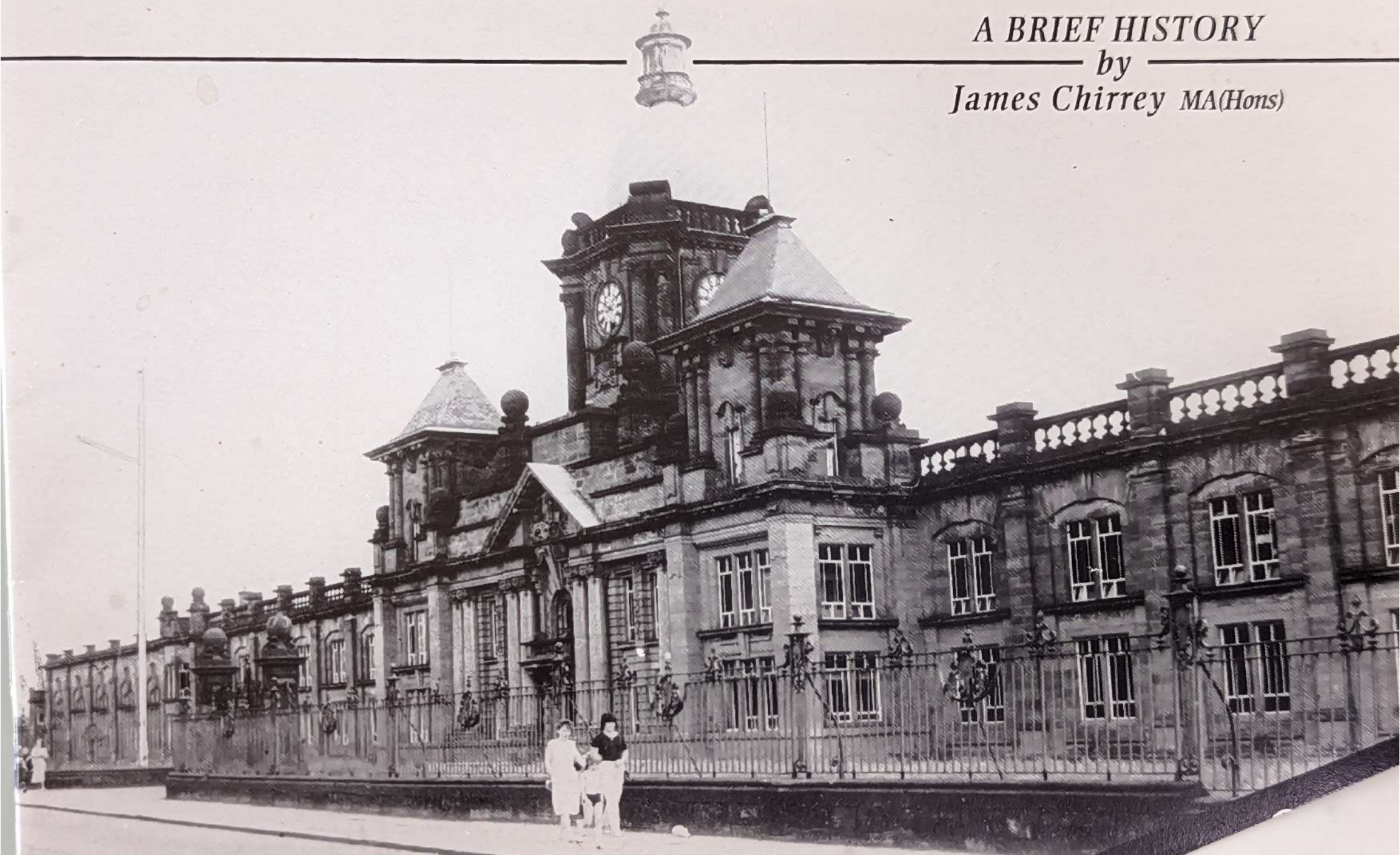


THE ROYAL NAVAL TORPEDO FACTORY, ALEXANDRIA

A BRIEF HISTORY
by
James Chirrey MA(Hons)



Front Cover: The Royal Naval Torpedo Factory, Alexandria. Much damage has been done to the roof and the imposing facade is showing distinct signs of water seepage. The naval flagpole can be discerned to the left of the picture. A light AA mfg was mounted in the central tower, below the clock, in addition to the AA mfgs in sandbagged emplacements at either end of the roof of the facade. Photo by Denis Coleman.

Sinews of War

The Vale of Leven in the 2nd World War

by

James Chirrey MA(Hons)

(Author of "The Loch Lomondside Military Road")

