

[Written in 1960 for the JGB Centenary, Author unknown – Focus on technological development of John Bartholomew & Son Ltd.]

HOUSE OF BARTHOLOMEW

(A) Introduction

Scotland has a long tradition of map-making linked with such famous names as Timothy Pont, Gordon, Adair, Ainslie, Lizars, Lothian Johnston, Kirkwood, Thomson and Bartholomew. John Ogilvie and George Philip are another two gentlemen, who, though they spent most of the working lives in England, were born in Scotland.

At the beginning of the 19th century Edinburgh was very much the centre of Scottish printing, so it is not surprising that Scottish map-making and map publishing established its home in the capital.

(B) History of the Firm

The association of the name Bartholomew with maps goes back to the 18th century when in 1797 George Bartholomew (1784-1871) at the age of thirteen started his apprenticeship as a map engraver with the Edinburgh firm of W. & D. Lizars. Daniel Lizars, his teacher, had himself been a pupil of Andrew Bell, a famous engraver and proprietor of the original Encyclopaedia Britannica, the maps for which were later destined to be produced by the firm of Bartholomew.

George's son John (1805-1861) followed in his father's footsteps as a map engraver and it was he that in 1826 drew and engraved for W.H. Lizars, the first directory plan of Edinburgh. He then set up his own engraving business into which he brought his son, another John (1831 – 1893), as a trainee and later as a partner when in 1860, one hundred years ago, the new business title of John Bartholomew & Son was created. The offices were then situated at 4A North Bridge with the printing works round the corner in Carrubber's Close, off the High Street. In 1870 the business

premises were removed to 17 Brown Square, the site in Chambers Street where the Dental College now stands. From there the next removal was to 31 Chambers Street in 1879 where John George (1860—1920) joined his father in the trade that had by then become a family tradition. In 1888 he took over the control of the business and in the following year expansion necessitated the firm moving again, this time to Park Road where it became known as the Edinburgh Geographical Institute.

From 1888 John George was in partnership with Thomas Nelson until the latter died in 1892. From 1893 until 1919 his cousin Andrew G. Scott was his partner and was responsible for the financial side of the business. During the period of these two partnerships the firm was known as John Bartholomew & Co. In 1919 the company was first registered as a private limited company, its title becoming as it is known today:— John Bartholomew & Son Ltd., In 1911 The Geographical Institute was moved to its present site in Duncan Street where a completely new printing works and offices had been erected. The imposing front entrance was originally part of Falcon Hall, a mansion house in Morningside built in 1780 which had been the residence of John George Bartholomew until 1907. Falcon Hall was demolished in 1909 and the facade and pediment were re-erected in Duncan Street. From 1919 John Bartholomew M.C. (1890-) took over the management from his father after serving with the Gordon Highlanders and General Staff during the 1914—18 War. There are now three of his sons in the management of the map business.

(C) Development

Unfortunately few records were retained prior to 1860, but it is certain in the earlier days that Map Engraving formed the chief part of the business, the maps themselves being printed and published by other firms, particularly A. & C. Black and W. Blackwood & Sons, both of Edinburgh. In 1860 the House of Bartholomew started their own printing works, but for the next 30 years or so the printing was not devoted exclusively to

cartographical work. Lithography was particularly suited to the printing of cheque books, medical and architectural drawings of which many were produced during the period. The plans for the Forth Railway Bridge and the literature for Gladstone's election in 1880 were amongst some of the more interesting items covered. On the cartographical side the work in the second half of the 19th century was in the production of atlases, both general and educational for other publishers including: — A. & C. Black, Chambers, Collins, Elmwood Zell of Philadelphia, Encyclopaedia Britannica, Fullarton, Haywood, Jarrold, Macmillan, Meiklejohn, Nelson and Philip. Maps during that period covered Town Plans, Estate Plans, Railway, Parliamentary and Biblical Maps; at the time of the South African War there was also a big demand for war maps.

In 1888 by which time the production was almost exclusively cartographical in nature, the firm took on geographical publishing in their own name. This change over was inevitably gradual, but at the same time contract work was necessary, and even to this day possibly 50% of the production of maps and atlases is done for other publishers. These publishers of Bartholomew atlases now include: — Dent, Newnes, Oliver & Boyd, Oxford University Press and The Times.

