# CHAPTER I

Train to work – North Harrow to Neasden – Chromoworks, Printing House – Frank Oppenheimer – Lithographic Printers – Artists Studio – Working on stone - Transferors – Hand drawn Posters - Festival of Great Britain – Lyons Tea Shops - Apprenticeship - London School of Printing – Boult Court – Harrow Art School – Evening Classes – Life Drawing Classes – The Boy's Brigade - Dancing lessons.

It did not take long to get into the swing of working life… Up, out of bed, a quick wash and a snatched breakfast… then, a quick dash down the road, to reach the station in time to catch the seven o/clock train for Wembley Park.

In 1950 there were still steam trains running on the brown liveried Metropolitan Line. The slam-door carriages held a dozen passengers all intent upon trying to read their newspapers whilst packed together like sardines. My journey lasted thirteen minutes, stopping at three stations…, at the fourth, the doors opened to disgorge half the passengers… myself amongst them. Not stopping for breath, I, and the other mackintoshed paper carrying passengers, forced a way over to the other side of the platform. We pushed our way into the underground train - already waiting at the platform… not needing to be reminded 'to mind-the-gap'…, as the doors slid shut…

Gasping for breath, I attempted to glance at the Daily Mail - to check the printing vacancies, clinging, as I did so, to the overhead strap. The passengers, hundreds of other expressionless workers, swayed to the hypnotic clackerty-clack, as the train travelled along the track towards Neasden. This was the start, to a lifetime of travelling up to London. A habit-forming ritual, as I, and every other passenger, fought for space and isolation engrossed in their books or reading for the umpteenth time the advertising streamers.

My destination – Neasden, was a rather dingy outreach of Willesden Green a place where trolley buses ran - receiving their power from overhead lines. Neasden's most important employer was British Rail who operated its railway sidings. Reputed to be one of Britain's largest goods yards, work went on round the clock… railway enthusiasts could always see great activity and register numerous working engine numbers. Obviously, the sidings importance were internationally known, for numerous Nazi hit and run raids damaged the tracks and further defaced the Victorian terraced houses that lined the perimeter fence.

It had never been a place of any pretence or elegance, even when first built… languishing as it did so between Blackbird Cross and Willesden High Road. The rows of terraced housing - three up two down were purpose built for railway workers and their families.

Along with hundreds of others, I joined the stream of hurrying workers marching up the stairs, like the march of the troglodytes, past the booking hall out onto the street, there, to turn right onto the pavement leading down the hill past the railings… Trying to walk on the pavement was a feat in itself… ducking in and out, now one foot in the gutter the other on the kerb, jostling with the rest of the early birds…down the hill – as the human tide surged about me. Sheltering behind the hoardings - from the wind, I strode on, past British Thompson Houston and Dalmyers optical works to Chromoworks, perched on the Willesden Road, behind some unimposing iron railings, which corralled the car park. Opposite, the showroom windows of coach-builders Park Ward, reflected and distorted the polished Rolls-Royce cars that lent an aura of respectability to the whole neighbourhood… Just along the road, a forlorn café perched next to a paper shop – a rather seedy establishment that sold sweets and cigarettes. It was here that I bought my cigarettes in packets of five with a book of matches. When times were extra hard, which was almost weekly, the cheapest brands, Weights, Woodbines or Turf, could be purchased one at a time… to become my saviour - from depression, boredom, and at times, shattered confidence - when jobs went wrong.

Reaching the gate, I braced myself before entering, remembering that 'I must order the men's cheese rolls and dinner choice… early'. With that thought in mind, I passed by the canteen.

I was usually the first to clock in. Inserting the card, I jerked down the handle… 7.50 in purple ink. I started off, down the long corridor… past the warehouse, printing shop and stairs, leading up to the grainers… past the lavatory, turn left and there on the right the sliding door surrounded by large printing plates propped handily against each wall. Hardly an imposing entrance or welcoming sight, nevertheless it was the firms Artist's Studio.

