NOTES ON BRITISH MAKERS OF PRISMATIC BINOCULARS
DURING WORLD WAR 1

by Terence Wayland

The quantities shown below are taken from files in the National Archives On 13 July 1918, (the last date where there is a breakdown of totals), the following figures were quoted as having been delivered;

U.K. Prismatics 54179 (20.1%), Galilean 3008 (1.1%),
U.S.A. Prismatics 27533 (10.2%),
FRANCE Prismatics 52908 (19.7%), Galilean 109717 (40.8%),
Orders in Council Prismatics 6865 (2.5%), Galilean 14103 (5.2%).
Total Prismatics 141485 (52.7%), Galileans 126828 (47.2%).
Grand Total 268313
By 7 December 1918 the grand total was 294278.

It is clear that the serial numbers on some makers binoculars do not reflect actual quantities made. It is possible that those who did not normally manufacture binoculars were allotted bands of numbers by the Ministry of Munitions.

AITCHISON AND CO. 38 Bucklersbury, London EC4. ( The manufacturing works for Aitchison and for Wray were at Ashgrove Road, Bromley, Kent. )

James Aitchison started up as an optician on his own account in 1889. He was successful and opened up several branches. He developed an interest in binoculars and took out 13 patents between 1891 and 1906. With C.V. Drysedale he advocated the joining of the prisms to reduce light losses. In 1907 he purchased Wray Optical and appointed Albert Smith (recruited from Ross Ltd.) to run it. On his death in 1911 his son Irvine took over control. He placed the emphasis on retailing rather than manufacturing binoculars, although he retained ownership of Wray Optical Works Ltd until the 1970’s.

Aitchison had supplied No 3 Mk1 binoculars before the War. On 22 August 1914 580 No 3 Mk 1 were ordered and fully delivered by June 1915. On 20 December 1915 a continuous order for No 3 Mk 1’s was placed, 3507 were delivered by 29 December 1917. On 21 March 1915 840 No 3 Mk 1 were ordered, none had been delivered by 15 June 1915.

After the War Aitchison bought up all the American made surplus prismatic binoculars, ( Bausch and Lomb, Crown and Gundlach Manhattan ), and sold them at low prices. In 1927 Aitchison bought Dollond and Co. Ltd.
The Company, which was formed in 1912, manufactured the Folding Minim binocular \((5.5 \times 16)\) designed by J.H. Barton and 250 were purchased from Negretti and Zambra by 15 June 1915. The Company mainly produced Box Sextants for the rest of the War. After the War Barton took out further patents for a binocular which was called the Britannic. There is an illustration in H. Seegers 2001 edition of his work on Military Binoculars. It was not successful and the Company was dissolved in 1923.

Beck was a well established company famous in the nineteenth century for the quality of their microscopes. During the War their main contribution was the manufacture of gun sights.
On 23 December 1915 they received a contract for 2500 No 2 Mk1 binoculars. However by 29 December 1917 only three had been delivered (the rarest binocular?) and the contract was cancelled in February 1918.

On 4 September 1915 a quantity of prismatic binoculars (unspecified) by 31 March 1917 145 had been delivered at 780 were due. By 29 December 1917 155 had been delivered and 1140 were shown as due and the contract was cancelled.
A sample Bellingham and Stanley binocular No 69 examined did not have any specifications engraved. It appears to be a 6 X 21 with eyepiece focusing. Possibly, uniquely, for a British binocular it was equipped with linear focusing.

The Company was set up by the Ministry of Munitions to manufacture optical items during the War. It was shut down at the end of the War. There are references to consulting Mr. Watson Baker a Director of Watson and Sons Ltd. Possibly there was a management connection.
In July 1916 it received a contract for 5000 binoculars to No.3 Mk 1 specification which was not completed until 1919. It received prisms from Barr and Stroud, Lenses from the Guaranteed Lens Co. and some metal parts from the Dental Manufacturing Co.

Its production rate never exceeded 100 per week. Like other makers it suffered from a high rejection rate when inspected at Woolwich. By 6 December 1918 4284 had been delivered. When the balance of 716 were completed the factory was to be closed.
DOLLOND AND CO. Kirby Street, London EC3. (The manufacturing works were situated in Maidenhead.)

Dollond traced their history back to 1750. They were famous throughout the eighteenth and nineteenth centuries for the optical and scientific instruments. By 1900 it was a Partnership run by two former employees. At that date eight men were employed in making Galilean type binoculars. Up to the outbreak of the War Dollond used glass of French manufacture.

