

**Appendix**

### An Outline of the Block Printing Process

by Janet Hearn-Gillham

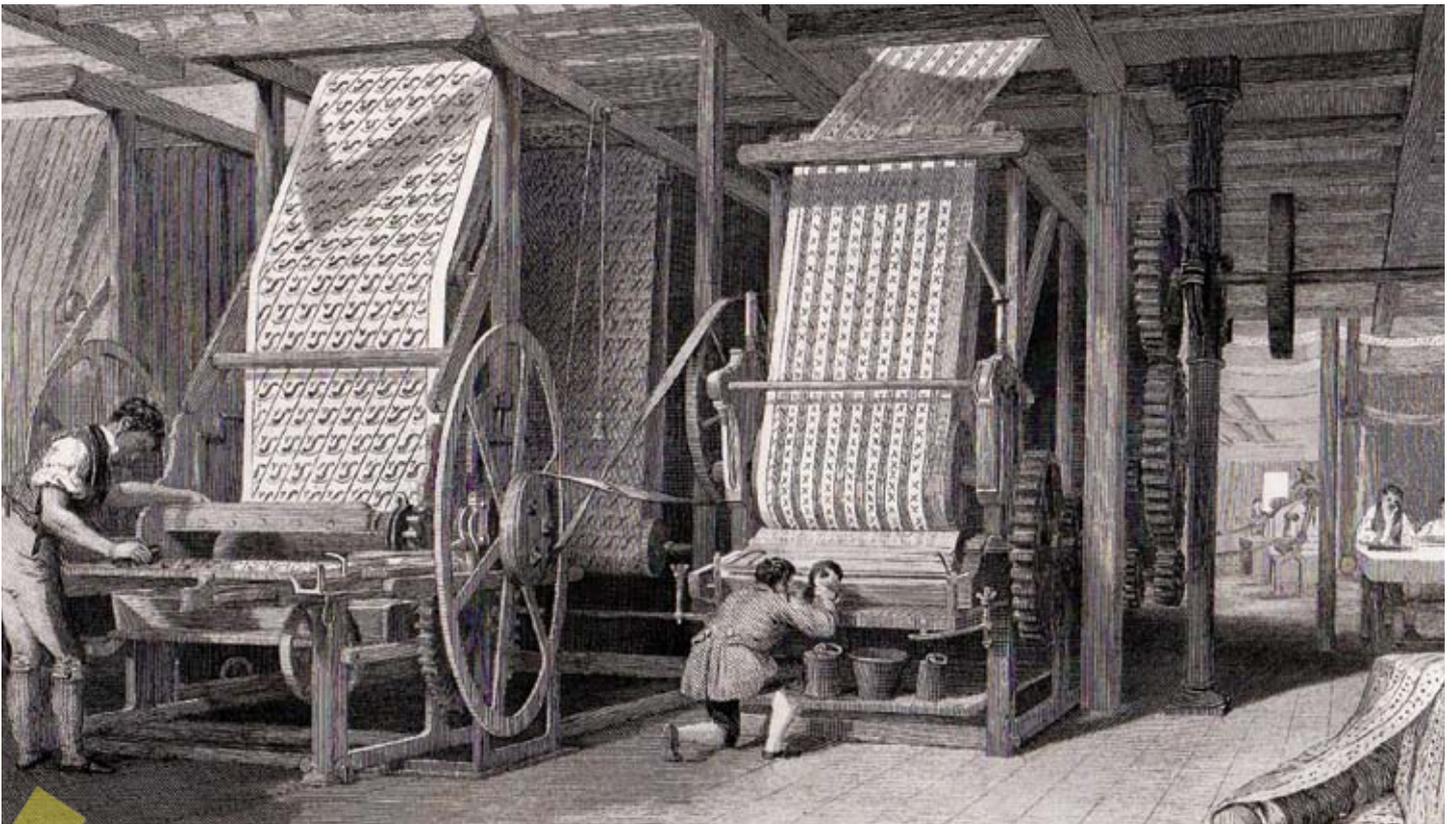
The woven natural fibre cloth will first have to be prepared; for example, in the case of calico, by an initial singeing then bleaching, in the case of silk, by boiling to remove the sericin gum which would resist the dye.