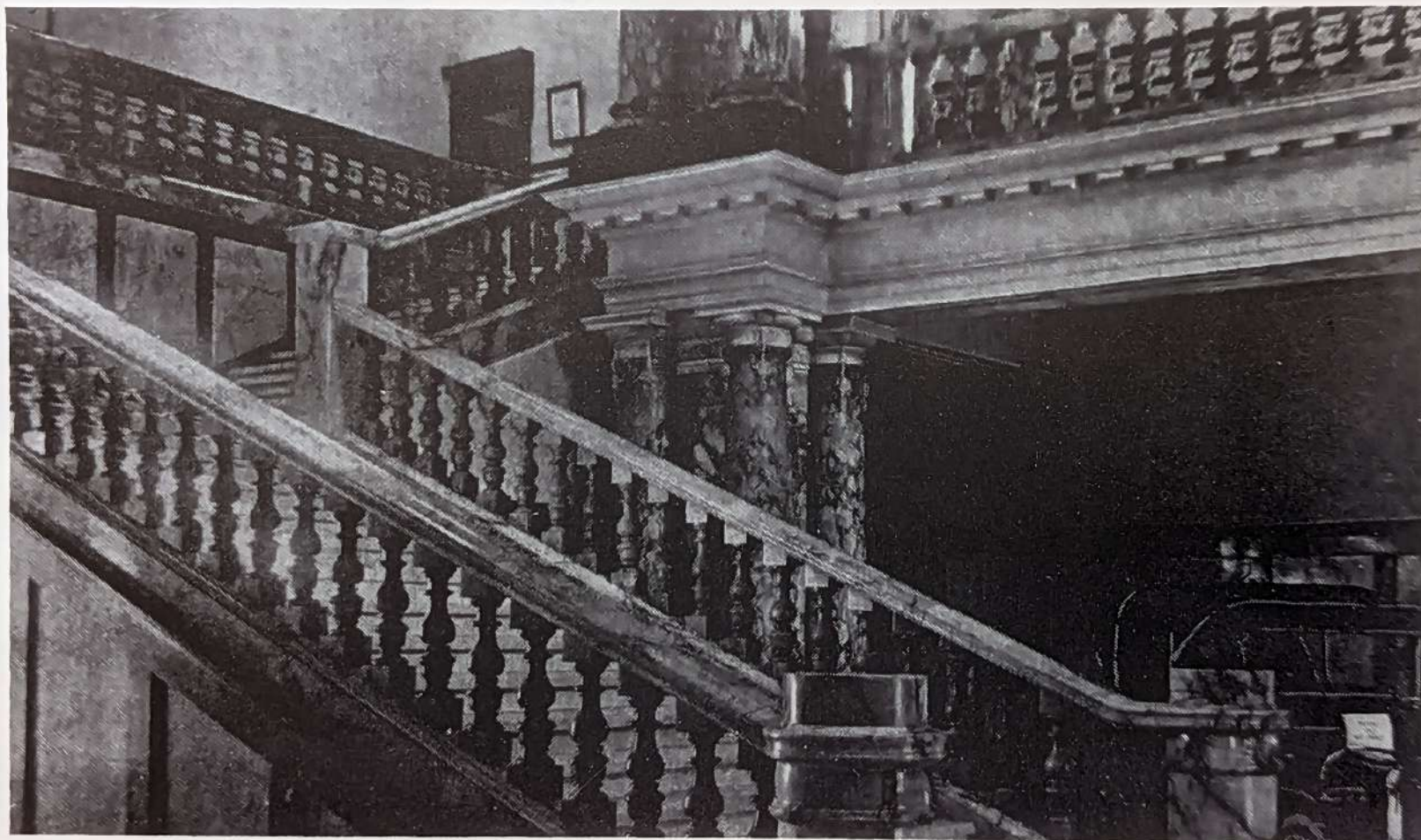
Part 1 — The Royal Naval Torpedo Factory, Alexandria

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View of the majestic marble staircase in the entrance hall, with an example of an "Argyll" car on display. Photo taken c1917, when the factory was under control of Armstrong Whitworth and engaged in making munitions. Photo courtesy of Mr David Sloss.

“In the Beginning” — ‘Genesis’



The "Argyll Motor Works" and "The Gunworks"

In late 1935 there stood at the northern end of Alexandria a large empty factory full of the memories of distant sounds, the crash of hammers dimly heard, the screech of turned metal echoing thinly through the darkness, the roar of powerful engines now still. It was this factory, with its fancy facade, its imposing dome gleaming in the autumn sun, its cool marble staircase more to the style of a stately mansion, yet with its big empty workbays full of potential, that the Admiralty's team from the Property Branch looked over and inspected that October. The factory was formally taken over in December 1935. Who built that edifice, and why?

In 1899 the "Hosier Engineering Company", Hosier Street, Glasgow, designed and built the first 'Argyll' light car under the direction of its general manager, Mr Alexander Govan. It was the

type of vehicle then known as a "voiturette" and cost the sum of £250, with a choice of 4 body-styles and 3 engines. By 1904 they had reached the Mark III version of the car and were building 15 vehicles per week in their cramped premises. The company took the decision to open a new big factory. A flat greenfield site in the northwestern end of the Vale of Leven, on the west bank of the river, was chosen. Work began on 10th April 1905 and the new "Argyll Motor Works", Alexandria, with its facade, its dome, its marble staircase, its exceptional workers' toilets and washroom facilities, was opened some fourteen months later on 26th June 1906 with a public ceremony. A splendid achievement by the builders!

The cost of the building was £250,000, a fair sum in those days, and there was a further £250,000 for production and other start-up costs. The parent Hosier Engineering Co was liquidated. The new factory had a designed capacity of 2500 vehicles per year. They had the works, they had the cars,



they had the confidence. They were the largest in Europe!

By 1907 they were building cars at the rate of 1000 per year, employing 2000 people but running into problems. One of the main problems was the sudden death of Alexander Govan, aged 41, in 1907 from suspected food poisoning but later examination revealing a cerebral haemorrhage. Another problem was an expensive courtroom battle with the Daimler Car Company to protect the Argyll patent on a type of engine valve.

In 1908 the Argyll Car Company Ltd was re-organised, its name changed to "Argylls Limited" and its finances and management team restructured. The production of motor cars continued at Alexandria.