The smell of turps and printing ink greeted me as I made my way into the large airy room… I headed for the store cupboard to fetch out the enamel plate and stick of ink. Rubbing the ink stick on the plate, I splashed a small amount of water in and started to rub my finger round and round to mix-up the ink - into a creamy, opaque mixture… I wondered how many times apprentices had gone through a similar induction to their working day…?

Just outside the room…. along the corridor, the machine shop burst into life. The machine assistants fetched tins of ink from the store. The machine minders opened the tins and troweled some onto their mixing slabs. There, they worked the ink, oil and driers together to form the correct consistency… as the inking slabs resounded to the slap of palette knives - that pummelled and squeezed out the ink…

The printing plates, wrapped round the plate-cylinder, were damped over - with a water-soaked sponge that also removed the gum layer. The brakes squealed, as they stopped the cylinder turning. The machine minder scraped the mixed-ink into the inking duct, and laid on a palette knife - full of ink, to the rollers… Then the warning bell rang, as power was switch on. The cylinders revolved and the sheeting lever released, as the vacuum pumps 'puffed and sucked' - opening and closing the sheet feeders. The hiss of the ink-coated rollers – as they came in contact with each other, and the 'click' of the gripper's release gear - letting go the paper…, the stack began to grow…

The warehouse girls, feeding in the paper, burst into song, 'Bewitched, Bothered and Bewildered'… as they positioned the next sheet against the lay-bars. The minder rushed round to the front of the machine to extract a sheet to check the register and colour… This was the scene at all printing firms throughout the country.

I loved the activity, the rhythmic sounds and evocative smells… being in the company of others, skilled workers all contributing to creating, what I thought to be, a work of art… part of an age-old printing industry, with skills and routines that had hardly changed from its conception - a hundred years before.

Lithographic printing is 'a chemical process' – using a surface image rather than raised - for letterpress, or sunken, for engraving. The lithographic process was discovered in 1798, by fortuitous accident. Alois Senefelder, a book and music publisher, of Munich, grasped the significance of a dampened non-image area, which repelled greasy black ink.

Hand drawn colour lithographs – printed from stones or metal plates, is the only commercial reproduction method to simulate drawing with a brush, crayon or pencil. Both the production of letterpress blocks and engraved plates are stilted mechanical processes - which lacked artistic freedom. The hand-drawn lithographic reproduction has a random chalk image that does not rely upon a mechanical screened image - to show graduations of tone.

The first lithographic printing surface was that of a smoothed, locally hewn, limestone, which retained its quality - remained damp when water applied. Later… grained aluminium and zinc plates took the place of stone – a surface medium able to wrap round a printing cylinder.

Kelheim limestones are cut in the quarry three to four inches thick - for various machine sizes… then, given rounded edges and corners. The stones then either polished or grained depending on the size of the 'run' and the 'quality' required.

Initially, Senefelder used a smooth ungrained surface to write his music. When illustrating his work he produced tonework with a pen and ink – to produce stipple work [dots], or scraped away a solid patch - to give a line, crosshatched or woodblock effect. Later, for commercial jobs, the stone's surface grained - to allow crayon-work to be used – to give a pencil tint. Graining also increases the surface area - allows the dampening effect of water to last longer – allowing a greater number of prints to be made.

The stone's grained surface is produced by rotating a levigator, [trade name for a hand spun metal wheel… mimicked a corn mill], or, spinning two stones in contact - grained two stones simultaneously. Both these methods used graded qualities of silica sand - as aggregate, plus copious amounts of water [old work removed by the same process]. Steel straight edges provided an accurate level. When graining metal printing plates the same principle applied - a graining machine oscillates – as a rotating bed, using various sizes of metal or glass marbles - depending on the finished grain size required. Whether stone of metal plate, the final grained surface is washed and prepared using a very weak acetic acid – cleans the surface by removing any grease particles – giving the surface an even greater grease receptiveness.