The cloth is then stretched onto a completely flat table with a rubberised surface, this enables the gum to stick down the cloth so that it will not move; the printing process can then commence.

Each colour will require one block, for example a six colour pattern will require six blocks, so each block forms a different part of the pattern and needs to have its own space on the fabric with no colour overlapping. (There are one or two exceptions to this for particular patterns). The blocks therefore need 'pitch pins' on their corners to enable perfect alignment.

The colour is brushed on to a 'sieve' (a wooden frame with felt stretched across) which floats on a water-tight membrane over 'swimmings' (old dyes and gums). The block is charged with colour by pressing it onto the colour-impregnated felt, and then pressed onto the cloth. This process continues the full length of the fabric, the sieve re-brushed with colour every time. Each impression will be lined up exactly to the previous one by placing the pitch pins on the pin marks just left. The second and subsequent colours are printed in the same way, using the pin marks to ensure accuracy.

Once the printing is finished, the cloth is lifted up on to a wooden frame over the table to allow it to dry completely. (The printer can start another job while the first piece is drying; this was important as the work was usually done on a piece-work basis). Once dry, the cloth usually goes through a steaming process to fix and develop the colours. It will then go through an appropriate finishing process according to its end use.



**Calico Printing in Lancashire.** The illustration shows the calico printing process. The worker on the left is using a machine printing process with engraved copper rollers transferring the pattern onto the cloth. The worker on the right is a block printer, using a hand carved wooden block. Note the buckets of dye under the machine. One cylinder printer, attended by one man and one boy, will do as much work as 100 block printers with 100 boys.

**Silk and Cotton Printing Works at Crayford Kent****by Major J.G. Burns 8th April 1842**

In passing Crayford, by your orders, I inspected and took evidence at the cotton and silk printing works of Mr Swaisland and Messrs. Applegath and Co. In these works numbers of young people of both sexes are employed as teerers, i.e. rubbing the colour cases (which float in tubs on a strong solution of gum), to which the block printers apply their blocks. This employment is common to both establishments, as are the wash-house, steam-house, and copper house. In the first the goods are put into large wheels closed in and turned by machinery; there are three lads at this work, which must be a very cold one in water, as though under cover, they are constantly wet from the splashing of water. They wear blanket aprons and flannel around the ankles, but this does not effectually protect them from the wet.

**"In winter very cold; goods almost frozen; can hardly feel our fingers." (No 248 Friend Sawyer) .**

The lads at the copper house are still more exposed, working chiefly in the open air by the river side rinsing their goods (cloths) after they are taken from the madder- coppers; this is done by the web being hung over a wheel and trailing in the water, the lads turning a winch. At Mr Applegath's this is done under cover and Mr Swaisland intends covering in the places on his premises also; but even where so sheltered, it must in winter be very cold and severe work. The lads are also employed in spreading out cloth for bleaching in the fields. There are two lads working in the steam house, but they are not employed above half an hour at a time; in this room the goods are close packed in cases, and submitted to a very high temperature from steam to fix the colours; the lads assist in packing and unpacking. One lad is employed in the colour-house where the colours are prepared; he attends a copper in which fustic chips are boiled, and washes out the pots and brushes; he does not complain of the smell of the colours, nor does the lad at Mr Applegath's works.

**"Smell of colours don't hurt me; never hardly smell 'em." (No 245 Richard Roberts)**

**"Used to smell the colours a little at first; never smelt them to hurt me; now I am used to it, don't smell nothing on 'em now - (No 255 Thomas Jonner)**

Much of the printing at Mr Swaisland's is done by copper plates and presses but at these only adults are employed. The machinery is well fenced. About a year ago a man's fingers were caught in the cogs of a wheel at the side of one of the presses; this accident suggested a fender being applied there, and it now perfectly secure.

**"Very trying for the hands when at that work; I don't think the health suffers; mine did-not when a teerer." (No 249 W Whitehead)**

The whole of the premises, particularly the rooms where the block- printers and teerers work, are clean, spacious, lofty, and well ventilated-heated in winter by warm water pipes to a very comfortable temperature. They are thoroughly drained, and are built on a fine open and healthy situation close to the river. There are places for cooking or warming victuals.

