Arsenic Smelter. The brick kiln was situated towards the railway line near Olstan Colliery tunnel. Pezet had been involved with the production of arsenic in various parts of Australia and in 1922 he was obtaining ore from The Pinnacles in Queensland and Jibbenbar near Stanthorpe. At this time he was Managing Director of Arsenic Ltd. Labour troubles had rendered the smelter in Queensland unviable and it was soon after this that the plant at Blackalls was established.

It was reported in the Chemical Engineering & Mining Review in August 1923 that 'Arsenic Limited is erecting Works at Fassifern near Newcastle NSW for the production of White Arsenic. The ore is from Sundown Mine near Stanthorpe in Queensland'. This was certainly a great distance to bring the ore, but perhaps Pezet had a financial interest in the mine.

There were many uses for white arsenic during the early years of the 20th century. These included sheep dip, weed killer, timber preservation, and tanning of leather. Arsenic was used for the fumigation of blankets and uniforms during WWI and was tentatively used during WWI for Poison Gas but was found to be not very effective. Other uses were to harden copper and to make projectiles shoot true. It was particularly successful in the treatment of termites.

The principal structure at the works was a small reverberatory furnace which had two chambers and was constructed from imported Belgian firebricks, braced with vertical metal bars and joined with cross tie bolts. The furnace had its own square chimney stack made with sandstock bricks from the nearby brickyard. Leading off the furnace was a condenser-flue built some 100 metres up the hillside along the surface of the ground.



Chimney Stack 1976

Remains of Kiln - 1953

This structure was made of sandstock bricks and unreinforced concrete. The aggregate used in the concrete condenser line consisted of coke, wood or any rubbish to hand and the lack of strength in the structure seems to have been responsible for its later collapse. The condenser was constructed with a series of internal baffles. In turn this led to a larger square chimney stack some 20 metres in height and made from local bricks. A small electric centrifugal fan was set in the base to assist the draft. Electricity came via a power line from the steam-powered direct current generator at Olstan Colliery(8).

The ores were probably crushed and shovelled into the furnace through side doors and the coke was shovelled through fire holes at the end. The arsenic fumes that were driven off were drawn into the condenser flue where they cooled so that the arsenic oxide was deposited on concrete baffles. This product was from time to time shovelled out of the flue through small square side openings. The residue in the furnace was raked out and barrowed to a waste dump south of the furnace(9). It was reported that coke for the furnace came from the Illawarra region which, once again seemed unusual, bearing in mind that it would have been available locally. Perhaps Pezet had an interest in the coke manufacturing plant. There were extensive drainage canals beside the flue line taking surface runoff down into a dam. (See diagram)

A light narrow gauge tramway was constructed to bring the ore and coke to the plant. This was about 1 km in length, winding up the slope and through the trees from the Olstan Colliery. Therefore, supplies were transported from the Olstan Railway Siding onto the light tramway and horse drawn up the slope on small flat top trolleys. When in production, the arsenic was packed in drums and loaded on the trolleys and taken to the siding using gravity and hand power and transported onto standard rail trucks.

During this era access for workers to this small industrial area was from a bush track in Blackalls Park which led to railway gates and a level crossing of the main rail line. Walter Pezet stayed at the new Great Northern Hotel near the railway station at Teralba during the construction of the smelter. Pezet's son Leon worked at the smelter, and was left in charge when the plant was in production, with Pezet senior making regular visits(10). It may well be that Leon Pezet had accommodation on site.

In the meantime Walter Pezet had formed the Camellia Chemical Company and in 1925 he purchased factory premises in Sydney at the suburb of Camellia, being Lot 18 on the corner of River Street West and Alston Street(11). This was quite close to the Parramatta River and a railway spur line ran down to the river. The factory produced Camellia Weed Killer, a fast selling product at the time, used for the eradication of prickly pear, a noxious plant that for many years over ran vast areas of agricultural land. (The cactoblastis grub was eventually to see the control of this pest). NSW Government Railways used extensive quantities of Camellia Week Killer beside the railway tracks for weed control, and it was most effective in controlling blackberry infestation.

However, trouble was brewing at the Blackalls smelter. Fumes from the stacks were destroying the native vegetation, as well as wafting over the small settlements of Blackalls and Fassifern, causing the residents considerable distress. A Public Meeting was held at Blackalls to protest about the poisonous fumes and this eventually led to the abandonment of the venture by Pezet. Thus the plant at Blackalls had a very short lifespan for according to anecdotal accounts, it was abandoned by 1927.