The lithographic hand press uses both the principles of a letterpress screw press – for pressure, the engravers reciprocating press – to produce a larger print size and the operation of a scraper bar on the tympan - greater, directed, pressure. The first hand press, using the same principle as a clothes mangle, plus a scraper blade, instead of a wooden roller, was built at the turn of the eighteenth century – just after the discovery of the process. Fifty years later, in the 1850s, lithography became the premier printing process for monotone and colour. My work as an apprentice and during training used exactly the same type and age of hand press.

The artist's studio – my responsibility to keep tidy, had a high ceiling strung with suspended fluorescent lights. The tall, metal framed, windows - glazed with wired, hammered, safety glass, let in a filtered, glittering light, still clothed - to the higher panes, with a criss-cross of sticky brown paper - there to guard against shattering – caused by London's blitz. The walls, painted a light mustard colour, gave a mellow look to the otherwise harsh interior. Painted below the dado-line - braking up the expanse of tobacco stained wall colour – mid-grey… those areas that could be seen, unbroken by racks of zinc printing plates propped against the walls.

The stained and uneven floorboards – raised, where the nails and hard polished knots protected the surface, defied continual wear… smelt of turps and benzene. The planked surface blackened with chalk shavings, cigarette burns, and scratched by the edges of hundreds of metal plates dragged over them, testified to many years of service. The large wooden benches - massive legs capable of supporting heavy stones, arranged to give access to all sides… their owner, protected by dark grey warehouse coat… stretched across their surface - attending to a chalked tint or penned letter. The atmosphere smells and rustles, the same as years gone by - when the process discovered…

In 1822, it was demonstrated that 'by overprinting several colours' the lithographic process could make a reasonable reproduction of a coloured original, even though the number of copies limited.

Commercially, the chromolithographic process began in 1850. Previously, all printing work had been in a black and white line image [monochrome]. The public anticipated colour so did the advertisers. To some extent, hand-colouring prints did produce the desired effect, but only 'for

limited editions' - not for 'the mass market'. Letterpress and lithography both vied with each other to produce many copies of a commercially acceptable coloured reproduction – which matched the artwork. Chromolithography won… but not for long!

The changes that did come about to the lithographic and letterpress processes in the first hundred years, concerned mechanics, not principle - the use of metal rather than wood- in the construction of the press and the type. Later, the use of rotary action rather than reciprocation further advanced each process until, finally… conversion - of the coloured continuous tone picture, by the photographic halftone principle. The photographic reproduction of coloured originals had a relatively short life span. Eventually, in the 1980s, the electronic revolution began by introducing colour scanners… ink and laser jet printing.

1. When a new job estimated, for a hand drawn lithographic reproduction, a decision of how many colours required is the first consideration. Obviously if the job is for a cinema poster the number of colours would be less than for a facsimile of a fine art reproduction. The average number for a commercial reproduction is eight: buff, yellow, flesh, blue, red, black, pink, and grey.
2. A swatch or tab of each colour to be printed is stuck onto a piece of card to remind the artist exactly what colour he is working to, and give the printer a guide - when mixing his colours.
3. Multi-colour printings must register on the sheet of paper. The artist needs an accurate tracing to use as a guide to reproduce the original. To achieve this, the artist traces an outline guide. This guide, called 'the key', gives an exact position of each colour, shape, shade, brush stroke, shadow, and highlight. To position this correctly on the paper, register marks added for the printer.
4. The guideline, on each stone or plate, has to be non-greasy. Either the original tracing has to be retraced onto as many plates and stones that are to be used, using a non-greasy setoff powder, or the Keyline traced in conte crayon and rubbed down. Commercially, a key stone or plate is drawn, a black ink pull taken, the wet ink line dusted with purple setoff powder and the key pressed onto as many stones or plates as necessary.
5. Each printing stone or machine plate, with its faint purple line-image, can now be 'drawn-up' in black ink or crayon - to represent the weight of colour to be printed. The artist will use: pen line and stippling, Ben Day tinting mediums, splatter-work, airbrushing, flat crayoning and finger tinting, jumper work, sharpened crayon, sponge and stump work.
6. Incorrect work on the plate can be removed using blotting paper soaked in benzene for both ink or crayon work, and an etcho-stick [chalkstone] on a wet stone or plate when proving. Care taken, not to remove the grain, especially on a zinc plate, for that might create a scum of half-removed work when printing. No method is perfect or wholly reliable on metal plates, for utmost cleanliness is essential at all times. The limestone, being relatively soft, allows its surface to be engraved, scraped, carved, or etched.
7. Before starting to draw each colour, all non-image areas should be painted with gum Arabic - to desensitize the stone's surface. This prevents dirt, dust, finger marks, or stray grease affecting the clean paper areas.

