

Harrison & Sons Involvement with Stamp Papers: Part 1

By Glenn H Morgan FRPSL

When a stamp collector talks about Harrison and Sons they are probably discussing stamp printing. However, there was another side of the business that was far larger than most realise and was a Harrison speciality, namely the coating, gumming and calendering of stamp paper. Glenn Morgan explains all in his two-part article.

Harrison and Sons was founded in 1750, became printer of *The London Gazette* (1756), established a private press at the Foreign Office (1825) and the War Office (1856) and in 1867 was appointed 'Printers in Ordinary to Her Majesty Queen Victoria'. In 1881 it won a contract from the General Post Office to produce telegraph forms, while in 1910 the company tendered for, and won, the new King George V stamps contract, presumably as they were by now a major British government print supplier. In the decades that followed, many worldwide contracts were won for stamp printing.

The long association with the Post Office was set to continue, probably unbroken, until the take-over of Harrison by De La Rue (DLR) in 1997. Harrison had experienced a long period of success and had become a thorn in the side of DLR, especially in the field of banknote printing, so they followed their business plan of taking over the opposition to remove competition.

At its peak, Harrison had been printing stamps for at least 120 countries⁽¹⁾, all the time consuming vast amounts of paper in both reel and sheet formats.

The stamp papers man

I was recently privileged to be introduced to William (Bill) Dorricott through Brian Janes, both of whom, like so many of their ex-colleagues, spent virtually all of their working lives at Harrison. Bill has an international reputation in the stamp paper field that extends way beyond his time with Harrison, having acted in consultancy and technical roles for many worldwide governments, companies and industry organisations to this day, through his company Bill Dorricott Associates. His expertise is mainly in the scientific research and development of new products.

Bill started working for Harrison in 1969 as an Assistant Works Chemist (to 1970), then became a Coating Technologist (1970-75), Chief Works Chemist (1975-80), Technical Manager (1980-87), Divisional Manager (1987-90) and, until De La Rue took over the company, was the Divisional Technical Sales Manager (1990-97). He was then DLR's International Technical Sales Manager (1997-2002), before moving to Tullis Russell Coaters (2002-03), finally being employed at Group Gascoigne (2004-09) in a consultancy role.

Recorded above are his job titles, but Bill's CV also reveals many ground-breaking advances that he made, such as developing present day coating and adhesive systems, the introduction of phosphor coated papers

(PCPs) into the UK and overseas markets, the development and patenting of the 'Prestique' self-adhesive system and the introduction of a single base paper for all stamp printing processes, among many other activities.

Who better, then, to explain to me the involvement of Harrison with stamp papers. But first a small diversion while the story of paper and paper-making is briefly told to put matters in context...

The invention and spread of paper

Even in this so-called electronic age, we still use a phenomenal amount of paper in our daily lives and tend to take it for granted. A man from China called Ts'ai Lun is credited with its invention in AD105, but it was not until 1150 that it found its way to Europe, specifically Spain.

The first paper mill in England did not appear until the late 1400s, having been set up by a John Tate, with a printer making use of Tate's paper for the first time the next year. Over the following centuries paper and its production methods became more and more sophisticated, with 1803 witnessing the world's first practical paper making machine, later named the Fourdrinier. This was installed at the Frogmore Paper Mill in Apsley, Hertfordshire, where an



