The Story of
WM. HEAP & PARTNERS LTD.

William Heap (WH1)

WH(1) was born in 1760 in Padiham, Lancashire, a little village with a population of only a few hundred and with rolling hills on all sides, but the Industrial Revolution was coming. **(Note 1)**

When WH(1) was 15, 2 events occurred which primed the bomb of the Industrial Revolution.

1. In Bolton Samuel Compton invented the spinning mill
2. James Watt teamed up with Matthew Boulton and started to produce more efficient engines near Birmingham

Padiham, like other towns in Lancashire had

- Coal for fuel
- Stone for building
- The right climate for spinning cotton
- Most of all, hard working, enterprising people.

It was ripe for the revolution.

William Heap(1) grew up, and started a business as a grocer, serving the quiet modest needs of the small country village supplying flour, local cheese, black pudding, tripe, smoked ham and local produce.
He met and married Nancy, and they had 5 children, John, William(2), George, Mary and James. The eldest, John went into the grocery business with his father to learn the trade, and eventually take on the business.

Sadly in 1819, John died, leaving his father to carry on, and then, 3 years later in 1822, WH(1) died.
Meanwhile, William Heap(2), the second son in the family, had decided to become a weaver in one of the local mills, and during these years, he met and married Mary Smith of Burnley, on 29th August 1822, and set up house in one of

the stone cottages in Padiham. However, this part of his life was soon to be thrown into disarray on the news of his father's death, and William decided to leave the mill and take over the family business.

The coming of the cotton industry to Padiham, and the growth of other industries such as mining and quarrying in the area, made a great impact on the village, as these industries attracted workers from local areas and as far as Ireland. The population increased from 250 to 6000 by the year WH(2)'s father had died.
The grocery business was flying.

Within months WH(2) had started corn dealing and then began to mill his own flour and sell it.
Between 1825 and 1836, WH(2) and his wife Mary had 6 children, Eliza, **William (3)**, Edmund, John, James and Ann, and in these early years the business grew so much that WH(2) was no longer a grocer but had become a prosperous merchant.

The increase in family fortune meant that the family moved up in the world, and **our William(3)** was born in **Isles House, Padiham**. This was on the estate of Huntroyde Hall, which was owned and lived in by Le Gendre Pierce Starkie. William(2) became a man with a property portfolio and bought other cottages on the estate, and also rented 75 acres of rolling parkland from the Starkies. This piece of land swept down close to Huntroyde Hall suggesting that William must have been very friendly with Pierce Starkie.

(The Starkie family continued to live in the Hall until 1982 ,when they sadly had to sell).

So in the 1820's the Heap family lived in some style with their own coach and horses and several servants, and the background of our founder WH(3) was one of a large house, prosperous middle class parents and 75 acres of parkland to play and ride in.

When he was old enough, he was sent to Whalley Grammar School, 4 miles up the road. **(Note 2)**

William settled in well. It was likely that he was a weekly boarder, and he had an excellent education. His father hoped he would go into the business, but William(3) had other ideas, and informed his parents he wanted to be an engineer.
So after leaving Whalley Grammar, he served an engineering apprenticeship.
Following this, he was offered his first position with William Evans of Cambridge, who had a contract to build a tubular bridge at Conway. (No.3) So, in 1846, aged 21, he moved into lodgings at Conway. **(Note 3)**
It was here that he met many of the giants of the Industrial Revolution.
Robert Stephenson
George Stephenson
I K Brunel
William Fairburn
Thomas Brassey

The Conway and Britannia bridges are land marks in the history of engineering. Not only the first large tubular bridges made, but also the process of their construction enabled engineering problems to be solved by the new science 'Strength of Materials'.
Bridge design was given impetus by the railways. When the Liverpool to Manchester line was opened in 1830 there were 20,000 bridges in the UK, but within 25 years 25,000 more were built and William Heap(3) played an important part in the building of this most famous of all.

The commission to build the railway and bridges was accepted by Robert Stephenson, and it was decided to lift the tubular construction with hydraulic power with pumps driven by steam engines. A workshop was set up at Conway. Plates arrived bowed and the first job was to straighten them. They also needed to punch holes. They

used the Roberts Jaquard Press. William (3) was in charge of this machine from 1847, the year of its invention, to 1866 when he set up on his own.