## Proving the image

When the printing stone or plate had been drawn - ready for printing, the image should be 'proved' - to secure the work and to make sure that what is on the printing surface is what is wanted. There are three reasons why 'proving' the image has to take place:

i. The artists drawing ink and crayon, does not contain a 'sufficiently greasy content', to ensure a permanent image – a more grease receptive image has replace the drawn one.
ii. Before printing, the printing surface has to be scrupulously clean - showing only that which is to be printed.
iii. The printing image must be capable of producing multiple impressions.

## Preparing the image for proving.

- The completed ink and chalkwork drawing is dusted with French chalk – using a shaker and cotton wool puff. This prevents the work smudging when gummed-up.

- The stone or plate is 'gummed up' - using a sponge soaked-in a gum arabic solution - to cover the whole plate surface. To prevent smearing or interfering with the image in any way, dab over the dusted work, do not rub.

- Gum Arabic crystals melt in water - to make a thin creamy consistency [test for 'tack' between finger and thumb]… applying gum arabic desensitizes the non-image areas - makes the non-image areas 'water receptive'. If the gum-Arabic solution is too watery, there is the danger that you will remove some of the fine chalkwork. Similarly too thick the solution will scrub the image. You do not add any acid to the first application of gum solution for the same reason. The solution will be useable for a few weeks steadily becoming acidic which will have an etching effect.

- When the Gum Arabic solution applied to the printing surface, the excess is blotted-away - using newspaper. This reduced the gum to a thin layer. The surface is then fanned dry. The Gum Arabic will only adhere to the non-image area.

- The artist's ink and chalkwork is now removed with turpentine using a pad of bound felt. When that has been achieved, remove the excess turpentine with a cloth, which leaves a ghost image, and fan dry.

- The ghost image-area is now fortified with 'washout' ashphaltum - a thin greasy tar solution that has a greater ability to attract grease [transfer or black printing ink reduced slightly with linseed oil can take the place of washout]. Excess removed and the surface fanned dry.

- The printing surface dampened with water - using a sponge. The drawn image now replaced by ink - using an ink-charged nap-roller - applied in a number of directions to ensure even coverage. Unwanted work can now be removed with an etcho-stick…, the plate or stone fanned dry and dusted with French chalk.

- If the plate or stone is not to be used, it is gummed over with gum-etch [gum Arabic and much-diluted nitric acid. *Remember to only add acid to water*], this keeps the surface clean. The printing plate can now be stored to await proving or printing.

- When 'machine proving', prepare a suitable amount of transfer or black printing ink on your rolling up slab. Charge a composition-rubber hand-roller. Dampen the printing surface -

with a water soaked sponge. Roll-up the image uniformly in a number of directions using the ink charged roller… whilst continuing to keep the non-image areas damp...

- Finally, prove the work – by taking an impression on paper. The rolled-up printing stone or plate, transferred to the press, dampened, and re-rolled using a composition roller charged with black printing ink. *All ink rollers whether composition or nap should be stored on a rack, not left lying on the ink slab.*

- Place a sheet of paper on the stone. Lay-on additional sheets as 'backing-sheets' – this finely adjusts the pressure on the plate or stone by the scraper bar. Lower the tympan - a thin sheet of tin held in a frame hinged to the middle of the machine, which the scraper-bar runs over. The stone – resting on the 'bed' of the press, now raised-up to meet the scraper-bar using a jacking lever. Using the cranking handle, the bed wound by ratchet on a track, beneath the scraper bar, previously adjusted for pressure by the screw. The bar or lever dropped back into place - to take the pressure off, and the bed run-back. The tympan raised and packing sheets and 'proof' removed. The resulting proof is a 'direct' impression - straight from stone or plate. This reverses the image on the plate.