Ts'ai Lun of China is said to have invented paper in AD105



Paper making in China during the second century

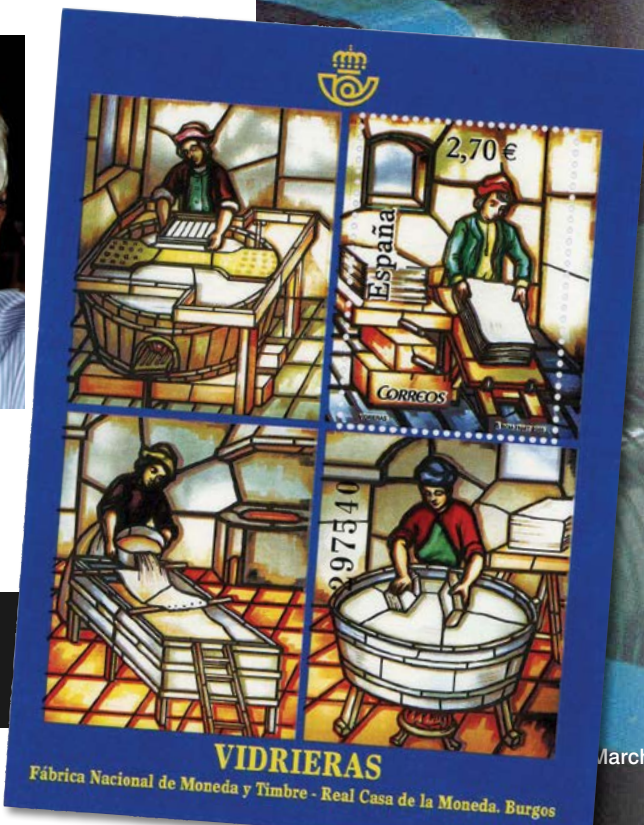


Paper making in Europe, AD1600



Paper expert Bill Dorricott

Paper-making at the Spanish Mint, as depicted in a stained glass window



1890s example is on static display (see www.thepapertrail.org.uk for details of its location and when it is open to visitors; it's a great day out).

Basic paper-making

Put simply, to make paper, fibres from a raw material are suspended in water following a chemical, mechanical or combination pulping process that involves beating for some hours, which gradually splits the fibres apart, cutting them until they are small enough for the purpose of making paper. The resultant soft mass is known as 'stuff', or 'stock', which is then processed into paper.

The main ingredient of paper, aside from water, is cellulose, which comes from plants and trees. Many thousands of species are suitable for paper-making, but few are economically viable or practicable, therefore only a limited number are used. These include cotton, esparto, flax, hemp, jute, old rags and wood.

Hand-made paper

Hand-made paper involves the vatman holding a wooden frame (known as a 'mould') that has a loose wooden frame on top of it (known as a 'deckle'). The mould either bears wires going horizontally and vertically (creating 'laid' paper), or has a woven wire mesh (creating 'wove' paper). The mould is dipped into the vat of stock removing enough for the type of paper being made. The fibres are dispersed evenly by shaking the mould, while the excess water drains away through the wires or mesh. The deckle is removed, the mould inverted and the wet sheet is transferred to a piece of felt.

The process is repeated for subsequent sheets, with the resultant pile of alternating paper and felt being exposed to great pressure in a screw press that squeezes out much of the excess water. The sheets are then removed and hung-up on pegs to dry.

Machine-made paper

The Fourdrinier-type paper-making machine more-or-less did what is undertaken manually, but at far greater speed and efficiency and in reels not sheets. Stock was poured onto a moving belt of wire mesh, the water drained away as it proceeded along the machine, the fibres had by now tangled together and the result was paper. This wet paper was transferred to endless felts that were taken through rollers that pressed out the excess water, then the paper passed through heated cylinders to dry the reel. By this stage the paper was strong enough and dry enough for the web to be wound onto a take-up reel, then stored for later use. The process end-to-end took less than 30 seconds and is probably even faster today.

Stamp paper suppliers

Back to our story... 1840 had seen the introduction of the world's first postage stamp and these had been printed on hand-made paper supplied by Mrs Wise of Rush Mills near Northampton. Down the years other companies became responsible for supplying paper to stamp printers, including British producers such as:

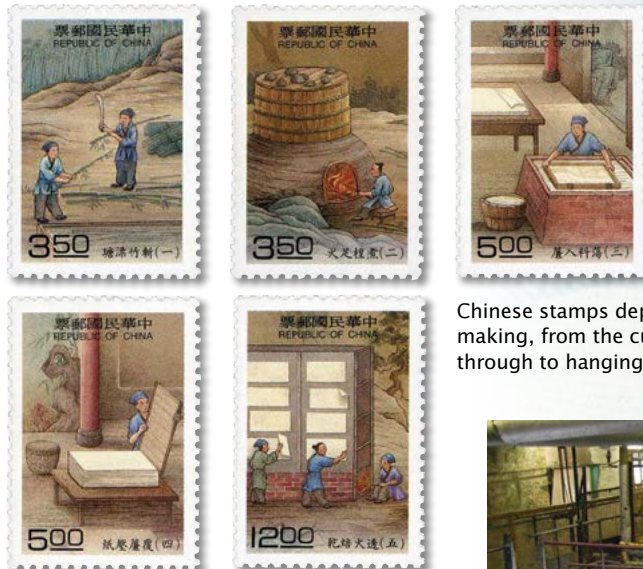
John Dickinson & Co Ltd (Apsley, Hertfordshire). Founded 1804, Dickinson produced a paper containing silk threads

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Tree felling for paper-making in Finland at the Metsä-Serla mill

Even in this so-called electronic age, we still use a phenomenal amount of paper in our daily lives and tend to take it for granted.