However, by 1910 vehicle production had fallen to approximately 450 per year. A new design of car, the "torpedo-bodied car" with 4 wheel brakes and

high hopes was brought out late in 1910 and success was awaited. Unfortunately sales remained low in 1911 and through 1912. New models and variants were produced with desperate speed in a frenzied attempt to remain in business. At one time during this period there were no fewer than 32 different "Argyll" variations available to a bamboozled public. The 'Argyll' had lost its identity. No wonder no one bought their cars!

In 1912 the litigation came to an expensive conclusion. The Court ruled that the 'Argyll' patent had not been breached since the Daimler valve had a different movement to the Argyll valve. This was a great blow because the ruling meant that no 'royalties' were payable to 'Argylls Limited'.

In 1913 the Company presented 4 'Argyll' cars to the Prince of Wales and his entourage for their Tour of India. Amid high publicity one broke down! The same year an 'Argyll' car broke the



World Speed Record for its class at the famous Brooklands Race Track. But it was no use. This was the Company's final fling. On 16th June 1914 at an Emergency General Meeting, 'Argylls Limited' went into liquidation. No more would their cars be road-tested on the Carman Hill road between Renton and Cardross. Had they been able to stave off their creditors for another six weeks or so, in all probability the First World War, with its huge demand for vehicles of all types, would have saved them, and Scotland might yet have a motor car industry.

A Munitions Factory - The Gunworks

In October 1914 the factory was opened by Armstrong Whitworth as a munitions factory and soon became known locally as 'The Gunworks', although no guns were made - only shells. With a labour force soon reaching nearly 3000, including many women, the factory produced artillery shells

for both the Army and the Navy, ranging from the light 6 pdr shells for the new 'tanks', up to the massive 15-inch ton-weight shells for the enormous guns of the new "Queen Elizabeth" Class of battleships building for the Royal Navy.

In 1916 the factory was taken over by the new Ministry of Munitions (but remaining under Armstrong Whitworth management) as part of the huge wartime re-organisation of ammunition supplies bulldozed through by Lloyd George. It was during this time that the field adjacent to the factory, where the Vale of Leven Swimming Pool now stands, was used for the dangerous task of filling the shell cases with High Explosives. Small sunken buildings were scattered about the field and used for this dangerous task, separated and dug in, to limit damage in the event of an explosion. There is no record of one having occurred. After the war all these buildings were removed, but the field lay derelict for a number of years, full of pits and hollows, like the surface of the moon.



On 11th November 1918 the Armistice was agreed. Production of shells stopped almost immediately and the labour force was dismissed, except for a small staff engaged in clearing up.

In 1928 there was a false dawn for the empty factory when a company called 'Scottish Amalgamated Silks Ltd' was set up. It had two mills in England and intended producing artificial silk in the old Argyll Motor Works. Only a nucleus of office staff were actually employed. However, early in 1929, after complaints, the company's books were seized by the police and the company closed down. Some directors were arrested and later tried in the High Court in Glasgow and found guilty of fraud.

The Admiralty takes over

From 1929 until 1935 the dust settled and slowly built up in the vast empty spaces of the factory. It

was in 1935 that Britain began to take its first hesitant steps towards re-armament. That year a team of surveyors from the Admiralty's Property Branch came to look over the premises. They liked what they saw and the factory was formally taken over in December 1935. It was to be a 'Shadow Factory', to shadow the workings of the Torpedo Factory in Greenock. The Greenock establishment would provide the core management and be responsible for setting up the machinery etc.

The first task was to put the factory into a habitable condition again. Glaziers, painters and other maintenance tradesmen were employed in this work, while a start was made to recruit the skilled engineers necessary to do the difficult work which was to be undertaken - making torpedoes.

Engineers of all skills were required. At first men were to be recruited locally; from among the unemployed textile mechanics of the Vale of



Leven; from among the unemployed metal workers of Dumbarton; from among the unemployed shipwrights of Clydebank. Later the call went out to Glasgow, Lanarkshire and the Kilmarnock area. The skilled men were found. A Recruiting Team visited Dundee with marked success. The majority of the engineers were sent to the RNTF Greenock 'to learn the ways of Admiralty'. Many stayed in 'digs' in the Greenock area, near Battery Park, only coming home at weekends.

By the middle of 1937 the factory had been cleaned up, debris removed, windows re-glazed, wiring replaced, power re-connected, floors re-concreted and levelled where necessary, and a few machines installed. The original wall facing onto Main Street, Alexandria, was reduced to a few courses high and iron railings superimposed, allowing unrestricted views of the facade. A security fence was erected round the rest of the factory,. Admiralty policemen appeared. An

Identity Pass system was inaugurated. The main gates were re-hung and an oval plaque, bearing the Admiralty "Fouled Anchor" device, with the date "1935" set out in relief was inserted into the ironwork of the gates. A naval flagpole, with a yardarm, was erected in front of the clock tower. This flew the 'White Ensign' right up until 1969.

The factory covered 60 acres, 15 of them being roofed. The frontage was 540 feet. The main corridor at the head of the marble Grand Staircase stretched almost 90 yards in each direction. The main frontage housed the administrative offices which were lofty and large. In the grounds many temporary buildings were put up during the war. Large dug-in shelters were placed in the grounds while the basement toilet area in the main building was reinforced to act as shelter space also. Each individual shop (or 'bay') had a small emergency shelter constructed in case a surprise attack left workers no time to reach the main shelter.