These and the previous list of publishers were the outlet for a great number of general atlases and in particular of school atlases for which special editions were prepared for Australia, Canada, India and South Africa. For India six different vernacular editions have been produced embracing Bengali, Hindi, Marathi, Tamil, Telugu and Urdu. Nine different educational atlases are still currently coming off the printing presses.

The firm's most outstanding contribution to world geography has been the two editions of "The Times" Atlas of the World, the first of which was published in 1922 after many years of hard work under the direction of John George Bartholomew, L.L.D., and the second edition in five volumes between 1955 and 1960, edited by John Bartholomew M.C., II.D.

On the map side, motoring and travel organisations, shipping

companies, air lines and youth organisations provide the bulk of this other work. Petrol companies in this country are following the American vogue in providing giveaway or subsidised maps to the motoring public, and this is providing a growing production which in a way is also an insurance against those motorists who will not buy a map if they can acquire one free or at below cost.

(D) Publications.

From 1888 the publications consisted in the main of the Half-Inch series which was originally known as Bartholomew's Reduced Ordnance Survey and published by W.H. Smith. This series, the first sheet of which was Edinburgh District 1875, was completed for Scotland in 1885 and for England and Wales on 1903. The series is famous as being the first topographical series in any country to make use of the layered system of contour colouring. District Maps, Town Plans and World Maps made up the rest of the list of publications at the outset until gradually the list of general atlases was taken over from other publishers.

The following atlases appear on the publication list:—

- 1895 Survey Atlas of Scotland
- 1899 Atlas of Meteorology
- 1904 Survey Gazetteer of the British Isles (First published 1887 Black)
- 1904 Survey Atlas of England and Wales
- 1907 Reference Atlas of Greater London (1913—21 Walker)
- 191]. Atlas of Zoogeography
- 1912 Citizens Atlas (First published 1898 Newnes)
- 1918 British Isles Pocket Atlas (First Published
- 1903 Newnes)
- 1922 London Pocket Atlas (First published 1886 Walker)
- 1923 World Pocket Atlas (First published 1886 Walker)
- 1923 Handy Reference Atlas (first published 1887 Walker)
- 1932 Graphic Atlas (First published 1893 Walker)
- 1943 Road Atlas of Great Britain
- 1943 Compact Atlas
- 1948 Regional Atlas
- 1953 Columbus Atlas
- 1954 Edinburgh World Atlas
- 1958 Roadmaster Atlas of Great Britain.

(E) Technical Progress.

Because of increased geographical and scientific knowledge, map-making has become a more exact science and its history over the last 150 years reflects in itself a chronicle of the times.

(i) Engraving and Drawing. The family tradition was built up from map engraving, which was originally the only essential craft for map-publishing. It was only with the advent of lithographic printing and later of photo-lithography that additional and more complex processes became an integral part of map production. The delicate art of map-engraving has been practised since the 15th century, and until lithography was introduced, all published maps were direct impressions from the copper or steel plate on which the map image was engraved by hand. The only means of colouring each map was also entirely by hand with water-colour. With the advent of lithography over 100 years ago the engraved image could be duplicated quite readily by transferring it to stone, from which the impressions were taken. Likewise colours could be now printed from other stones. The litho-artist's craft was born; he could draw a map direct onto the printing stone, or correct the engraved image thereon.

With the advent of photography, it became possible to reproduce a map image drawn on paper, and while engraving could still produce much finer work, map-drawing became important as a finished technique.

Since the Second World War successful methods have been developed to match or surpass the engraver's art. In particular new tools have been evolved from "scribing" on specially coated glass or plastic sheets. By this means the finished map image is out as a negative which can if desired be photo-printed direct to the printing plate. The names can be "stripped in" from photo-composed" copy which obviates the use of type and extra photo-processes.