1953 - Condenser Line

1953 – Condenser and Stack

Two men recorded their memories of the smelter. It was such an unusual structure that the memory stayed with them for many years. They both visited the area from time to time over the years and, although they have since passed away, their accounts add some knowledge of the plant relating to the condition soon after its abandonment. The late Ernie Lambert of Estelville came upon the smelter in 1927 when he and his father were looking for work at Olstan Colliery. Ernie remembered the flues, furnace, and the stacks, the height of tallest one he estimated to be approximately 10 metres. (This is at variance with other reports). He noticed that the interior roof of the condenser line was domed or arched with a rise of 20cm and about every 1.8 metres there was a concrete partition. He noticed arsenic crystals on the roof and walls. He said that at the base of each partition there was a hole about half brick in size to allow any residue condensed to run out into a concrete drain which ran the entire length of the flue drain on each side. (see diagram.) Ernie also noticed a galvanised iron storage shed.

The late George Hague of Blackalls, visited the smelter the following year and noticed a brown weatherboard building with a gable roof and open skillion verandah perched on round wooden piers. (Did this belong to Olstan Colliery, the quarry, the brickworks or was it accommodation for Leon Pezet?). He mentioned the brick works near Olstan tunnel, and noticed a full kiln of what looked like newly baked bricks. The kiln just looked like a stack of bricks about 6 metres long by 3.5 metres wide by 3 metres high with ducts or air vents built to circulate the hot air from the fire that may possibly have been built into or underneath the stack.

A split branch line came into the area, one for the coal and another passed by the weatherboard building through a cutting into the old quarry. He saw the shed that Ernie Lambert had noticed, which he described as having a low iron roof and built on a bush frame. Scattered on the dirt floor were half made bricks, empty moulds and broken down old work tables. At the time the tramway was still in good condition. George found several flat top four wheel trolleys beside the line and on the high side of the line, stacks of large bricks and tiles, presumably spares for the furnace. Following the winding track he saw a well-constructed galvanised iron shed minus its doors. The floor was made of timber and looked as though it had been used as a store room. On the floor were several bags of English cement gone hard and standing outside there was a set of cast iron platform scales like those once found in produce stores. In the condenser flue about every 1.8 metres there was a door made from flat asbestos and timber. He referred to the domed or arched roof which had a rise of no more than 20cm, and every 1.8 metres between the doors was a concrete partition extending half way to the centre on alternate sides. He also realised how the flue worked, with fumes drawn up through the maze of partitions, leaving over time the deposits of crystals on the roof and wall. These remained there for many years.

1976 – Looking down from the Condenser Line. Bottom Left is rubble from the kiln, mid left shows waste heap, and remains of the dam are at the bottom.

1976 – Remains of kiln, looking up collapsed condenser line.