By 1938 the RNTF Alexandria was able to accept some torpedo parts from Greenock for finishing. But as yet the Alexandria factory did not have the capability of making a complete torpedo. The work force crept up to around 500. In the autumn of 1938 it was decided to recruit a volunteer team to man the two old 3" naval anti-aircraft guns which were scheduled to be installed in the grounds behind the main building. About 20 men volunteered and, in the summer of 1939, they were sent to an Army camp near Morecambe to be trained. Each gun team would consist of an NCO and 9 gunners. When war broke out in September a small detachment of Royal Marine Reservists arrived to guard the perimeter and to provide the NCOs for the two guns. Later the volunteer gunners were incorporated into the Torpedo Factory's Home Guard Company while the Royal Marines were deployed elsewhere.

The return of Neville Chamberlain from Munich on 30th September 1938, bearing aloft the 'Agree-

ment' ending the Czechoslovakian crisis and promising 'Peace in our time', marked a new phase at the Admiralty and work at getting the Alexandria factory into production was speeded up. Overtime to 8 pm became available. It was obvious that the torpedo was a priority weapon.

But just what was this weapon that needed so much time and trouble to produce? The "Torpedo" has been defined as an under-water self-propelled weapon with a large charge of high explosives in the head. The first self-propelled (or locomotive) torpedo was invented in 1866 by the retired Capt Luppis of the Austrian Navy. It was not a success, being like a small clockwork boat with a tiny amount (5lbs) of gunpowder in the bow. It moved at about 5 kts, just awash, and trailing guiding wires behind it. Its range was all of 100 yds!

However, the idea was taken up by a British engineer, Robert Whitehead (1823-1905), then



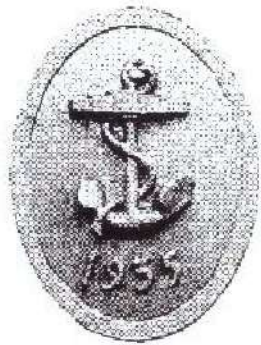
working in the Austrian port of Fiume, near Venice. Whitehead saw the potential of the invention, and he built and developed his own "Whitehead" torpedo between 1866 and 1868. In 1870 the British Admiralty invited Whitehead to bring his torpedo to Britain. It is another story altogether of how Whitehead and a group of anxious British officials managed to hustle the prototype torpedo through Paris by rail just as the Prussian armies completed the investment of that city. On arrival, Whitehead was given a large workshop in Woolwich Arsenal and the sum of £15,000 for the manufacturing rights in the UK. Whitehead continued to develop his torpedo and, in 1878, invented his famous "balance chamber" which kept the torpedo at a pre-set depth. The 'balance chamber' remained in use, practically unaltered, till well after the Second World War, a great credit to Whitehead's genius. Whitehead built his own factory at Weymouth, producing his torpedoes. By 1880 the Whitehead torpedo was 14 feet long, had a diameter of 17 inches and

carried 32 lbs of HE at 19 kts for 600 yards.

A decade later, further improvements to the weapon increased its diameter to 21 inches, its speed to 21 kts (22.2 mph), its warhead to 119 lbs of HE and its range to 800 yards. It was discharged from a tube by means of compressed air.

In 1896 a major problem was overcome with the invention of the gyroscope, by Ludwig Obry, another Austrian. Whitehead quickly adapted the gyroscope to control the rudder of the torpedo, thus overcoming the tendency of the torpedo to wander off course, due to wave and current action and the natural spin of the propeller.

The accuracy and explosive power of the Whitehead torpedo revolutionised naval warfare. The larger warships now needed belts of thick armour round them below the waterline and distances lengthened between opposing warships to try to keep beyond the range of the dreaded



torpedo! A whole new class of small fast warships, armed with torpedoes, came into being to threaten the mighty battleships!

The method of propulsion of the original Whitehead torpedo was a pure pneumatic engine, using compressed air to drive the propeller at the rear. The compressed air-engined torpedo lost speed as the pressure fell. Later an engine using a mixture of petrol and oil combining with compressed air on ignition, was developed and made small enough to fit inside the torpedo. This gave even higher speeds and longer ranges. Pressures of up to 2200 pounds-per-square-inch were achieved.

By 1905 a further development took place regarding engines. It was found that if the compressed air was heated before being ignited with the petrol/oil vapour, then much higher speeds and even longer ranges could be attained. Engine temperatures of 1000°F were reached using the

heated steam technique.

Between the Wars the British carried out unsuccessful experiments using the gas oxygen instead of steam. But the volatility of that gas could not be controlled and many explosions occurred. Research stopped around 1928.

The Japanese, however, persisted with experiments along the same lines - and it paid off for them. In 1933 they produced the prototype 'Long Lance' torpedo. Briefly the Japanese solved the problem by increasing the diameter of their torpedo to 24 inches, the thicker sides containing the explosive power of ignited oxygen under extremely high pressure. The 'Long Lance' torpedoes tore the guts out of the Allied Fleet at the Battle of the Java Sea on 27th February 1942, and also sorely afflicted the US Navy in the fierce closely-fought actions in late 1942/early 1943 around Guadalcanal in the Solomon Islands in the South Pacific. Full technical details are shown on page 22.



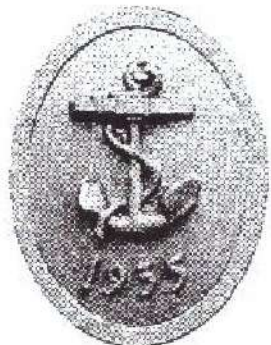
In the UK, the firm of Peter Brotherhood and Co of Peterborough became the acknowledged experts in torpedo engines. They improved performance by using enriched air (air mixed with extra oxygen). Later they developed the 4-cylinder "burner cycle" engine which ultimately produced, by 1945, torpedoes with speeds in excess of 50 kts (55 mph). Torpedoes using air in any form produce a stream of air bubbles which an alert lookout can spot.