On 9 June 1916 there was an order for 1500 binoculars (not specified). By 31 March 1917 899 had been delivered.

16 August 1917 some No 2's intended for the Navy were inspected.

By 29 December 1021 had been delivered.

1 March 1918 an order for 400 Admiralty Pattern 343’s (6 X 30).

22 March 1918 an order for 1000 Admiralty Pattern 343’s. This was completed by 23 September 1918.

28 August 1918 an order for 830 Admiralty Pattern 343’s and 280 Admiralty Pattern 323’s.

20 September 1918 an order for 1000 Admiralty Pattern 343’s. 420 were delivered by the end of the year.

The Dollond binoculars were of the Zeiss pattern in construction.

By 1920 Dollond had ceased making binoculars although they continued to sell binoculars sometimes marked with their name.

THEODORE HAMBLIN LTD/PRECISION OPTICAL Co. LTD. 5 Wigmore Street, London W1.

In peacetime they were opticians and manufacturers of ophthalmic equipment. With the outbreak of the War they offered their services and were provided with a factory in Barnet.

On 25 May 1916 they received an order for 2000 No 2 binoculars (Mk unspecified). By 19 March 1919 1131 had been delivered. On 15 October 1917 2000 Admiralty Pattern 343’s (6 X 30) were ordered. By 31 March 1919 1046 had been delivered.

Both contracts were ended but the Company received an allowance of £5762-19-5 in compensation.

Their binoculars were of the Ross Pattern construction. One of the Admiralty contract binoculars had the serial number 6006.

The lenses were supplied by the Guaranteed Lens Co.

The business continued successfully after the War and offered binoculars for sale marked with their name.

In 1981 they were acquired by Dollond and Aitchison Ltd.

Heath were suppliers of binoculars both galilean and prismatic.
On 9 February received an order for 500 miscellaneous binoculars, (possibly Galilean), the order was completed by 31 March 1917.
31 May 1916 an order for 2000 No 2 Mk I’s and 427 Type 4044′s (?). By 31 March 1917 179 of the No 2′s had been delivered. On 31 October 1917 the order was formally cancelled, 1500 were to be graticuled to Mk II standard.
15 October 1917 an order for 1500 Admiralty Pattern 343′s (6 X 30′), 42 were delivered by 29 December 1917. At 24 February 1919 the firm reported it had 289 in stock to be finished. The Ministry refused permission to complete.
7 May 1919 the firm had made preparations for a further 1500 binoculars although no contract had been placed. The Ministry considered the firms claim for compensation should upheld.
The Heath binoculars were of Zeiss pattern construction.

A.KERSHAW AND SON(S) LTD. 76 Woodhouse Lane, Leeds.

Kershaw was a well established maker of photography equipment. During the War they were appointed to manufacture prismatic binoculars, (and also clinometers).
They recruited three key workers from Carl Zeiss (London) Ltd. at Mill Hill. One of the sons attended an intensive course on lens design at Imperial College.
On 15 June 1916 the Company received an order for 25000 No 3 Mk I binoculars. The prisms were supplied by Barr and Stroud and the lens sets by Thomas Cooke and Son Ltd and Taylor, Taylor Hobson Ltd. Later Kershaw started manufacturing its own lenses. The Ministry considered they were generally better than those supplied by the other companies.
By 29 December 1917 5798 had been delivered. From 4 February 1918 not less than 50% of production was to be of Mk II specification, (with graticule). Kershaw made binoculars of both Ross and Zeiss pattern construction.
After the War Kershaw continued to manufacture binoculars for occasional military orders and for the commercial market. By 1930 their catalogue listed 26 models.

H.F.PURSER AND BROTHER.
They were opticians in peacetime. On 6 June 1918 they received an order for 600 No 3 Mk1 binoculars (apparently amended to 1120). By 10 February 1919 349 had been delivered. The contract was considered completed and £1754-13-6 compensation paid. The compiler has a Purser binocular dated 1918. It is of Zeiss pattern construction and has the serial number 69039.