Following the completion of the Conway bridge, WH(3) was in charge of taking the machine to Drogheda in Ireland, for William Evans, where the idea was to build a railway between Dublin and Belfast, and a bridge along the way. No firm foundations could be found for the bridge which was to be finished by the 1853 Irish Great Industrial Exhibition, and William Evans went into liquidation. WH(3) found himself out of a job.

Luckily, Robert Stephenson was so impressed by William Evans and William Heap that he suggested to Thomas Brassey, **(Note 4)** a surveyor and railway contractor, that he should take them on to run his bridge department. This he did. Evans was made manager and Heap the under manager, and in 1856, WH(3) took over as manager, with 500 men in his charge.

By 1852 Thomas Brassey had contracts all over the world, one of which was 540 miles of the Grand Trunk Railway of Canada.
So in 1853 he built and opened ‘Canada Works’ in Birkenhead to prepare everything for this Canadian contract. Brassey had bought the press from the failing company of William Evans and installed it at Canada Works Birkenhead, as part of the equipment needed.

In the factory Brassey, WH(3) and the other managers believed in education for the work force, so a library and a canteen were provided for them, and concerts and balls were held regularly for all.
They built locomotives, the first one of which was ‘The Lady Elgin’, and a celebration was held at the Woodside Hotel.

WH(3) Home Life.
As well as all the activity in his working life, WH(3) was not standing still in his private life.

In the same year as his promotion to manager, 1856, he moved house to 14 Somerville in Seacombe. The house looked out over rolling farm land and had views over the Mersey to Liverpool. Most of the residents were merchants and one of his near neighbours was John Crichton, who lived in Poulton Lodge, an impressive house set in acres. WH(3) first met him at a party, where he also met John's daughter Eliza, who was a quiet, shy girl of 22 years. She found the well travelled, grave and courteous engineer very attractive and in 2 years they were married at St Pauls Church, Seacombe.
They had 2 children, William and Charles.
In 1870 they moved to 2a Falkland Rd Liscard and a year later their son William died. 4 years later Walter was born and then died after only a year, and in 1876 Charles also died. This left WH(3) and his wife with 2 daughters Mary and Elizabeth. They were heartbroken and decided that Falkland Road was an unhappy house for them and they moved to Elm Mount, Penkett Road, Liscard, with glorious views over fields running down to the river. They stayed here to the end of their days.

During all these years, WH(3) was doing many good works. He was a member of the Wallasey Local Board and was elected Chairman in 1889. He pushed for the purchase of Liscard Hall Estate, and this now is the reason why Wallasey has a central park of 57 acres. He pushed for the building of Wallasey promenade and the great sea defences, preventing North Wirral from being swamped.
He was treasurer of the Wallasey 'Dispensary', enabling poor people to receive free medical treatment. He was on the board at Central Hospital Wallasey and the Cottage Hospital. And for his services he was presented with a magnificent silver tray when he retired. (This was left to AHA)

He was also Treasurer of the Egremont Presbyterian Church, and the building of this superb church in 1912 owed much to his careful husbanding of the funds.

Aged 60 he was made a JP. He was a good JP, showing leniency and firmness.

By 1854 10 Locomotives had gone to Canada and many more were ready to go.
WH(3) was busy meanwhile, working on the Great Victoria Bridge over the St Lawrence. He was sent out to supervise, and there were dreadful problems. There was a huge amount of ice, and so masonry piers had to be designed with wedge shaped sides to cut the ice as it flowed. When the piers were built, the worlds biggest 'mechano set' was sent out with full instructions by WH(3). The report back was
"Extraordinary perfection attained in the ironwork"
"Centre Tube – 10,309 pieces with half a million holes, and not one piece required alteration neither was there a hole punched wrong".
'The Engineer' magazine wrote – "The greatest example of engineering construction in the world".

In the Crimean War from Balaclava to all parts on the front, work began on bridges and railways. The company sent an elite work force, and ensured that the men were clothed, housed, fed and well paid. They set about building with incredible speed.

The company also had contracts in India and in 1858, laid 112 miles of the Eastern Bengal Railway, then 304 miles in the Punjab and the Chord line, 147 miles from Delhi to Calcutta. WH(3) built all the bridges, over **River Sutley, River Beens** and the biggest of all, over the **Jumna River**.

As well as the bridges, WH(3) also handled the contract for 3 large pumping stations for the Calcutta Waterworks.

By 1866, the great heyday was passing, but WH(3) had taken part in some of the greatest engineering adventures ever taken, and met and worked with the greatest of engineers.