Submarine and surface warships-launched torpedoes were almost the same. However, British aerial torpedoes, those dropped by aircraft, were somewhat different. The aerial torpedo was lighter with a shorter range and specially strengthened to take account of being dropped from say 100 feet at 150 kts. Aerial torpedoes were also fitted with an additional wooden "tail" to make them enter the water cleanly at the correct angle. The extra "tail" broke away on impact. There were four factories producing torpedoes in

the UK during the Second World War. These were:-

- (1) Vickers Armstrong's factory at Weymouth (purchased from Whitehead in 1905 upon his death).
- (2) A Morris Motors factory, somewhere near Oxford, which 'shadowed' the Weymouth factory (believed opened c1936, closed c1953).
- (3) The Royal Naval Torpedo Factory at Greenock (opened 1908, closed 1955. A small Experimental Establishment remained until 1960 when the work was transferred to Weymouth).
- (4) The Royal Naval Torpedo Factory at Alexandria (opened 1935, closed 1969. It absorbed the Greenock workers in 1955).

As far as can be ascertained, the first torpedo fully manufactured by the RNTF Alexandria was in May 1939. Production was low, averaging 12 per month. There were many bottlenecks. It should be remembered that, in 1939, to have an air



powered engine, using superheated steam, with working temperatures of around 1000°F, held inside a strong but slightly built metal cylinder which contained pressure of about 4000 pounds-per-square-inch, was the very cutting edge of contemporary technology. It required a highly skilled labour force, backed by specialised workshop organisation, to make these torpedoes.

Each British torpedo required 1707 'highly skilled' man-hours for its manufacture, the equivalent of 2560 'semi-skilled' man hours. Each 'semi-skilled' man-hour cost £1, so the British torpedo cost about £2500 to make. The large amount of 'highly skilled' man-hours required did not lend itself to mass production techniques. Each torpedo had to be almost made individually. To put the cost into perspective, in 1939, Lawrence the builders were selling semi-detached houses in Balloch for about £550!

The Germans took a different route. From early 1938 they almost ceased production of air-powered torpedoes. They concentrated upon producing electric powered torpedoes, having perfected the use of electric batteries. They used a simple electrical propulsion unit for their torpedoes, made up of 52 lead-acid cells, in a battery compartment 11 feet long, the batteries weighing 1500 lbs in total. Lead-acid batteries were easy to make and could be mass produced and widely subcontracted. From early 1939 the Germans produced electric powered torpedoes at the rate of 1000 per month. Each of these German torpedoes needed 1255 'semi-skilled' man-hours to make and cost the equivalent of £1255. Although the German electric engined torpedo was an inferior weapon to its British air-powered counterpart, it was perfectly adequate for its main task, the sinking of thin-hulled merchant ships by U-Boat. Its short range was no handicap because, during the U-Boat "Happy Time" (1941-42) in the Battle of the Atlantic, most U-Boats loosed their torpedoes



from between 500 and 600 yards range. Electric powered torpedoes left no tell-tale stream of bubbles!

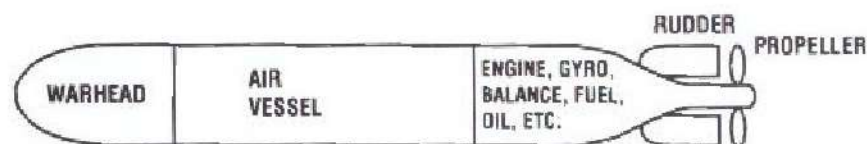


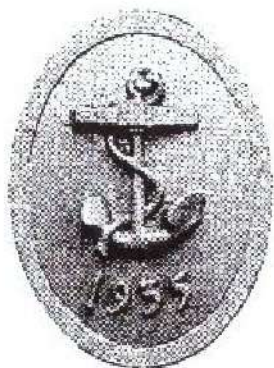
Figure Drawing of a Torpedo:

RNTF Mark IX. A 21-inch torpedo (surface ships). 25½ feet long. Engine by Brotherhood & Co, Peterborough, "burner cycle" type, giving a speed of 40 kts over 10,000 yds. Charge in warhead of 750 lbs of TNT was later replaced with "Torpex" which had enhanced underwater blasting effect.

Production

According to official figures, the Germans produced around 55,000 electric powered torpedoes during the war years 1939-45. Official production figures for the UK have proved very difficult to track down. However, semi-official publications and previously published sources have been used to give the following figures. The total UK production of torpedoes (all marks & types) for the period September 1939 to June 1944 was 17,677. In March 1942 monthly production of torpedoes in the UK had reached the rate of 440 per month. For the final year of the war, monthly production was running at c600. The probable total UK production of torpedoes for the war period was 25,000 in round figures.

Assuming each of the 4 factories had approximately the same capacity and that the two original factories were producing at a higher rate from an earlier date, then I estimate that the total produc-



tion of torpedoes during the war period by RNTF Alexandria was probably in the region of 5500. Of these, approximately 50% would have been aerial torpedoes, giving figures of 2300 for surface/submarine torpedoes and 2200 for aerial torpedoes.

The table at the end gives specifications of the types of torpedoes made by RNTF Alexandria, together with the specifications of some contemporary German, Italian, US and Japanese torpedoes for comparison,.