Ross dated its origin from 1830 when Andrew Ross set up in business as a maker of Mathematical and Philosophical Instruments. He became a famous maker of microscopes and the business claimed to be the oldest photographic optician. Andrew died in 1859 and his son Thomas ran the business until his death in 1870. His widow married John Stuart and he took control. In 1897 Ross Ltd. was formed to raise capital to expand it manufacturing capacity. 1897 also saw a Ross employee patent a prismatic binocular. This was put into production in 1899 as the first British prismatic binocular. The company’s catalogues were extensive running up to 160 pages.

Prior to the outbreak of the War Ross had supplied the Army with approximately 5000 prismatic binoculars.

On 22 August 1914 there orders for 810 No 2 Mk II’s and 1350 No 3 Mk I’s of which 100 were to be graticuled. By 30 June 1915 594 of the No 2’s and 1010 of the No 3’s had been delivered. (There was also an order for 451 Lumina prismatic binoculars, possibly a French trade name as they were also ordered from other firms. Examples show them to have been 8 X 21 of Zeiss pattern with centre focussing. Some have serial numbers and some do not.)

On 11 March 1915 orders for 800 No 2 Mk II’s and 800 No 3 Mk I’s. None had been delivered by 30 June 1915.

On 12 January 1916 there were orders for 1300 No 2 Mk I, (many were sent to Sherwoods for graticuling who had problems with graticules), and for 1700 No 3 Mk I’s, (later reduced to 1436). There was also a contract for No 3 Mk II’s (quantity unknown, possibly a continuous order), on 29 January 1919 contract was cancelled uncompleted.

On 29 January 1917 an order for 144 No 2 (Mk ?)binoculars, completed.
21 November 1917 an order for 264 No 3 Mk II’s.
12 December 1917 an order for 6000 Admiralty Pattern 343’s, by 6 January 1919 4020 delivered and the contract was cancelled with Ross receiving £2000 compensation.

On 19 January 1918 an order for an unspecified quantity of No 3 Mk II’s from the Mill Hill factory. 800 delivered by 6 January 1919, 209 were rejected. The contract was cancelled and Ross received £4500 compensation. (see also under C.Z.London)
9 February 1918 an order to graticule 400 No 2 Mk I’s.
7 March 1918 a continuous order for No 2 Mk II’s. On 23 January 1919 three months notice to end the contract was given. On 12 February 260 were due for delivery.
28 March 1918 a continuous order for No 2 Mk II’s at 20 per week.
11 May 1918 an order for 67 6 X 30’s, delivered by 6 January 1919.
24 June 1918 an order for 838 Admiralty Pattern 343’s, (6 X 30), with Radium spots and graticules. By 6 January 1919 165 had been delivered and 328 were awaiting glass. On 21 February 1919 the contract was cancelled.
18 September 1918 an order for graticuling binoculars, 150 completed by 6 January 1919 and 223 were in the workshop.

9 October 1918 an order for an unspecified quantity of Admiralty Pattern 343A (?) with Radium spots and graticules. None completed by 6 January 1919.
30 October 1918 an order for 2000 No 2 Mk I’s. 200 completed by 6 January 1919, the contract was cancelled.

31 July 1919, an order for 6 Admiralty Pattern 343’s with special eyecups.

In June 1917 Ross Ltd, which was the control of the Ministry of Munitions, acquired the assets of Carl Zeiss (London) Ltd. They took over the former Zeiss offices in Great Castle Street, London W1 and the factory in Mill Hill. The factory continued to make No 3 binoculars of the Zeiss pattern though now marked with the Ross Ltd name. The papers of the Optical Munitions Department indicate that the bodies were imported from France.

After the War Ross continued making prismatic binoculars but the Company was in severe financial straits until the Re-Armament program started in the mid 1930’s.

SHERWOOD AND CO. Verulam Street, Grays Inn Road, London EC1. (After the war it was called the Endacott Scientific Instrument Co.)

5 February 1915 an order for 1000 No 2 Mk II binoculars, completed by 31 March 1917.
5 May 1916 an order for a continuous supply of No 2 Mk II’s, by 29 December 1917 1500 delivered.
There may have been other contracts as a Zeiss Pattern No 3 Serial Number 10165 with Sherwoods name has been recorded.
Sherwood received contracts to fit graticules to binoculars made by Bausch and Lomb, Hunsicker and Alexis and Ross Ltd. Usually noted on the top plates. They at times had severe problems with the graticules and were allowed to deliver many without this fitting.