In Mr Swaisland's works there are, under 13 years of age, two girls and five boys; between 13 and 18 years old, nineteen girls and thirty lads.

In Mr Applegath's works the employment of the teerers, the wash, colour and copper houses are of the same nature as that at Mr Swaisland's; but the Bandana silk printing employs more young people. Here a great number of both sexes are engaged in stretching silk handkerchiefs, preparatory to their being printed; some girls at "cut laying," placing pieces of oiled cloth on the parts where it is not intended the machine should in passing along, make any impression; and many others (lads and girls) are employed at the various printing-presses and other mechanical work.

Mr Applegath has three places of work-one at Crayford, another at Barne's Cray, and one called the Saw Mill; they are all spacious, clean, well drained and ventilated. In these there are, under 13 years of age, 6 boys; between 13 and 18, there are 53 girls and 84 lads. At both establishments the hours of labour in winter are very many, averaging from 12 to 16; but under existing circumstances it would be difficult to avoid this. There being no protection for patterns, the utmost diligence and exertion are required to have those for the spring and summer executed before they can be pirated by the copyists, who on their part use every exertion to effect this to the manifest injury of those who have the originals, and for which prices are paid. Were the copyright granted for 12 months or longer, the necessity for such expedition would cease and of course hours of labour be fewer.

The wages of girls are from 6s. to 8s. a week, and of most of the boys and lads from 5s. to 13s.; they are chiefly hired and paid by the block-printers and machine men with whom they work. In winter much over-work is done all before 6am and after 6pm, is so counted; half an hour each for breakfast and tea, and one hour (teerers get one and a half) for dinner, are allowed; many work during the latter interval, and for every half-hour are paid a full hour's work. Some eat their meals at the factory, others go home. In summer the work is much lighter.

I saw the whole of the people at their respective employments, and they seem a very stout healthy set indeed; I could not perceive any unpleasant smell from the colours, nor did I hear a single complaint on this score.

**KENT - COTTON AND SILK PRINTING**  
**COTTON PRINTING WORKS of Mr. Swaisland at Crayford**

**No. 244. John Savage, aged 13 years. Examined April 8th:-**

Can read and write a little. Next week, going to evening school, could not go lately, been working over hours. Been here about two years. Work in the fields, laying out cloth for bleaching, also in the copper-house rinsing cloth after it has been in the madder-coppers. (This is done by the web being hung over a wheel, and trailing in the water). I turn the handle of the wheel. Come to work at six o'clock, sometimes, as this morning, at five, when there is more work; six at night is our regular time for leaving off work. I have worked till 12 at night when much work in winter, it's not been hard work; when working till 12 at night for a week or more together, I find that six hours sleep is quite enough. Allowed half-an-hour for breakfast, and an hour for dinner. Eat meals at the copper house, cooked at home, can warm it. Plenty of good food, meat of some sort every day. Regular wages 5s. a week; but for every hour before six in the morning and after six in the evening paid extra for. Work doesn't tire not very often, doesn't hurt my health; am very well. Well used. No beating allowed. Hired by Mr. Swaisland, paid by Mr. Whitehead of the copper-house. My father works here, he takes my pay.

(Signed)

**JOHN SAVAGE**

**No. 245. Charles North, aged 17 years. Examined April 8th:-**

Can read and write. Been about 14 months here; employed before at Mr. Applegath's works. Employed much in the same work as Savage. Time of working the same. Have been a little tired at times, but not very often. Allowed an hour for dinner, but work half the time, being paid extra for it. Six shillings a week regular, paid extra as above. Have very good health. No beating allowed by Mr. Swaisland if he knew it; have a little cuff of the head from my mate (the man whom he works with), never hurt much, but he threatens. Been pretty good friends lately. My work is out of doors.

(Signed)

**CHARLES NORTH**

**No. 246. John Hennessey, aged 12 years. Examined 8th April:-**

Can read and write. Don't attend school. Been here since a week after last Whit-Monday. Employed as a teerer with my father. (Rubbing the colours in a sieve for the block to be rubbed on.) Stand to work. Come to work at six o'clock, leave off at six; half-an-hour allowed for breakfast, and one hour and a half for dinner. Eat meals at the factory, cooked at home, warmed here. Places at each door for washing. Plenty of good food, meat, greens, and potatoes. Paid three half-pence an hour; hired and paid by my father, the block-printer I work with. Work does not tire, nor make me ill. In summer time we feel the rooms hot, but mostly have all the doors open. Feel no inconvenience from the smell of the colours. The blue smells strong. Kindly treated.