STARTING UP HIS OWN BUSINESS

WH(3) spent 14 years with Thomas Brassey, but he was now 40 years old and wanted to start his own business. He mentioned this to George Arkle, a banker who was associated with Canada Works, and he suggested a relative Thomas Arkle to join with him in his new venture. They picked a new office in Liverpool.

1866 – 1870 The Albany, Old Hall Street

They called themselves:

Heap and Arkle. Engineers, Iron and Steel Merchants

WH(3) was well known in many countries by now, because of his work with Brassey and many suggested that he handle exclusively their products in a given area of NW England. In addition, if he also handled technical problems and sales service, he could be an exclusive agent. Outside this area he could sell what he liked. Within 4 years they were filling orders all over the world and were prospering. They decided to move offices.

1870 – 1876 Bank Chambers, 3 Cook St. (adjoining the Bank of England)

During this period they encountered some very slow payers, Jessops of Calcutta, and this meant increasing their overdraft, and finally they had to move again to smaller offices. **(Note 5)**

1876 – 1896 9 Rumford Place

1892 was a very unhappy year for WH(3).
There were many financial pressures, and WH and Thomas Arkle fell out, mostly because Thomas was so very extravagant, and they decided to part company.
WH(3) had a strong constitution to weather the storms. His standing in India was so high that he was retained as a consultant by the Government to inspect bridges and cast iron structures, which assisted in the come back of the company, but also, WH decided to expand, and in 1894 he took on **John Douglas Crichton** (JD) (his brother in law's son).
Not long after that the firm accepted an agency with David Colville and Sons Ltd building ships in Spain and selling steel to Canada, Newfoundland (NFL) and the NW of England.
JD worked hard and business progressed particularly in the already well established area of NFL. **(Note 6)** However, it is largely down to JD that the engineering side of the business developed.

THE ATKINS YEARS

In 1906, JD and WH(3) decided to advertise in 'The Engineer' for a Sales Engineer. They had 2 applicants, one of whom was **Arthur Henry Atkins**, and on **Monday 9th July 1906**, he joined Wm. Heap and Co.

Arthur Henry Atkins Born near Dorchester in Dorset 1882

Youngest son of Charles and his second wife Ellen

Charles had 5 children by his first wife, and 4 by his second.

Charles and Ellen were well off, and Arthur spent his childhood in a pleasant country manor house set in several acres of rolling Dorset countryside.
He studied engineering at Imperial College, London

Went as an apprentice Cosens Co Ltd (Weymouth Shipbuilders)

HM Dockyard Chatham (saw how not to do things!)

W H Allen of Bedford (pump design)

Wm. Heap and Co.

AH was described as a "handsome, cultured, amusing young Englishman".

He began by developing the business in the NW, and travelled by train, taking his bike with him and using it to visit his customers. In Manchester he developed a friendship with the MD of Lancashire Dynamo in Trafford Park, and he would often call to see him to share a glass of sherry. He would hear of the various cotton mills that were being modernised, and would then set about getting orders from the mills for boiler feed pumps and ancillary equipment. The bike served him well.

He worked hard and within 3 years he was made a partner.
1909 AH was sent to NFL to supplement JD's work. He stayed with James Angel in Hamilton Street.

Meanwhile in 1910, WH(3) decided that it was time for him to retire, the business was in the safe hands of his nephew and AH, and WH's health was beginning to fail. He had worked continuously for 68 years. Regrettably Eliza had died 3 years earlier, and William had an unhappy retirement, suffering from ill health. His daughters looked after him until he **died on Sunday 10th March 1912 and was buried at Wallasey Parish Church**.

1911 – 1928 JD and AH expanded and took on more staff. They moved to offices to the **Liver Buildings.**

AH started to concentrate on Canada. Within 4 years they had opened offices in Montreal, Toronto and Vancouver, all under the name of Heap and Partners (Canada) Ltd. **(Note 7)**

AH travelled all over the country. In 1912, he received an enquiry from Charlottetown Light Heat and Power Co Ltd., and following a horrendous journey to Prince Edward Island, and a sleigh ride through almost impassably deep snow, he found himself staying with the manager of the company. His hosts were so impressed, they asked him to submit a tender for a new power station they were building. AH sent the tender on his return to England and the Charlottetown Power Co. placed the whole order with Heaps.