Chinese stamps depicting traditional paper making, from the cutting of raw materials through to hanging the paper out to dry

which was produced for security purposes and used on the Mulready Post Office letter sheet and envelope stationery of 1840 and a few postage stamps.

William Joynson & Sons Paper Mill (St Mary Cray, Kent). Adapted in 1860 to produce stamp and banknote papers. Wiggins Teape took them over in 1930 and eventually closed the site in 1967.

Roughway Paper Mill (Plaxtol, Kent). Built around 1807, the mill produced paper used by De La Rue for printing colonial postage stamps. Site demolished by 1997.

Stowford Mill (Ivybridge, Devon). For more than 150 years this mill produced paper, including stamp papers probably between the 1930s and 1960s. Latterly, ArjoWiggins produced speciality paper, but sold the site in 2014 for mixed development use.

Samuel Jones & Co Ltd (several site locations). Founded 1810, its non-curling paper was used on stamps from 1905. In 1924 it won a ten year contract to gum British stamps and it eventually became a part of the Wiggins Teape Group in 1969.



The Fourdrinier paper-making machine at Frogmore Paper Mill in Apsley, Hertfordshire



A modern paper mill and ancient printing underway in Austria

Henry & Leigh Slater (HLS) (Bollington, Cheshire). Incorporated in 1888, they were sited where TRC is today and were a major stamp paper supplier until merging into CPL in 1981. The company still trades, but now from Stockport and not in the security papers market.

Wiggins Teape (WT), eventually Arjo Wiggins (several site locations). Founded 1761 in London as Edward and Jones. Supplying Argentina, at least, with stamp paper by 1925 and perhaps best known philatelically for use of WT papers on New Zealand stamps.

Coated Papers Ltd (CPL), later renamed Coated Papers (TR) Ltd (Cheddleton and Bollington, Cheshire). Founded in 1981 having taken over a site at Cheddleton from the Inveresk Paper Company, then owners of Henry & Leigh Slater. In 1984 Tullis Russell acquired the company and they moved production to Bollington in 1989. It was rebranded under the Tullis Russell Coatings name in 1997.

Tullis Russell Coatings (TRC), later renamed Tullis Russell Coaters (Bollington, Cheshire). In 1809, Robert Tullis founded R Tullis & Co, changing the name to Tullis Russell & Co in 1906. TRC currently supplies more than 120 issuers and printers worldwide with stamp papers, including many ex-Harrison customers.

It is understood that from the above list Joynson, Wiggins Teape (Ivybridge), Samuel Jones and probably others supplied Harrison with its base papers at various times up to the late 1960s. From the 1970s, when Harrison focussed on marketing its own papers, four mills reigned supreme, with one continuing right up to the present-day:

1972 to 1981, Yates Duxbury & Sons Paper Mill (Bury, England). The mill closed in 1981.

1972 to 2006, Culter Guard Bridge (St Andrews, Scotland). The mill went into administration in 2008.

1981 to 1998, East Lancashire Paper Mill (Radcliffe, England). Not a good paper for stamps owing to calendering (surface smoothness or polish) issues. The mill closed in 2001.

1998 to present day, Drewsen Spezialpapiere GmbH (Lachendorf, Germany). Still trading, Drewsen ended-up as the main supplier to Harrison, then into the brief DLR era and now via TRC. Its paper has good 'bulking' (thickness) qualities and consistency with each order placed.

Harrison stamp papers

In 1950, Harrison held a bicentenary open day at High Wycombe and issued notes for its tour guides. As a result we know that they were using pure Gum Arabic (an exudant



Dummy stamp material from Henry & Leigh Slater, Coated Papers, Samuel Jones and Tullis Russell Coaters



from the Acacia tree) on the base paper received from the (unspecified) mill. This was processed through three gum mixers with a combined volume of 400 gallons, then fed by gravity, with the gum being dried on machine by hot air and a heated drum. Cold water rollers then cooled the paper before it was re-reeled ready for use. There was no specialist coating used at that time.

A fracturing machine used knives that broke up the gum on the back of the sheet to maintain flatness, thus preventing curling, while a calendering machine smoothed (or polished) the surface of the paper to varying specifications ready for printing.

Perhaps surprisingly, some stamp production in the recent past was still being specified with the uncoated surface so prevalent pre-1970s. This is put down to tradition and a probable lack of understanding by the client as to the benefits of coating. Cost was also a factor, for example in Hong Kong where print quantities were large.