(Signed)

**JOHN HENNESSEY**

**No. 247. Jane Kenyon, aged 12 years. Examined April 8th:-**

Can't write nor read. Attend Sunday-school at Dartford. Came to work here last Monday. Work as a teerer with Abraham Watson. Stand at work. Work, hours, meals, &c., same as Hennessey. Regular pay 5s. a week. Paid and hired by Abraham Watson. Not very tired. Don't find the smell of the colours unpleasant. Well treated. My father and two sisters work here.

(Signed)

**JANE KENYON**

**No. 248. Mary Biswell, aged 15 years. Examined April 8th:-**

Can read, can write a little, not a great deal. Sometimes attend Sunday-school at Bexley Heath, and when able go to the Infant-school to learn writing. Been working here going on for three years. Work, hours, meals, &c., same as Jane Kenyon. Regular wages 8s. a week. Paid extra for over-work three halfpence an hour. If we work half an hour of our dinner-time am paid for it. Hired and paid by my father. Sometimes when I work over hours feel tired, but from six to six don't feel it. Enjoy a very good state of health; work agrees with me. Don't feel anything at all from the smell of the paint. Very well used. Like the situation.

(Signed)

**MARY BISWELL**

**No. 249. James Wykes, aged 17 years. Examined April 8th:-**

Can read and write. Been here between three and four years. Work as a teerer. Work, hours, meals, &c., same as Mary Biswell. earn, when I work all the week, 8s. Work does not tire, used to make me unwell when I first came. Don't mind smell of paint, at first annoyed me, but don't now. Have pretty good health. Paid and hired by George Hudson, with whom I work. Kindly used, never beaten.

(Signed) **JAMES WYKES**

**No. 250. Richard Roberts, aged 15 years. Examined April 8th:-**

Can read and write a little. Attend a Sunday-school. Been here about two or three years. Work in colour-house. Attend to a copper, boiling fustic chips, and carry gum from next place to colour-house, and wash out the pans and brushes. Come to work at six and leave off at seven in the evening; sometimes longer, till nine, just as the work is oftener in winter than in summer. An hour and a half allowed for dinner, half-an-hour breakfast, go home to meals. It ain't very hard work, does not tire me, don't feel it very hot, used to it, can sit down whenever I like. Pay 6s a-week; paid for extra work. Mr. Swaisland hired me, he pays my father, who pays me. Plenty of good food. Very good health. Smell of colours don't hurt me, never hardly smell 'em. Ain't ill-used, don't get tanned (beaten) once a year. Like the situation. Have time to play at breakfast and dinner. Sometimes have holidays, not very often.

(Signed) **RICHARD ROBERTS**

**No. 251. John Wright, aged 15 years. Examined April 8th:-**

Can read and write a little. Attend Bexley Heath Sunday-school. Been here five years. Employed sewing goods (cloths) together previous to their being put into the steam-boxes. Come to work at six, leave off mostly at 9, but sometimes till 10 and 11. Stand at work. Allowed half-an-hour for breakfast; eat meals here, can warm them. Feel very tired after work, does not affect my health, makes my legs and arms ache. In summer feel it very hot from the steam. Been only at home two days from illness since I have been here. Standing wages 9s a-week. If we work before six in the morning, or after six in the evening, paid extra. Plenty of good food. Never beaten. Like the place.

(Signed) **JOHN WRIGHT**

**No. 252. James Finch, aged 14 years. Examined April 8th:-**

Can read and write. Attend Sunday-school. Been rather better than two years here. Employed folding and marking goods. Carry up the bales to where they are stamped. Come to work at six in the morning, leave off sometimes at seven, and sometimes eight or nine, according to the work. Leave off at six in summer - six to six - a day; paid for overtime; 7s a-week regular pay. Work not hard, does not tire nor hurt my health; open place where we work. Have very good health. Never beaten. Well used. Hired and paid by Mr. Swaysland.