Testing the Torpedoes

When torpedoes were completed at the Alexandria Factory, they were fitted with practice warheads, packed into long rectangular wooden boxes, then loaded onto large articulated RN lorries for the journey to the Torpedo Testing Range at Arrochar (opened 1912). Launched down the Loch Long Range, the torpedoes were fired from the Firing Pier, which was fitted with

both surface and submerged tubes. Each torpedo was given two test runs, the first at 3000 yds, the second at 5000 yds. After testing, the torpedoes were returned to Alexandria for cleaning. The dummy warheads were removed and the torpedoes were then sent to a Royal Naval Armament Depot where their real warheads were fitted prior to issue to fighting units.

Much use was made of the Factory's own branch railway line. The Brotherhood engines came up from Peterborough by rail, as did the partially curved steel plates and tubes, mainly made by Stewarts & Lloyds.

A few 'rogue' torpedoes were discovered among those tested at Arrochar. The balance mechanism failed occasionally and the torpedo 'porpoised' down the range, hotly pursued by a Range Motor Boat. Sometimes a torpedo would fail to surface and had to be searched for, using grapnels, drag lines and perhaps a naval diver. Sometimes a



rudder would stick and the torpedo would plough up onto the shore at 45 mph! The failure rate was normally under 0.5% and back at Alexandria the manufacturing history of the 'rogue' was carefully checked to identify the fault and eradicate it.

The Arrochar Range also tested torpedoes produced by the Greenock Factory. Their output of torpedoes was usually transported by sea to Arrochar.

Aerial torpedoes were tested at the Torpedo Development Range at Stokes Bay, near Gosport, being transported by rail. Any aerial torpedo found wanting after test was attended to by the Weymouth factory.



RNTF Volunteer AA gun crew. Training camp, summer 1939, Morecambe. L to R (standing):

- 1 John Slater
- 2 Mr McFall
- 3 Robert McKellar
- 4 Unknown
- 5 Andrew Gray
- 6 Pat Cummings
- 7 Jim Currie
- 8 Royal Artillery Sgt
- 9 John McKay
- 10 Unknown

Photo courtesy of Mr John McKay



The RNTF's 'Home Guard'

The Torpedo Factory had its own Company of the Home Guard. It was known as 'T' Company and was part of the 1st Dunbartonshire Battalion of the Home Guard. Formed in June and July 1940, 'T' Coy was a priority unit and quickly received serviceable rifles, ammunition and uniforms to equip its volunteers. The Royal Marine Reservists helped to lick 'T' company into shape. Many of the weapons issued to 'T' Coy came from Royal Navy/Royal Marine sources. 'T' Coy had the special task of defending the perimeter and factory buildings from both sabotage and direct attack. They assembled for training every Thursday evening for 2 hours drill and weapon training etc in a large Nissen hut. They also patrolled the fence in conjunction with the Admiralty police who controlled the gates. A sub-unit, known as 'Gun Platoon', manned the two 3" AA guns in the grounds and also, for about 3 years, the light AA guns on the roof of the main building in sand-

bagged emplacements at each end and in the central tower as well. In passing, it should be noted that the gilt was removed from the 'gleaming dome' early in 1940 and it was painted matt black. The glass on the roof was reinforced and also black painted.

Factory Routine

By the spring of 1940 the Torpedo Factory was working 24 hours a day, seven days a week. A two-shift system was employed, the day shift starting at 8 am and finishing at 8 pm, the night shift starting at 8 pm and working till 8 am next morning. Weekends were covered from 8 am to 5.45 pm. A seven-week shift cycle for the production workers on the factory floor, alternating between day shift and night shift, was originally put into practice. It was later changed to a two-week cycle. Routine maintenance for machinery was done on Saturday and Sunday nights. Break-downs were dealt with on the spot, as and when



they occurred. Since assembly line production techniques were not in use, this did not interfere with overall production to any great extent.

In 1941, women were brought onto the shop floor as machine operators, much as had been done in the previous conflict. However, this was a new departure for the Admiralty and for the Trade Unions. Both sides closely monitored the situation, for various reasons. Eventually some 300 women were employed in the Factory on shop floor duties. Of course, traditionally many women had been employed in offices, stores and canteens for many years. In 1944 it is estimated that over 2500 workers were employed in the RNTF Alexandria, covering all trades and grades, under Commander Perrow, RN, the Naval Officer in Command.

Humour and Entertainment

The work may have been hard and the hours long, but factory humour was close to the surface, and entertainment often came from among workers themselves. One individual who stands out in this connection was John Reid Slater, who was born on 2nd July 1905 in Thornliebank, Glasgow. John, or 'Jock' Slater, as he was almost universally known, joined the RNTF in 1938 as a turner in the Machine Shop. Then living in digs at 19 Dalvait Road, Balloch, Jock was an excellent singer, mimic and noted ballroom dancer. Besides this, he was a sparkling compere with a line of witty patter worthy of many a professional entertainer.

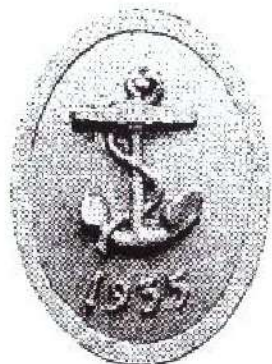
The Night Shift had a long break between 2 and 3 am each morning and Jock often organised "ad hoc" entertainment in the Canteen. Jock and some primed colleagues persuaded a man known as 'Bumps' that he had a magnificent singing voice. In actual fact his voice was mediocre at best!