In 1914, AH pulled off another contract supplying very large water pumps to the City of Ottowa Water Works, and when war broke out, we held almost the entire stock of high speed steel cutting tools in Canada, and Heaps continued to work flat out through the war years.

In 1914, Britain's steel industry faced serious problems. The UK imported dolomite from Austria to make refractory bricks to line steel furnaces. With the outbreak of war, we were cut off from this supply. Heaps, were agents for Colvilles of Motherwell, who were top steel manufacturers, and AH was therefore aware of this problem, and offered to find alternative supplies of dolomite.
He remembered someone had told him of dolomite supplies in Canada, and so he cabled the Montreal office, and the junior manager went out and found an area of land with enormous deposits of refractory. He left the firm, bought the land and a tractor, and began to supply refractory to British steel works. After the war Heaps became agents for the whole of the UK for Canadian Refractories Ltd., and continued till 1964 when AH felt he was too old to handle the contract any more.

1914 – 1918

August 1914, AH volunteered for the Army **(Note 8)**, leaving JD running the business, but eventually JD joined up too, and the business was run by his father Charles Crichton and JD's wife Hesther.
1915, the company converted from partnership to a Limited Company and became:

WM. HEAP & CO. LTD.

Hesther, Charles and Eustace Baker were made directors. Hesther was a remarkable woman and a strong figure in the Company. (hurray for girl power) Throughout the war she ran Liverpool head office and expanded the business. In 1917 a problem arose which needed input from JD and AH, who were fighting in the trenches, so Hesther decided to hold the meeting in France. Against all odds she made her way to Paris and held the meeting in Hotel Grillon at 4pm on Wednesday 5th September 1917. JD and AH had 24 hours leave, and enjoyed a bath and some relaxation as well as the meeting.

1928 – 1936 The company moved to India Buildings.

SOUND RANGING (Note 9)

Sir William Bragg and his son W. Lawrence Bragg were jointly awarded the Nobel Prize for Physics for their work on X ray techniques in the investigation of crystals, and during the war Lawrence, was Scientific Advisor on Sound Ranging. He gathered about him bright young officers to form a team. One of the team was AH. They developed completely new methods of Sound Ranging. AH's strength lay in organisation and application of Sound Ranging and battery work.

After the war, AH and Lawrence corresponded regularly and saw each other periodically, and their families became close friends. So in 1939, when it became obvious that a second World War was coming Bragg visited Larkhill to look at the latest methods of Sound Ranging and was horrified at what he found. It had

become far too complicated, and was in his opinion far inferior to the equipment used in 1918.
He wrote to the War Office telling them of his fears, and suggesting they should write to the 2 most successful sound rangers of the first WW, Philpots and Atkins. This was done, and on the 19th September 1939, AH travelled to Cambridge and met up with Philpots and LB.
On the 2nd October, AH wrote that the new equipment was 'too gadgety' and recommended a fresh start, and went back to the office.
Meanwhile, LB felt the Army was not capable of straightening out the mess and wrote again to the War Office, saying that in his opinion, it would be an enormous help if they could persuade AH Atkins to take over, as AH was "so eminently sound on practical detail". Reply came, "Atkins is just the fellow we want to run a show which has every sign of becoming quite big".
The War Office then wrote to AH asking him to rejoin the army and sort out this "sound ranging mess".

So in 1940 AH donned uniform once more and joined the Royal Engineers at Larkhill.

It was one thing asking AH to straighten things out but quite another thing achieving it. He was put under the command of the very officers who had caused the mess, and they did everything they could to stop Major Atkins taking action. Their first step was to keep him well away from the Sound Ranging instruments themselves, and they tried to side track him by putting him in charge of training men in Sound Ranging, but with their inefficient and complicated instruments.
AH had however been invited by the War Office to improve Sound Ranging instruments and technique and he was easily a match for the 'Establishment' dinosaurs. In secret, he and LB set to work on new instruments which were developed from the 1918 models and because they were denied facilities at Larkhill, they had some of these instruments made by students working for LB at Cambridge University.
Several times AH despaired of getting anything done, and the red tape infuriated him. However when Winston

Churchill came into power this galvanized new thought and action, and although AH worked continually against huge resistance, he and LB continued to develop new instruments at Cambridge and AH quietly arranged for testing to be done at Larkhill.
The work continued throughout 1940, and in spite of every obstacle, new instruments and new methods were developed. These were to have a most important bearing on the future conduct of the war. The war in the desert between the 8th army and Rommels Afrika Corps proved LB and AH right, and the critics wrong, and work on development of simple Sound Ranging instruments continued. Even the ploy of trying to push AH into training instead of development did not work, since AH trained the men in the simpler way and they used these skills to good effect in the field.