(Signed) **JAMES FINCH**

**No. 253. Friend Sawyer, aged 18 years. Examined April 8th:-**

Can read, and write a little. Been about four years here. Teering about three years; now on out-door work in the wheel-house; employed rinsing goods after they come from the mordant (where they are prepared for block-printing), turn the winch. Regular day from six to six. Come to work at six; sometimes work as late as nine or ten. Paid for overwork. Half-an-hour allowed each for breakfast and dinner; eat meals here. Liable to be wet from the splashing; wear flannel round the ankle, and a blanket-apron. Once caught cold and confined for three days. Very hard work, and feel tired; my health not hurt. Sometimes so tired can hardly eat my supper. Earn 8s. a-week. Ours is a large family, only three of us employed, ten of us, so we don't fare very well. Pretty well treated. Don't much like my situation, the work hard and always wet. In winter very cold, goods almost frozen, can hardly sometimes feel our fingers cold. Like teering better for the work, but this is more constant pay.

(Signed) **FRIEND SAWYER**

**No. 254. William Whitehead, aged 17 years. Examined April 8th:-**

Can read and write. Am apprentice. Work at block-printing. Been here four years, come to work at six, leave off at six precisely. Meals same hours as teerers, and paid same if work during the time. Earn 11s. a-week. In winter, generally speaking, the teerers wash the blocks in-doors at the pumps, at the doors of each shop. The cases are washed every evening in the river; very trying for the hands when at that work. I don't think the health suffers, mine did not when a teerer. The printing-shops are well ventilated, in winter plenty of warmth.

(Signed)

**WILLIAM WHITEHEAD**

**No. 255. James Wright, aged 17 years. Examined April 8th:-**

Can read and write middling. Been here between six and seven years. Employed in sewing the cloths together preparatory to copper-plate printing. Stand to work. Come to work at six, leave off generally about nine; but six to six is regular work, paid extra for all beyond that. Allowed half-an-hour for breakfast, one hour for dinner, and 20 minutes for tea. Eat my meals here. Can't call it hard work, a very nice place altogether. When working till nine do feel tired. Have good health. Room where we work neither too hot nor too cold. Kindly treated. Hired and paid by Mr. Swaysland.

(Signed)

**JAMES WRIGHT**

**No. 256. Frederick Phillips, aged 13 years. Examined 8th April:-**

Can read and write. Attend Sunday school. Been here about six months, wheeling goods from one part of the works to another. Come to work at six. Times, meals, &c., same as James Wright. Regular wages 6s. a-week, hired and paid by Mr. Swaysland. Don't think the work very hard, except we stay later. Does not injure my health. Kindly treated. Like the situation. Plenty to eat.

(Signed)

**FREDERICK PHILLIPS**

**SILK PRINTING WORKS of Mr. Applegath at Crayford.**

**No. 257. Frederick Collison, aged 14 years. Examined 9th April:-**

Can read and write. Don't attend school now. Been here eight months. Employed in stretching the silk. Stand to work. Come to work at six, leave off about nine at night, allowed half an hour each for breakfast and tea, and an hour for dinner. Eat meals in factory, cooked at home, warm them in the flues. Get plenty of good food. Been used to sitting up, work does not tire me, does not hurt my health, which is very good. Paid 5s. a week taking the day from six to six, all beyond that extra, paid a penny an hour. Hired and paid by Thomas Archibald, at whose machine I work. Don't feel the smell of the colours annoy me. In summer time feel the room we work in very hot. In summer the skylights are opened. Well treated, and like my situation. Amuse myself at dinner hours.

(Signed)

**FREDERICK COLLISON**

**No. 258. John Allen, aged 13 years. Examined 9th April:-**

Can read and write. Don't attend any school. Work, time, meals, &c., as Collison. Paid by piece. Earn about 7s. 6d. a week, hired and paid by Mr. Deakins, with whom I work. In the winter when we worked till eleven and twelve, the work used to tire me very much, only worked at that rate one week. Doesn't tire me so much when working as now till nine. Doesn't work so late as nine in summer, get away at half past-five. Health good, not hurt by work. Don't mind the smell from the colours, used to it. Been here about a year and a half. When ill find our own doctors. Very well used, no beating allowed.