To make the image 'right reading' the image either has, to be drawn in reverse, or, transferred – using two 'damp-proof transfer-papers' and another printing surface. It was not until 1905 that a rubber blanket used to transfer an image from stone to blanket, then from blanket to paper – to produce an indirect, 'offset' reproduction.

The 1880s saw photographs reproduced. The photographic prints, with their continuous tone image, converted using a 'halftone screen'. Ten years later, this halftone process applied to coloured photographs.

A coloured artwork is photographed three times using three separate films. Each separate exposure made through a primary light filter to make three separation negatives – one through the red filter, one through the blue and the final one through the green filter. These three negatives are now converted to a positive image and screened by contact or camera. The result from this action is to reverse the image from negative to positive and reverses the colour separation from primary filter colour to positive secondary colour. Each of these now positive images are made into three separate printing plates. Each plate now represents a positive image for its secondary light colour. There is a plate for the cyan printer, a plate for the yellow printer and one for the magenta printer. We can now print each one of these on top of each other [to overprint] to reconstruct the original artwork.

By 1900, lithographic printing was well established. The industry now saw the introduction of the cylinder press. Rotary printing, and the wrap-round rubber blanket - transferring the image to the paper 'right reading', took a further five years.

It was discovered, at about the same time, that if a stone were to be grained [given a slightly rough surface] a wax crayon could be used to draw with to represent tonework – much like pencilling. The result, when printed was a crayoned effect similar to a pencil image… the wax crayon producing an image that could be 'rolled up' and proved, in exactly the same manner as the solid ink line-work. This transformed the chromolithographic industry. Oil paintings and watercolours were now capable of being reproduced - using fewer printings - to achieve the same result… All the Commercial Artist's work was now capable of being reproduced, including the lettering.

Artists appreciated that they too - could produce their own work – to make fine art prints. They were not able to show the same expertise in application. Their work, depicting a free unrestrained quality, became autolithographs.

To reproduce an oil painting needed twelve or more printings, plus an engraved stone for canvas texture, brush strokes and impasto work, faithfully copied - using an embossing technique. For every day reproductions - advertising theatre productions, greeting cards and packaging labels, fewer colours were needed.

Colour printing technology and type composition improved over the years… that allowed faster production, increased the length of the machine run and improved quality.

I was fortunate, not by foresight but by chance, to be working for a lithographic printing house… at a time when drawn lithographs - the process used by advertisers, agencies and poster designers, used for poster production - for hoardings, tea houses and railway platforms. It was also the time when lithography was about to overtake the letterpress industry as the 'printing process for the jobbing printer'.

A reasonable colour reproduction on paper was only possible a few years before the First World War… a number of inventions and discoveries came about together to make this possible. Hand drawn reproduction techniques only lasted fifty years, before giving way to photographic processes. My apprenticeship came right at the end of this fifty-year period.

By 1955, colour corrected, separated film sets, now patched together with typematter, onto clear plastic foils - in page and sheet position. This transformed the platemaking industry. It was a far simpler method to create a printing plate for multi image production. These innovations made lithography preferable to letterpress. A few years later, the same thing happened to the photogravure industry casting many workers aside – when faster and cheaper lithographic plates and platemaking made the process acceptable - for fast, long runs with he ability to make quick changes to plate content.

My three-month trial period disappeared in a flash. To be indentured as an apprentice, the union members had to vote whether I was suitable… the management also had a say in the matter…

At the following month's union meeting, I was asked to 'stand outside', while they discussed my future… Thankfully, I was accepted. The indenture was then legally drawn-up, for me to sign, as did the Directors, and the seal applied – guaranteed the training, conditions and scale of payment.