THE LAST YEARS WITH AHA

So AH returned to Liverpool, but was retained as an advisor to Larkhill for another two and a half years. His work had been a struggle, but a total success and Britain once again led the world in Sound Ranging.
Meanwhile, in 1935, JD retired. So when AH agreed to go back into the Army, in 1940, it was on the understanding that JD's son John came into the company, and was not called up. John could not bear this, and he only worked briefly before joining the RNVR in 1941, when JD agreed to come out of retirement to run the company until 1942

when AH was released from the Army, and JD could finally enjoy a well earned rest. **(Note 10)**
Also, during this period when JD first retired in 1935, AH decided to look for cheaper offices.

1936 – 1941
They moved to the **Georges Dock Building**, basement offices in what was the recently completed Mersey Tunnel ventilation shaft. He took on Mrs Roughton to join Miss Ellis his personal secretary. Miss Ellis was later to become Company Secretary.

1941 – 1945
There was another move of offices, out of the badly bombed Liverpool, and now unsafe offices in Georges Dock, to **Grosvenor House, Chester**. During this period in the absence of the men, the 2 women more or less ran the office, with Miss Ellis frequently visiting Larkhill so that AH could keep up with office work and correspondence.
At this time of rationing, the office workers were maintained by food parcels from the NFL office.

In **1945** AH who was now truly back at the helm, decided to move back to Liverpool, and found offices in **Empire Buildings**, which was built to attract cotton brokers, and was light and airy. In 1946, it came on the market and AH bought it for £25,000, and this is where Heaps remained until 1968.

Meanwhile, in 1949, great changes were afoot in NFL, which had become the 10th province of Canada and this had a profound effect on our trade with our Canadian Office, so in 1951, AH, who observed these changes, sold our interests in the NFL office to friends and colleagues.

During this time, AH handled the company's affairs with great wisdom and ability, but his hardest problem was the question of handing over to a successor. He was an outstanding man and they are not easily satisfied when handing over the reins.
The company had taken on a manager H H Gwillam, and in 1951 Gwillam decided it was time for him to take over.

(AH was approaching 70 and still not wanting to hand over power.)
The outcome of this power struggle was Gwillam's resignation on 30th December 1951.

The next three years were very unsettled. Finally in 1952 AH wrote to Liverpool University asking for suitable candidates for a post in the company. As a result, John Millar was taken on, and remained with the company until he retired. He is the author of the book from which this information if collated. Many managers came and went in the intervening years, until finally AH allowed the transfer of power, and worked with his younger colleagues for the next 13 years.

In 1967, Empire Buildings were compulsorily purchased for redevelopment, and the Liverpool Daily Post and Echo Building and Royal Insurance Buildings are now on the site.

After months of searching, in February 1968, and after consultation with AH, it was agreed that Heaps sister company William Heap and Partners Co Ltd, would buy the derelict Hoylake Steam Laundry. Before that was possible, in March of that year, AH went home feeling unwell, and died two weeks later. He had seen the firm was continuing to make slow and steady progress and he was ready to go. **AH died on 1st March 1968, aged 85.**
His death left our plans in jeopardy but with the help of loans from AH's daughter Joan, the plan went ahead and Heaps rebuilt the building and moved in, renaming it Britannia House.

"AH was like a diamond, brilliant, but turn it and the colours are different as each new facet catches the light, and several people could have as many opinions of him.

He had a warm personality and the gift of almost always having a smile on his face, a superb vocabulary, great wisdom, particularly where his own interests were involved. He was a good engineer and had a great personal courage. He loved his country and his company which he guided for 60 tumultuous years through booms and slumps and two World Wars. Many people loved him and few disliked him but nobody ignored him. He was greatly admired because he was such a splendid man." JM

NOTES

Note 1

The year 1st WH was 7, James Hargreaves invented the spinning jenny and the year after Arkwright made his water frame in Preston and the following year, 1769, James Watt patented separate condenser for the steam engine.
Until the railways opened up the country, almost everybody with the surname Heap lived within 10 miles of the Padiham, Burnley area.