(Signed)

**JOHN ALLEN**

## Appendix

**No. 259. George Beadle, aged 13 years. Examined 9th April:-**

Can't read, can't write much. Attend Sunday-school. Been here seven weeks. Hours and meals, same as last boy; employed sewing the pieces. Employed in a brickfield before, like this work a good deal better, used to work many hours, sometimes worked in brickfield from four till ten, when it was moonlight. This work does not tire me or hurt my health. Paid 4s. 6d. a week from six to six. Paid extra after that. Hired and paid by the man I work with. No beating allowed, well used, like my situation pretty well.

(Signed)

GEORGE SAMUEL

**No. 260. Thomas Janner, aged 15 years. Examined 9th April:-**

Can read. Can't write. Attend Bexley Heath Sunday-school. Been here two months. worked on a farm with horses before I came. Like this work better. Employed in colour house, washing pans and kettles out. Come to work at six, leave off at half-past eight at night. Meals same as other lads. Regular wages 5s. a week, paid extra after half-past five in the evening. Stand at work, it does not tire me, health good, not hurt by work. Hired and paid for by the man I work with. Used to smell the colours a little at first, never smelt them to hurt me, now I am used to it, don't smell nothing on 'em now. Well used, like the place very well.

(Signed)

THOMAS JANNER

**No. 261. Mary Ann Smallman, aged 13 years 26th next September. Examined April 9th:-**

Can read in the Testament, can't write. Attend a Sunday-school at Dartford. Been here a twelvemonth next Whitsuntide. Employed in wiping oil cloth for the machine to go over. Come to work at 6, leave off at 5 in the evening. Allowed half an hour for breakfast and an hour for dinner. Eat meals here, sometimes cook them at home, sometimes here. Plenty to eat. I ain't tired from work. Have very good health. Regular pay 4s. a week, paid by the man at whose machine I work. Well used. Like the work very well.

(Signed)

MARY ANN SMALLMAN

**No. 262. Mary Munday, aged 17 years next June. Examined April 9th:-**

Can read, can't write. Been here two years last November. Was at work in the fields a little time, but not long. Like this work. Employed as last girl; work, hours, meals, same. Earns 7s. regular pay a-week. Paid for over work after half-past 6. Hired and paid by the man I work with. Work doesn't tire very often; sometimes when I haven't been very well have been tired, but nothing to signify. Never been ill owing to the work. Never been ill-treated here.

(Signed)

MARY MUNDAY

**No. 263. Mary Munns, aged 16 years next June. Examined April 9th:-**

Can read, but can't write. Been working here turned three years. Was at service before I came here. Like this better. Employed teering (spreading colours); come to work at 6, and leave off sometimes at 6 and sometimes at 9. Half an hour out for breakfast and tea, and an hour for dinner allowed. Eat meals here, cooked at home, warmed here. Work does not ture at all. Have very good health. Under cover when washing blocks and cases, have warm water for it. One sister works here. Well used. Like the situation very well indeed. 7s. a week regular pay, paid extra three halfpence an hour for work after half past 5.

(Signed)

MARY MUNNS

**No. 264. Emma Munns, aged 17 years last March. Examined April 9th:-**

Can read a very little, can't write. Attend Sunday-school. Been here 3 years. Was in service before. Like the factory a great deal better. Employed cut laying (when the block does not mark has to fill it up with a pencil). Hours and meals same as Mary Munns. Work tired me when I first came; does not now, am used to it. Have good health, not hurt in the least by the work. 5s. a-week regular pay, over work as usual. Got a very nice master now; like the place.

(Signed)

EMMA MUNNS

**No. 265. Marie Fuller, aged 15 years in May. Examined April 9th:-**

Can read, can't write, very well; can't sign my name. Been here about 3 years. Employed teering. Work, hours, and meals same as Mary Munns. Go home to meals. Work don't tire or hurt me at all. 7s. a-week regular pay, over work as usual. Kindly treated, like the place very much indeed.