The revision of maps of foreign countries poses a real problem for the map maker. One of the biggest headaches is keeping abreast of the territorial changes and deciding when and how to recognise

them; some of these are pretty tough to handle. We have to be realists, and in the role of a neutral reporter we can take no political stand. Businessmen and tourists, our customers must know with which government they will have to deal. Because of this we tend to show de facto situations, in other words, those which actually exist.

Physical changes in road systems, new towns, reservoirs, airfield, etc. and changes in place—names and spellings keep the cartographer ever on his toes.

(ii) Printing. In the last 50 years great strides have been made on the printing side. During the 19th century, lithography (the art of printing from stone) was a slow and laborious way of printing compared with modern methods. The lithographic stone is a fine-grained form of limestone, the best of which came from Bavaria. These stones were awkward and heavy to handle, the large size 'double elephant' being affectionately known as "Jumbo" required six men to carry it. The hand-fed machines known as flat-beds which printed one colour at a time, were only capable of 700—800 impressions an hour. The introduction of the new process of rotary printing at the turn of the century completely revolutionised production. This started with direct rotary printing, which meant that the impression was transferred directly from the printing plate to the paper. This was found to be not entirely satisfactory and the introduction of the offset printing press established the technique which is followed today. Under this process the impression is transferred from the rotary printing plate to a rotary rubber blanket, which in turn transfers its impression on to the paper which comes through on a third cylinder. These presses which can be obtained with several units so that a number of colours can be printed at the same time, are now capable of speeds over 7000 impressions an hour, but in the very close register work of map printing, speeds are kept down to about 4000.

In 1924, the first rotary press, a Mann single-colour double demy machine, was introduced at Duncan Street. Gradually the flatbed machines were replaced with these modern presses by Mann, Crabtree and latterly Roland, the German firm. In fact it is only

this year, 1960, that the last flat-bed was nostalgically removed. It had been retained as an excellent training medium for apprentices, but inevitably the space it occupied was otherwise required.

One of the big problems of printing is the effect that changing atmospheric conditions have on the size of paper. With the printing of many colours on the one map it was all-important that they should fit exactly in the right place. In 1932 an air-conditioning plant was installed in the printing room which maintains constant temperature and humidity. Even so, where a large number of colours are required it is necessary before printing to hang the paper so that it is conditioned to the atmosphere, and also to press the paper through the machine so that it can settle to its printing size.

Photography greatly speeded up the time in preparing the printed plates. In 1928 a camera with plate size 42" x 32" was installed which was the largest of its kind in Scotland, but it was not until 1930 that the first job had all its colours made up photographically. With the expansion of the business an extension to the printing room was built in 1926 and a further one in 1938.

(F) Staff.

The size of the staff grew with the expansion of the business to reach about 140, but with automation it is now in the region of 120. Being a family business the succession of employees has tended to some extent to stay in families. The loyalty and service given by this devoted staff is perhaps best realised by the fact that there are at present 3 persons with over 50 years service, 11 with over 40 years, and 11 with over 30 years. The total staff of 120 includes a finishing staff of some 30 girls who mount and fold maps ready to go out to the shops.

The whole process of map-making is a combination of many extremely skilled crafts requiring a long and exacting training. On the printing side the apprenticeship was 7 years and on the artist's side 6 years. After the 1939—45 World War these periods were reduced to 6 and 5 years respectively. An apprentice starting 50 years ago was paid the princely sum of 2/6d per week, but modern

trends have ensured that he is well rewarded. With such skilled crafts, experience has shown us that the training is all—important. For our own particular standard of high—class production it has been proved that all our best craftsmen have served their apprenticeship with the firm and have so reached the standard required of them.

(G) Future.

We look to the future as a great challenge, for with man's inevitable thirst for knowledge, the demand for maps and atlases is bound to grow, in particular with the education of underdeveloped countries. The fast-growing motor industry and increasing tourist activity will always be requiring up-to-date maps recording the ever-changing pattern of new roads. This company can look back with pride on its achievements in the past, but it is necessary to regard the past as a sign of business maturity and look to the future with vision and foresight. No doubt present processes will soon be outdated, and the air age and possibilities of space travel in the perhaps not very distant future will create new opportunities and problems beyond today's comprehension.