However, Jock made a dummy 'microphone' for Bumps, using an empty sardine tin welded onto a metal tube standing on a wooden base. Bumps used to sing into this 'mike' with great sincerity, rendering his favourite Irish ballads. Unknown to Bumps, a large black cardboard spider (made by Jock) would be dancing about behind him as he sang. This caused great merriment in the audience and Bumps would go off to thunderous applause. Soon Jock became his 'manager', and entered Bumps in a "Go-as-you-please" competition in the Burgh Hall, Dumbarton. Jock talked the Burgh Hall management into allowing Bumps to reach the semi-finals by promising to bring in a large following from the Torpedo Factory for the competition. Bumps duly appeared in a borrowed evening suit, and went through his song, unknowingly accompanied by the black spider. His act brought the house down, though Bumps was puzzled as he considered the Irish songs quite romantic. He duly reached the semi-final as arranged but no further. Jock explained that the

hall management was anti-Irish and Bumps was somewhat mollified.

Jock continued the joke with Bumps, next persuading him he had the gift of hypnotism, illustrating this by having Bumps "hypnotise" him and the group of fellow night shift workers who were again party to the joke. Bumps was thoroughly convinced and showed off his new-found "skill" to the great amusement of those who gathered round at teabreak. One of the group improved on the joke by refusing to "go under" until he had but a few dregs of tea left in his cup, whereupon he would suddenly slump forwards, tossing the tea over Bumps as he became "unconscious". Jock used his talents to many good purposes, forming a concert party which toured local hospitals and raised money for charity. Among the members of this concert party were Bill Livingstone, Catherine Haggerty, Mr and Mrs David Scott, Jack Watson (make-up), Margaret Petch, Allan Collinson, Tommy Montgomery and Willie Murray. There



were others, of course. Jock died suddenly on 5th August 1961 of a heart attack.

The local Medical Officer

In 1937, Dr William Scott, born Glasgow 20th April 1895, and who had been a General Practitioner in Alexandria since 1920, was appointed Medical Officer for the RNTF in Alexandria. He carried out many medical examinations for those seeking employment in the Factory and was also responsible for training the First Aid Team. He used to remark upon the high incidence of ulcers and other anxiety-related illnesses among his patients in the spring of 1941. Numbers fell to normal levels by the summer of the same year. He explained the rise to anticipation of the 'Blitz'. Dr Scott also used to comment on the good health of the children during the war years, due mainly, he maintained, to the healthy diet and lack of sweets. He gave up the appointment of Medical Officer on 31st March 1968 and died on 8th September 1978.

His two sons, Kenneth and Jeffrey, both became doctors and continued the family tradition of practising medicine in the Vale.

The End

When the War finished in the summer of 1945, the RNTF Alexandria began to slim down, though still continuing to produce torpedoes. Various 'alarms and excursions' during the 1950s, e.g. the Korean War and the Suez Episode, brought sudden demand and the consequent need for overtime. As stated, the Greenock Factory closed in 1955 (except for a small Experimental Unit) and the Alexandria Factory absorbed the residual work force. However, by 1959, the number of workers had fallen to about 800. By the early 1960s technology was advancing in torpedo design. The RNTF Alexandria participated in development work for a "hush-hush" project in connection with the 'Chevelaine' underwater weapon. This required the construction of a large 'clean air' and



temperature-controlled workshop which was built at the cost of around £4 million, it is said. Hardly had it been completed when the Government announced the impending closure of the RNTF Alexandria and the transfer of all the work to the Weymouth Factory. The closure took place in 1969. The 'White Ensign' was hauled down for the last time, marking the departure from the Vale of Leven of the Admiralty after a sojourn of some 34 years. Exodus.

The last spasms

Some long serving workers accepted transfers to other Naval Establishments in Scotland, e.g. the Armament Depot at Beith and the Clyde Submarine Base. A significant number, however, elected to take up employment with Plessey Ltd, an electronics firm, lured into the area by Government grants. Plessey took over all the assets of the factory. They planned to make Traffic Control Equipment, to take advantage of the expected

expansion of the motorway network in the UK. Their stay in the Vale was short and unhappy. They pulled out within 24 months, but not before the workforce had staged a stubborn 'sit in', unsuccessfully trying to prevent the closure of the factory and the transfer of the work down south.

After the departure of Plessey a number of small companies set up in various parts of the factory. The majority failed but a few have prospered. The unused factory was eventually sold to a London based company who have done nothing to maintain the fabric of this 'A' Listed Building. In the mid-1980s a bare-faced band of robbers removed the marble Grand Staircase in broad daylight, leaving a baffled constabulary scratching its head.

Today the Argyll Motor works is but a disintegrating facade, an object of curiosity, a monument to its builders and a memory in the minds of the few surviving workers who used to make torpedoes.