Note 2
The school was founded in 1549 by Edward VI, the boy king, son of Henry VIII. He founded many schools, the best known of which is Christs Hospital in London, founded 4 years after Whalley.

Note 3
Conway Castle one of a chain of castles built by Edward 1

Designed	James of St George
	Master of the Kings works in Wales
Built by	Richard of Chester
	The greatest builder in the country
Labour	1500 men from all over the place
	Including Robert of Frankby
	The Chief Joiner

Note 4

Thomas Brassey. Born at Buerton near Chester 1805
Bulkley Manor House, which family still own
Boarded at St Johns Rectory School in Vicars Cross
Took up surveying. Articled to Mr Lawton, initially to help with survey of land for the A5.
Sent to Birkenhead to open another office for Mr Lawton
Soon became a partner
Started brick works and supplied bricks for Liverpool Custom House
2nd contract: road from Tranmere to Bromborough. New Chester Road
Married Maria Harrison
Started building railways 1834
Penkridge viaduct bet Stafford and Wolverhampton
36 miles Basingstoke to Winchester
Loads more in France, Spain, Norway, Austria, Germany, Denmark, Italy, India, Mauritius, Canada, Poland, Russia, S. America

Note 5

In 1878 the British were involved in military action in Afghanistan on the NW Frontier of India. There were no roads or railways, and following the end of the war it was decided to build a railway up to the frontier, and we supplied the wrought iron bridge over the Bolan Pass.

Note 6

Strange that it was easier to do business with us in Liverpool than more local suppliers, but in 1886, Brunels 'Great Eastern' had succeeded in laying the Atlantic Cable from Liverpool to St Johns and Marconi was making successful radio transmissions from Signal Hill St Johns to Britain. We had the materials and we had the communication technology of the time.

1880 NFL embarked on building a railway
1881 work started and we supplied much of the materials.

Disaster then overtook NFL:
1892 Great Fire of St Johns
Within 2 years:
World Trade in one of its periodic slumps, and the banks were struggling
Fishing failed 2 years in succession
Businesses failed
So trouble for Heaps, but WH(3) said “We will trust you, pay when you can”, and the Bank of Montreal stepped in, tying NFL to Canada. Within 2 years confidence had returned and all Heaps bills were paid with 5% interest.

We did business with James Angel of James Angel and Co., later Angel Engineering supplies.
His son Fred set up the NFL office of Heaps in 1919 at 241 Water St.
His son Jack was chairman of Heap and Partners (NF Land)Co. Ltd
His son Roger is still a director of Heaps

Eventually John Crichton (JD’s son), born 1906, became an engineer and worked in the NFL office where he met and married Emma Angel. After 3 years they returned together to Liverpool, where John became a director of the company.

Note 7
In pre WW I, some of our friends in St Johns expressed an interest in the newly popular vehicle ‘the motor car’. We supplied the first car in St Johns, a Rolls Royce Silver Ghost (manufactured in Hulme Manchester). Also engaged on our friends behalf were chauffeurs and mechanics to go out to NFL from Liverpool. One of the chauffeurs George Nightingale became Mayor of St Johns.

Note 8
AH fought on the Somme from March 1916 to June 1917 and was awarded the Military Cross for gallantry in action.

AH is one of the few men to have served in 3 wars.

The Boer War
The Great War
World War II

1902 served with the Royal Artillery
1914 joined the Royal Artillery (the Gunners)
1915 seconded to Royal Engineers to join a section working on Sound Ranging, and was promoted to Major
1940 again with Royal Engineers working on Sound Ranging

Note 9
Sound Ranging
This is a method of pinpointing the position of enemy guns by using microphones strung out in an arc as close to the front as possible. The sound of the enemy gun was picked up by the microphones and the times measured on instruments and from this the position of the gun could be determined very quickly.

Note 10
JD and Hesther went on a world tour and JD became a student at the Sorbonne in Paris and eventually gained a degree in French.

Offices

1894 – 1896	Rumford Place
1896 – 1905	28 Chapel Street
1905 – 1911	Seaton Buildings 17 Water St Liverpool
1911 – 1928	Liver Buildings
1928 – 1936	India Buildings
1936 – 1941	Georges Dock (Mersey Tunnel Ventilation shaft)
1941 – 1945	Grosvenor House, Chester
1945 – 1968	Empire Buildings, Liverpool
1968	Britannia House, Hoylake, Wirral

Bibliography

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