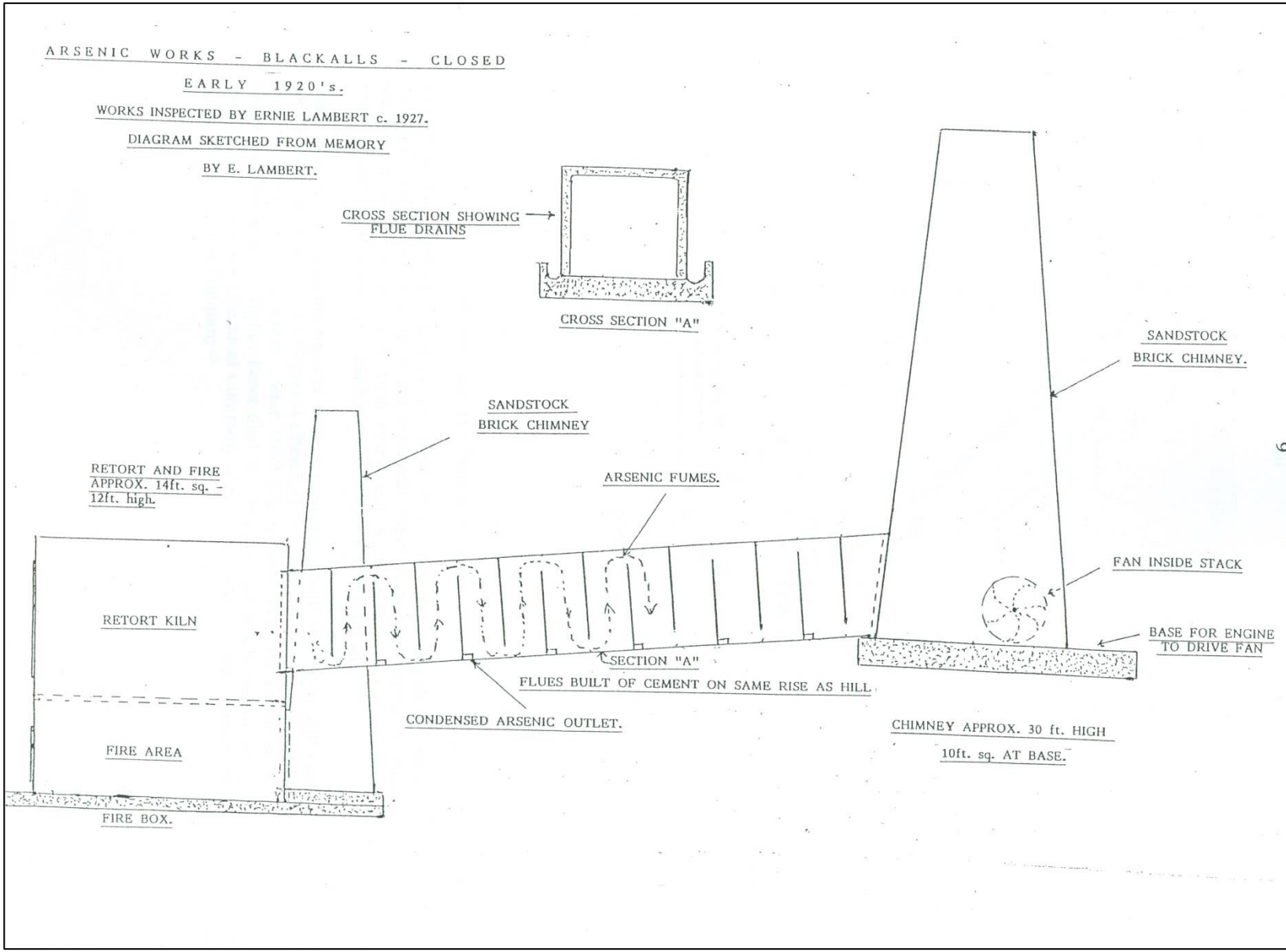
ARSENIC WORKS - BLACKALLS - CLOSED

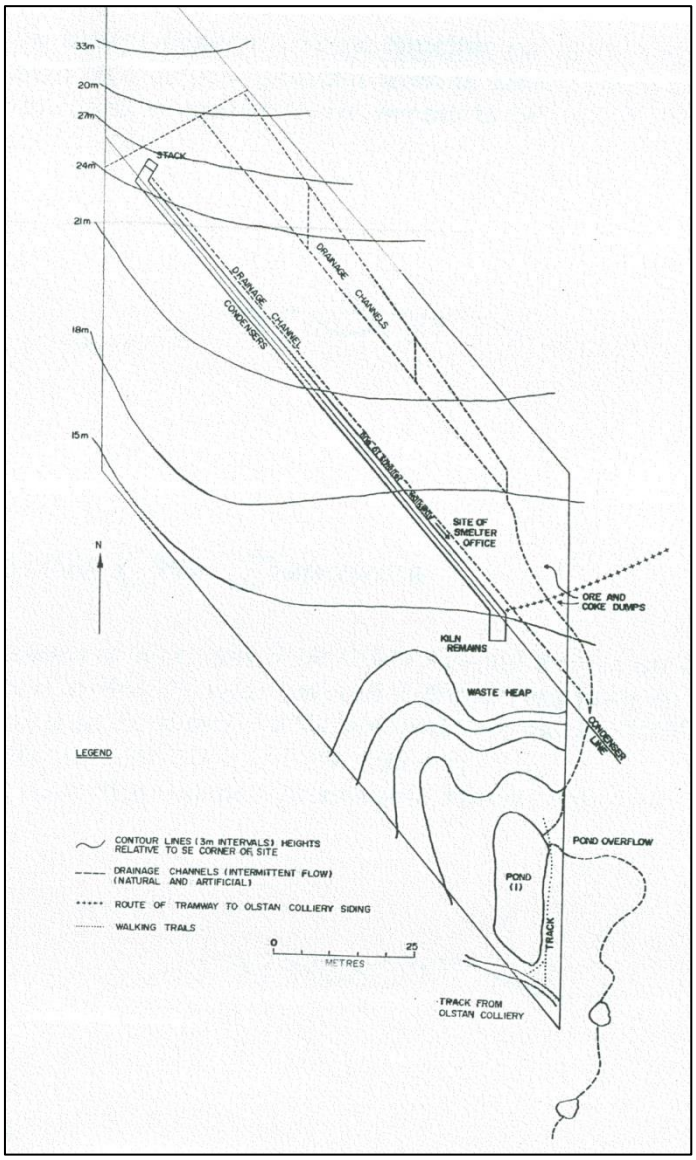
EARLY 1920's.