W.WATSON AND SONS LTD. 313 High Holborn, London WC1. (The manufacturing works were situated in Barnet)

Watson started business in 1827 and were well known makers of optical and
photographic equipment. They had also assisted Marconi in his wireless ventures and were developing X-Ray equipment. Prior to the outbreak of the War Watson had supplied 2600 prismatic binoculars to the Army.

On 22 June 1915 Watson obtained an order for 2000 No 3 (Mk unspecified), which was completed by 31 March 1917. On 12 November 1915 there was an order for 500 No 2 Mk I’s with 427 delivered by 31 March 1917 and one for 5000 No 3 Mk I’s, less than 300 had been delivered by 31 March 1917.

On 12 October 1916 there were orders for 2500 No 3 Mk I’s and 300 No 2 Mk I’s. Deliveries by 31 March 1917 were 303 and 220 respectively.

On 12 November 1917 2000 Admiralty Pattern 343 binoculars (6 X 30) were ordered, none had been delivered by 29 December 1917. By 25 March 1919 1056 had been delivered permission was given to complete a further 90. The balance of 854 was to be ‘Liquidated’. Of the 800 No 2 Mk I’s ordered 772 had been delivered by 29 December 1917.

On 29 May 1917 Watson received a ‘running’ contract for No 3 Mk I’s, 2488 were delivered by 29 December 1917, over 3000 were still due. 12 November 1918 the contract was terminated although the factory had material for another 1000.

On 21 June 1917 there was a ‘running’ contract for No 3 Mk II’s. By 29 December 1917 55 had been delivered and 830 were shown as being due.

On 2 July 1918 there was a contract for 2000 binoculars, probably Admiralty Pattern 343’s. By 4 December 1918 760 had been delivered. On 6 December 1918 Watson was instructed to complete another 500. £1300 compensation was paid.

It is possible there were other contracts as after the War Watson in its advertising claimed to have supplied 35000 binoculars.

Watson developed a brass bodied binocular but it was not put into production. British patent No. 117847 refers. Some of their lenses were provided by the Guaranteed Lens Co. They had problems with fitting graticules. They also suffered a high rate of rejection from Woolwich mainly with faults with the glass. Like Kershaw Watson made binoculars in both Ross and Zeiss pattern construction.

After the War Watson continued to manufacture binoculars. In 1922 Mr Watson-Baker represented the British binocular trade giving evidence to get the Government to further restrict German imports of optical and scientific instruments. They failed.


The firm was a well established maker of precision and scientific equipment.

On 31 October 1914 an order for 3300 Weiss binoculars (Weiss Instruments of Colorado U.S.A. made a Zeiss pattern binocular), by 15 June 1915 793 had been delivered.
24 January 1916 an order for 1000 Weiss binoculars, by 29 December 1917 521 had been delivered. The contract was cancelled on 4 December 1917 so that Watts could concentrate on other work.
Although the bodies were American the optical components came from France.

CARL ZEISS ( LONDON ) LTD. 13-14 Great Castle Street, London W1.
Until 1916 when the company was forced to close down (The manufacturing works were situated in Bittacy Hill, Mill Hill, London NW7. ) In June 1917 Ross Ltd. under the control of the Ministry of Munitions acquired the assets of the Company and operated the factory until 1919.

In 1909 the Director of Army Contracts reported the purchase of 1500 No 2 prismatic binoculars from Carl Zeiss, Jena. It became policy to avoid foreign purchases where possible. Zeiss set up a 'British' company so as not to be disadvantaged. Prior to the War the Company supplied approximately 1800 No 3 binoculars.

22 August 1914 an order was placed for 1064 No 3 Mk I, completed by 15 June 1915.
13 October 1914 an order for 300 No 3 Mk I, completed by 15 June 1915.
16 December 1914 an order for 1000 No 3 Mk I, completed by 31 March 1917.
3 September 1915 an order to fit graticules to No 3 binoculars, and for 5750 No 3 Mk II binoculars, 2989 completed by 29 December 1917.
18 August 1916, graticules had been fitted to 2983 Hunsicker and Alexis (French), to 5789 Watson No 3's, to 3634 Bausch and Lomb (American) and to 1180 Bonnever/AFSA (French).
(19 January 1918 Ross received a (continuous?) order for No 3 Mk ? Binoculars. Three weeks notice to end the contract was given on 12 November 1918. 910 were due by 12 February 1919, 800 were completed and 209 were rejected for remedial action. The contract was cancelled and Ross received £4500 compensation.)