

THE BARR AND STROUD PRISMATIC NIGHT BINOCULAR.

SPECIFICATION. — TYPE C. F. 15.

The following information is extracted from Pamphlet N^o 519, published by BARR & STROUD, Ltd., Glasgow, Scotland (London Office: 15, Victoria Street, Westminster, S. W. 1).

DATA.

Magnification.....	7 diameters.
Diameter of Objectives.....	50.8 $\frac{m}{m}$ (2 inches).
Aperture of Objectives.....	49 $\frac{m}{m}$ (1.94 inches).
Diameter of Exit Pupil	7 $\frac{m}{m}$
Angular Field of View.....	7°
Field of View at 1,000 yards.....	121 yards.
Weight of Binoculars only.....	33 ozs.
Weight complete in case	55 ozs.
Height	9 ins.
Width	7 ins.

This Binocular was designed and produced primarily for use as a night glass, but it has also been found most useful for general purposes. It has four outstanding features which distinguish it from the ordinary type of binocular:

1. High light-gathering power.
2. High light intensity at the eye.
3. Light weight.
4. Convenient shape.

These features have proved so attractive that the binocular has been adopted by the British Admiralty for general use in the British Navy after the most exhaustive competitive trials in the history of Binocular manufacture. They are explained in the following remarks:

High Light-Gathering Power.

The light-gathering power of a Binocular depends on the aperture of the objectives. The aperture in the C. F. 15 type has been made as large as can be efficiently used, the diameter of the exit pupil being 7 $\frac{m}{m}$, which is the maximum diameter to which the pupil of the human eye expands in the dark. With the C. F. 15 Binocular, therefore, the pupils of the observer's eyes are flooded with light under all conditions of illumination. An increase in the aperture of the objective would not give an increase in the amount of light reaching the eye as the exit pupil would then be greater than the pupil of the eye.

High Light Transmission Property.

The high light transmission property of this glass is no less than 69 %; no other glass in the competition approached anything like this figure. The great light gathering power, together with the large exit pupil (the diameter of the beam of light emerging from the glass into the eye, and which is 7 $\frac{m}{m}$ dia.), make this an ideal night Binocular as well as a perfect day glass.

High Light Intensity at the Eye.

In an optical instrument each separate optical part involves a certain inevitable loss of light. The loss at each surface is approximately 5 %. It is important, therefore, that the number of surfaces should be reduced to a minimum. In the C. F. 15 Binocular this has been attained by an entirely novel design, the saving in light by this design, as compared with the ordinary prismatic binocular, being about 20 %.

Light Weight.

The C. F. 15 Binocular has also been designed on novel lines as regards the distribution of weight. The type of material used for each part has been the subject of

special investigation and it has been possible, therefore, to use lighter materials than usual. Further, the design is such that weight is only placed where it is absolutely necessary; there is no waste weight.

The saving due to these factors is considerable, the weight of the complete binocular being only 33 ozs., which is remarkably small for a glass of such dimensions.

Convenient Shape.

The novelty of design referred to in the foregoing paragraphs has also resulted in a great improvement in the shape of the binocular over the ordinary type. The hands of the observer can grasp the body of the binocular conveniently and, even after a long spell of observation, without any feeling of fatigue. When holding the binocular in the hand the observer is conscious of a feeling of good balance about the instrument which, coupled with the very light weight, gives the greatest comfort and steadiness in its use.

Each Binocular during manufacture and before despatch from the works is subject to a series of rigorous tests, including tests for the following :

1. Watertightness.
2. Constancy under rough usage.
3. Optical quality.
4. Parallelism of the axes of the two component telescopes.

In addition to the special foregoing features the Binocular includes the following :

GENERAL FEATURES.

Focussing. — Each eyepiece is focussed separately and is provided with a dioptric focussing scale. Special attention is paid in the manufacture of the parts and in the choice of materials to smooth working of the focussing gear.

Interocular Distance. — Adjustable from 54 millimetres to 74 millimetres. The adjustment is made by hinging the Binocular bodies about the central hinges.

Interocular Distance Scale. — Engraved on the central hinge at the eyepiece end of the Binocular. The scale enables immediate resetting to be made at any time, if necessary.

Interocular Distance Clamp. — A knurled head is provided to clamp the Binocular after adjustment of the interocular distance.

MATERIALS.

Optical Parts. — All made of optical glass, optically ground and polished in the BARR & SROUD Works. The glass used for the prisms and lenses is of the highest quality, similar to that used in large optical instruments such as Rangefinders, Periscopes, etc.

Metal Body. — Made of aluminium alloy, designed to combine strength with minimum weight.

Body Covering. — Of the best quality vulcanised rubber, moulded in position. It will withstand weather changes without deterioration in appearance, and is very durable.

Finish. — Of the highest class. The metal parts are coated with a special durable black enamel, having a semi-matt surface. Some of the usual enamelled metal parts, such as the eyeguards and objective holders, have been replaced by a light but strong composition that is black throughout. The use of this material has enabled the finish of such parts to be made permanent.

Leather Case. — With shoulder strap. Substantially made from solid brown leather, lined with thick velvet.

In general these Binoculars are high class optical instruments, made from the same materials and under the same manufacturing conditions as optical instruments of precision such as Rangefinders and Periscopes.