WORKS INSPECTED BY ERNIE LAMBERT c. 1927.

DIAGRAM SKETCHED FROM MEMORY

BY E. LAMBERT.





Contour Diagram - Thompson Thesis.

The chimneys, fine examples of the work of a competent bricklayer, were eventually vandalised and the bricks removed. There is no sign now of the two stacks. Scavengers eventually took everything of value but cement sections from the collapsed roof of the condenser are still to be found on site.

Even though the Blackalls Smelter was abandoned, apparently Pezet still had sources of arsenic ore as the Camellia Chemical Company continued to produce its Weed Killer for many years. After 1952 arsenic was imported as the price was more competitive. Walter Pezet died in 1943 and the family continued in ownership of Camellia Chemical Company until 1963, when it was transferred to James Hardie and Company.(12)

The legacy left by Walter Pezet's Arsenic Smelter on bush land property owned by Newstan Colliery is a highly polluted area of land. Natural regeneration of the site to the standard of nearby forest seems to be out of the question in the foreseeable future.

Some Arsenic Ore Deposits:

1907 3.5 miles south of Warialda NSW (NSW Annual Report on Mining 1907)

1913 Conrad Mine at Howell, near Inverell (Official Year Book of NSW)

1922-3 Otterey Mine at Emmaville NSW (Official Year Book of NSW 1922-3) Urunga (Official Year Book of NSW 1922-3) Jibbenbar near Stanthorpe (Queensland Mines Department)

End Notes:

1. Department of Lands & Property - Vol 582 Fol 104 - Vol 582 Fol 106

2. Newcastle Morning Herald & Miners Advocate 16.8.1887 - Sydney Morning Herald 20.8.1883.

3. Miners' Advocate 7.8.1875

4. Department of Lands & Property - Vol 2517 Fol 139 - Vol 582 F105

5. NSW Annual Report on Mining 15.9.1915.

6. Department of Lands & Property- Vol 2688 Fol 13.

7. Information from Ruth Whittington, daughter of Walter Pezet.

8. Information from Thompson thesis, John Shoebridge and E Lambert

9. John Shoebridge.

10. Ruth Whittington.

11. Department of Lands & Property - Vol 3443 Fol 158.

12. Department of Lands & Property - Vol 3443 Fol 158.

Acknowledgements:

The compilation of this account has depended on the knowledge and help from many people. An important source was the Thompson Thesis for Master of Arts in Geography - University of Newcastle -1977. Stuart Thompson also very kindly provided photos taken in 1953 and 1977, invaluable evidence of the smelter and its disintegration over a 24 year period. Mrs Ruth Whittington nee Pezet of Newcastle, daughter of Walter Pezet, the youngest in the family and the last surviving offspring, provided the background material of the Pezet family, which was a real bonus. Paul Williams employed by Newstan Colliery kindly drove me around the Newstan property to see the site of the smelter, which I had first seen some 20 years previously. He also provided notes and Portion Map. John Shoebridge a friend with great knowledge of Coal Mining and Railway matters was most helpful. Ed Tonks' book 'Northumberland - Newstan - 1887 - 1987 - 100 Years of Coal Mining' was useful. Information from the late Ernie Lambert of Estelville and late George Hague of Blackalls was invaluable. These were two fine men of the old school, willing to help and share their memories.