ORIGINAL YEAR OF DESIGN	DIAM (inches)	TYPE	LENGTH (feet)	ENGINE	SPEED (kts)	CHARGE (lbs)	WEIGHT (lbs)	RANGE (yds)	REMARKS
1928	21	Mk VIII	25 1/2	BC (1)	40	750	3353	7000	Submarine
1928	21	Mk IX	25 1/2	BC	$\frac{40}{35}$	750	3731	$\frac{10000}{14000}$	Surface
1937	18	Mk XII	23 1/2	BC	40	388	1548	1500	Aerial
1934	21	Fiume XIX	22 1/4	H (2)	$\frac{49}{30}$	595	3530	$\frac{4370}{13120}$	Italian
1933	21	G - 7A	22 3/4	H	$\frac{44}{30}$	660	3334	$\frac{6560}{15310}$	German
1938	21	G - 7E	22 3/4	Elect (3)	30	660	3530	5470	German
1943	21	G - 5 (GNAT)*	24 1/2	Elect	25	660	3330	6320	German Acoustic
(*German Naval Acoustic Torpedo)									
1935	21	USN Mk 14	24	Turb (4)	$\frac{46}{31}$	600	3289	$\frac{4500}{9000}$	US
1933	24	Type 93 (Long Lance)	35	Oxy (5)	$\frac{49}{36}$	1100	6215	$\frac{25000}{43500}$	Japanese

Notes on Engines:

- (1) BC = Brotherhood "Burner Cycle" engine (2) H = Heater (Thermal steam) engine
 (3) Elect = Electric motor (battery powered) (4) Turb = Turbine engine
 (5) Oxy = Enriched oxygen propelled engine



Further details

During the latter stages of the conflict the British also developed an acoustic torpedo. It has been said that the RNTF Alexandria took part in some of the development work but it has not been possible to obtain confirmation.

The Mark VIII 21" submarine torpedo, designed in 1928, was still operating with devastating effect, suitably updated of course, in the Falklands Campaign of 1982.

It should be noted that during the Norwegian Campaign, from April to June 1940, German torpedoes fired from U-boats suffered an almost 100% failure rate. At the beginning of the war against Japan, the US Navy also suffered a massively high failure rate among its submarine-launched torpedoes. It was early 1943 before the Americans solved their problem and the US submarines then began to be an effective weapon-system again. No such failure was recorded by the British.

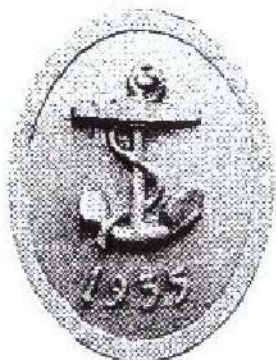
Acknowledgements

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- 2 "The Defence of the United Kingdom" Basil Collier. HMSO, London, 1957.
- 3 "The Devil's Device". Edwin Gray. Purnell Bks, London, 1975.
- 4 "A Damned Un-English Weapon". Edwin Gray. Seeley Service, London, 1971.
- 5 "The War at Sea" (3 Vols). S W Roskill. HMSO, London, 1955/56/57.
- 6 "Red Duster, White Ensign". Ian Cameron. Futura Pubs, London, 1975.

Personal

- 1 Mrs Helen Love (née Slater), then 79 Wilson Street, Alexandria, for information about her father.
- 2 Mr James Kerr, then 9 Upper Bridge Street, Alexandria, for Torpedo Factory & Home Guard.



3 Mr Wm Crawford, then 19 Dalvait Road,
Balloch, for Torpedo Factory and the Arrochar Range.

4 Mr Andrew Cochrane, then 281 Main Street,
Alexandria, for Torpedo Factory, 'T' Coy Home Guard
and more.

5 Mr John McKay, then 32 Napierston Terrace,
Jamestown, for RNTF gun teams and more.

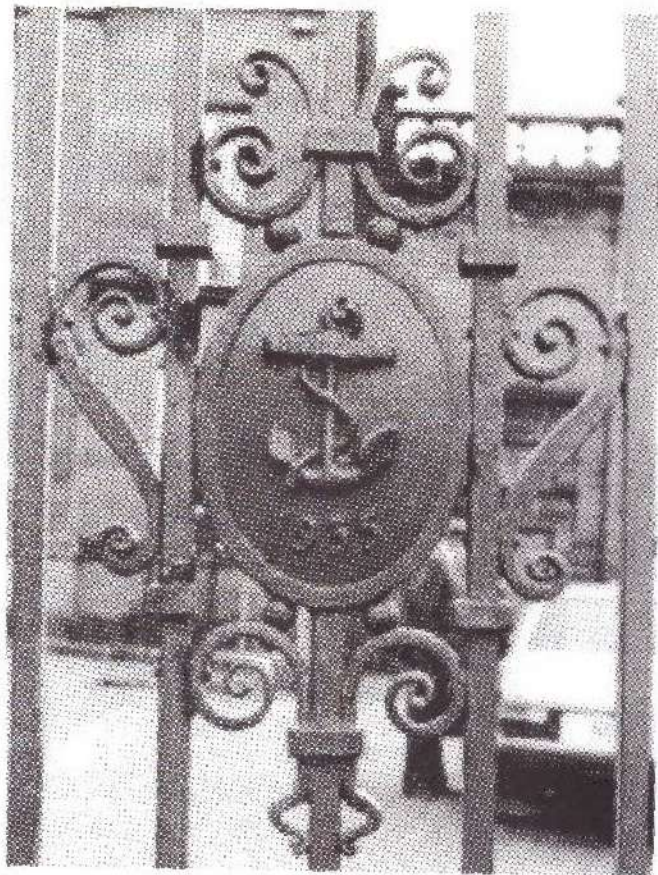
6 Mr David McLean, for "Scottish Amalgamated
Silks".

Note The wartime addresses are given.

Others who do not wish to be named have contributed
their memories to this publication.

To all, named and unnamed, many thanks.

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*The Admiralty "Fouled Anchor" device on the main gate
of the RNTF, Alexandria, with the date "1935".
Photo by Denis Coleman.*