For one hundred years, the Lithographic Artist considered the premier skill of the printing trades… from 1950 onwards, steeply in decline. The baton then taken up by the photographic retoucher, camera operator and film planner… handing it on ten years later - to the scanner operator.

My pay was, linked to that of a journeyman's rate, two guineas a week, for forty-eight and a half hours, plus two weeks holiday. I had to attend The London School of Printing, on a one day a week Lithographic Artists course. A set of drawing equipment bought at Cornellisons was my first job and the men gave me various tools to start.

The Festival of Britain, held in 1951, was supposed to herald Britain's recovery. However, we still had enormous repayments to make to America… a fact the media did not explain clearly to the population. Britain was now a second-class power still operating as if nothing had changed. British industry in general still spent heavily on research and development. This was a spill over from the war effort particularly into aircraft manufacture and allied industries – radio communication, radar

and electronic engineering. Two thirds of all exports were science-based much of the development work coming from America. The pre-printing industry used much development work from American film companies particularly Kodak who were manufacturing their new polyester backing for films. Colour correction for the printing tri-colours used the Kodak double-overlay masking soon to be replaced by the Tri-mask system.

During my apprenticeship taught the craft… working on my own reproductions… continually repeat any technique not mastered. Lettering was another challenge. One of my tasks was to draw the letter 'C' with a circumference of two feet - to draw the curves by hand. The foreman would get on his hands and knees following the curve round, the slightest bump or cavity I had to do it all again. When I had done this five or six times, I became very careful not to make the mistake again. All the members of staff checked all my jobs in turn so that I would have a total understanding of every technique. My fingers became hardened by gripping the snapped off chalk, especially when having to crayon large areas of tint… the ends of my fingers, at first, worn down, gradually they grew hard skin.

Doing all these elementary tasks over a protracted period made me respect what they meant by doing a job perfectly. I was expected to do a job better than a journeyman - I had more time… They were working commercially – quickly, doing the job, 'right first time'. When an artist told to copy something, it had to be exactly like the original… no excuses accepted. Some of the work for Lyons had been drawn by the artist onto printing plates… these are called autolithographs. The trained artist often viewed the work produced by such artists as crude – lacking in drawing technique and unfinished. The trained man took a delight in producing work of fine quality copying the artwork in every detail he was skilled. The autolithographer used many drawing techniques to obtain the expression desired. Quite often, these techniques were inappropriate for reproduction and caused many problems for the prover and machine minder.

One of my tasks was to draw a 'key', tracing with pen and Indian ink on Kodatrace, of a Lyons Tea Shop artwork. This was one of a series first introduced three years before… this being the first of a second issue. They were, introduced by Lyons to cheer up their teashops giving them framed lithographic prints, in bright colours, to hang on their walls.

I had to take particular care to see that every shape recorded. The resulting keyline drawing exposed, in contact with a light sensitive coating, to a zinc plate. The light hardened the coating of the non-image areas to allow the softer parts to be replaced with a greasy ink. When rolled up the plate became the 'key plate' to make transfers for each colour, to be drawn mostly in eight colours.

These quality prints were much sought after, and proved a favourite with the public. We all enjoyed spending time on these as a change from working on large posters. Not only were the subjects well drawn and painted but the impasto brush strokes had to be reproduced as well.

I had to address the men respectfully… they were my teachers… half the department not long been demobbed. Even so, they still demanded respect, for they had gone through a similar tough apprenticeship. An exception, not made for me, for they had every intension to make sure I 'was up to the mark' - not let the department down.

Chromoworks took its name from 'a small reproduction of a coloured original' – of an oil painting or other artists medium. The history of printing shows a challenge exists, between all the processes – which can produce the cheapest work with the longest run. As all businesses, price of product always the ultimate determinate.

Letterpress continued to be the main producer of books and newspapers well into the nineteen eighties when the cheap production of the lithographic plate and photographic page planning changed the whole industry. Photogravure still printed the radio and TV times and women's magazines… the massive 'runs' of several million copies. Within a few years, they too gave way to the lithographic process.