(Signed)

MARIA FULLER

**SAW MILLS, near Crayford, Mr. Applegath**

**No. 266. Samuel Miles, aged 15 years last December. Examined 9th April:-**

Can read and write. Attend a Sunday-school. Been here a month. Worked at the other factory and running errands at Dartford. Like this work best. Employed holding the plate back (printing by copper plates machine; he assists the man who manages the machine). Come to work at 6, leave off at 6 usually, but this week we have worked overtime till 7. 5s. a week regular wages. Hired and paid by Mr. Collins, the foreman. Feel very tired after work, my feet ache very much. Health good, not affected by work. Well treated, like the place very well. Plenty of good food.

(Signed)

**SAMUEL MILES**

**No. 267. John Hendren, aged 15 years. Examined 9th April:-**

Can read, can't write. Attend Sunday-school. Been here 3 weeks. Was 3 years at Mitcham in the wash-wheel house. Employed now holding out (the same as last boy, behind the press) and to shift the silk as it passes over the rollers to keep it in the middle. Come to work at 6, our regular time, and leave off at half-past 5, but lately worked till 8. Work does not tire me. Get very good food; very good health; can most eat anything, and eat hearty. Father was out of work, don't get so much to eat as I could, only enough to keep us in good health. 5s. a week regular pay. Paid for over-work. Well treated; work with my cousin. Paid by Mr. Collins. Like my work well now, did not at first, was awkward at first.

(Signed)

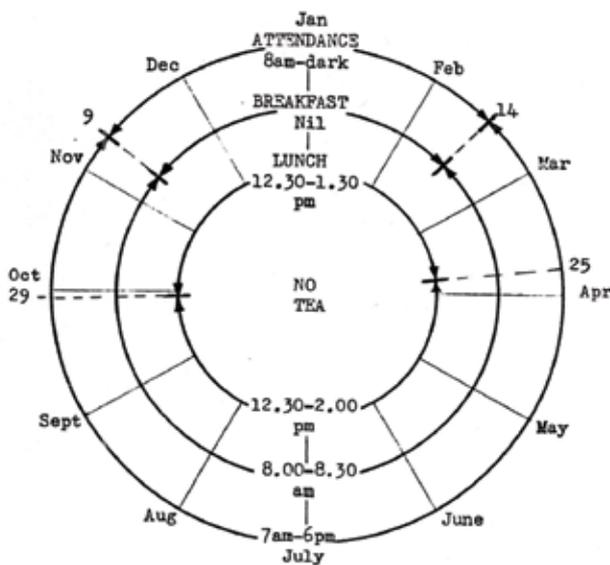
**JOHN HENDREN**

**Rules for Swaisland Print Works**

Holidays were listed as follows: 'At Christmas business is over on two days at 4 o'clock. At Easter

Saturday and Tuesday business closes at 4 o'clock and on Whitsun Monday and Friday business commences at 8 o'clock in the morning and terminates at 4 o'clock. On Crayford Fair day, on First Bexley Fair Day and on two Dartford Fair days business terminates at 4 o'clock.' Apprentices had additional holidays. 'They are allowed two whole days at Christmas-Christmas Day being considered one should it not fall on a Sunday, two days at Easter and two at Whitsuntide.'

A selection of other rules which seem unfamiliar these days are: 'No tierer to be admitted into the shop under 11 years of age nor when unable to read and write their name.' 'Bad work will not be paid for.'



On Monday business commences at 8 am.  
On Saturday business closes at 2 pm. No lunch break

The hours of working changed at different times of year and are summarised in the diagram. For example in May work commenced at 7am and continued until 6pm Thursday to Fridays. One half hour was allowed for breakfast from 8.00 to 8.30am, and one and a half hours for lunch from 12.30 to 2.00pm, that was a nine hour working day. Once a week the apprentices had to stay after business hours to clean the shops and during the winter months they had to start at 6am to light the fires.

The apprentices and tierers were paid overtime, but it was stated '10 hours being calculated to the day.' At a specified time on Fridays each shop sent a representative to the counting house to receive wages for the people in their shop. Apprentices were paid 8 shillings (1 shilling (-) =5p) per week for the first year rising to 16 -/- per week in the seventh year, but after the first year they were paid an additional '1/- in every full 5/- earned after paying their own expenses and tierers.'

*Rules for Swaisland's print works (Calico Printers), Crayford, Kent. c 1845, Manuscript, 15pp. Victoria and Albert Museum Library Box III 86DD (X)*