For many decades Harrison was only gumming and calendering (and subsequently coating) paper for its own consumption at High Wycombe and its litho plant at Hayes, but in 1971 it concluded that the company could sell specialist stamp papers to other stamp printers and directly to overseas post offices. This was an important decision, although it is unlikely that they could have foreseen at the time the worldwide impact that they would eventually have on this specific part of the paper market.

A product in its own right

Harrison had been a pioneer in the field of modern multi-coloured stamp printing and so knew what was required to produce a quality stamp paper, believing that most other printers were happy to accept whatever the paper mill supplied them with, neglecting to consider the important role that paper, and its coatings in particular, can have on the final appearance of the product. Not only that, but the inclusion in the coating of other technologies e.g. phosphor and fibres.

Experience, size and capacity enabled Harrison to focus on this key area and to take paper very seriously, creating a new product area known as the Paper Processing Department. Its laboratory personnel had many years of understanding when it came to creating unique specialised coatings, while its major investment in plant during 1980, such as a Tecmo coating machine, customised with its own design features specific to stamp paper, enabled them to become market leaders. In a short time, more than 50 per cent of production was being exported.

While many of the British paper-making names had fallen by the wayside, or had withdrawn from supplying this type of paper, Harrison had still clearly entered a congested marketplace, for there were many producers of paper, and not just in Great Britain.

Despite the competition, they gradually expanded this aspect of the business until at one point it is recorded that at least half of the world was using Harrison papers for its postage stamp production. No mean feat in such a short space of time.

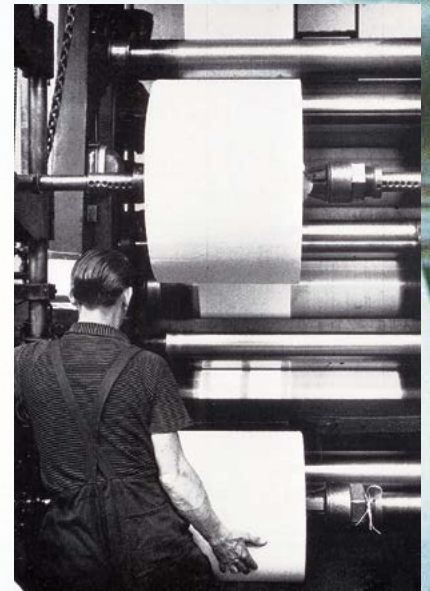
Next time: Glenn writes about the HS (Harrison & Sons) and DS (De La Rue Stamps) range of papers and coating types, the use of watermarks, luminescence and gumming, and Harrison's impact on the postage stamps of America.

References

⁽¹⁾: Brian Janes recalls that when he first joined Harrison his first full-time job was cutting out and presenting proofs to customers. This was in 1965 when everything was gravure at High Wycombe. At that time a huge number of orders came through the Crown Agents, who visited once a week. He suggests that the maximum countries at that time was approximately 50.



Maturing the paper prior to printing, 1950



Calendering a paper reel, 1979



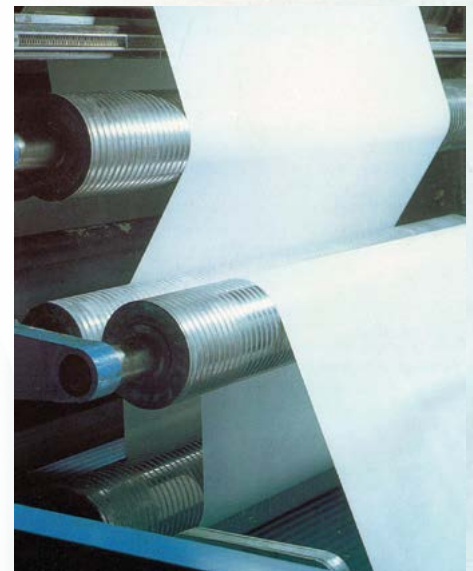
Harrison's Tecmo paper coating machine in action in 1980



A Harrison employee ensuring that the coated paper surface is smooth prior to rewinding, 1975



Applying the coating to the base paper, 1975. Note the bow roller keeping the paper in close contact with the coating head



Calendering the paper, 1975



Blank coated paper sheets sealed and ready for export, 1975



One of Harrison's competition in the stamp paper market was Security Papers Ltd, Pakistan. Founded 1965