

Telephone:
6979 CENTRAL.

Telegrams: { "OPTICS," London.
"CAMERA," Edinburgh.

Dept. No. 6.

JUNE, 1905.

Dept. No. 6.

AWARDED 42 GOLD & OTHER MEDALS AT INTERNATIONAL EXHIBITIONS.



NINE TIMES PLACED HIGHER
THAN ANY OTHER COMPETITOR.

— A —

SUPPLEMENTAL LIST

OF

Binocular Glasses

— OF NEW TYPE —

Including PRISM GLASSES.

Telescopes

ASTRONOMICAL and PORTABLE.

Manufactured and Supplied by

W. WATSON & SONS,

Opticians to His Majesty's Government,

313, High Holborn, LONDON, W.C.

(Two Doors from Chancery Lane.)

Branches { 16, FORREST ROAD, EDINBURGH.
2, EASY ROW, BIRMINGHAM.

— ESTABLISHED 1837. —

Steam Optical Factories:—

9, 10, 11, 16 & 17, Fulwood's Rents, Holborn, W.C.

Merchant Shippers and the Trade supplied.

Hours of Business: 9 a.m. to 7 p.m. Saturdays, 9 a.m. to 2 p.m.

W. WATSON & SONS

Have the honour to announce that they have been favoured by

The Admiralty

With the renewal of the Contract for a further term of **THREE YEARS**
for the supply of

TELESCOPES to H.M. NAVY. (18/5/05)

Admiralty Contracts are confined exclusively to **ACTUAL MANUFACTURERS**. Each Instrument has to be submitted to the National Physical Laboratory at Kew for verification and examination before acceptance for service use.

WATSON & SONS

Have supplied for **BRITISH** and **INDIAN** Government orders during recent years more than

8000 FIELD GLASSES

AND

4000 PORTABLE TELESCOPES.

These facts will bear testimony to the high quality of the Watson goods.
THEY ARE THE BEST.

REMARKS.

This Supplemental List contains particulars of newly-designed Astronomical and Portable Telescopes; particulars of modifications in the mounting of our "Century" Telescope; a new pattern of Equatorial Mounting for Astronomical Telescopes, and descriptions of a new series of Field Glasses which possess unique qualities. Further, we have added several types of Prism Glasses, so that purchasers may be in a position to select the pattern that best suits their requirements and taste.

Any of the goods contained in this List may be purchased by Progressive Payments, of which full particulars will be found on page 1 of our full Catalogue of Telescopes and Field Glasses (No. 6). This Catalogue will be forwarded post free on request.

We invite correspondence regarding the choice of Glasses, and our experience and advice are always at the disposal of enquirers.

We are always willing to send an assortment of Glasses for choice, on receipt of deposit to value or London trade reference.

BUSINESS TERMS.

All goods are marked at **Net Prices for Cash**, the small profit over cost of manufacture admitting of **NO DISCOUNT**.

Country and Foreign Orders must be accompanied by remittance in full, or a satisfactory London Trade Reference.

Remittances may be made by Cheques, crossed London and County Bank, also by Postal Orders or Post Office Orders, payable at the General Post Office. These should also be crossed.

Watson's New "Spanza" Field Glass.



In consequence of the loss of light that is of necessity incurred when a Field Glass of prism construction is used, frequent enquiry has been made for a glass which will give high magnification with a large degree of illumination, so that in a poor light, when a prism glass could not be advantageously employed, it would still be possible to make high power observations.

By a new computation we are enabled to offer in our new "Spanza" series, Field Glasses which give respectively 6, 7 and 8 diameters magnification, and this in a mounting of moderate size—very little in excess of the ordinary prism glass.

Great accuracy of workmanship has been necessary, especially in the optical parts of this glass; but an examination will confirm our judgment with regard to the very high standard of unapproached quality which we have attained. The definition to the edge of the field is superb. The brilliancè is greater than that of any other glass of the same power.

The sizes and weights are as follows :—

No.	Diameter of Object Glass.	Magnification in diameters.	Size closed.	Weight.	Price in best solid leather sling case, with straps either black or brown.
A 6	1½ inches.	6	4½ × 4½	1 lb. 7½ ozs.	2 15 0
B 6	1⅞ "	7	5½ × 4½	1 " 5½ "	3 0 0
C 6	1⅞ "	8	5½ × 4½	1 " 1 "	3 7 6

Watson's New "Mersa" Field and Opera Glass.

A FIELD
GLASS
GIVING A
WONDER-
FUL FIELD
OF VIEW.



IN NO POINT
INFERIOR--
IN SOME
QUALITIES
SUPERIOR--
TO A PRISM
GLASS.

The combination of large angle of field of view with appropriate magnifying power, in a Field Glass of ordinary type has hitherto proved unsuccessful and unsatisfactory.

This newly designed "Mersa" Glass has been made from special computations, and it will be found to combine all the beautiful qualities of the best low power Prism Glass that is made, with the added advantage that it passes a far larger amount of light than is possible with a Glass of Prism construction.

The maximum amount of light which any Glass of the Prism type will pass to the eye is 65 per cent., the "Mersa" passes 80 per cent.

It will be recognised from this that exceptionally valuable features are incorporated in this new Glass. Summed up in figures its angle of field of view is in excess of 10 degrees and its power is three diameters.

For the use of naturalists, sportsmen, and those who are in constant need of a glass with which objects can be rapidly picked up and watched over a large area, there is no finer glass procurable; its qualities render it specially suitable in a dull light when no other glass could possibly be employed.

Further, although the Object Glasses are large in diameter the size of the whole Glass is so compact that purchasers will be induced to carry it when any other would prove too bulky and have to be discarded.

Finally, the price at which we are able to offer it is a most moderate one.

To sum up its qualities, it is the equal of the best expensive low power Prism Glass that is made, but it passes fully 15 per cent. more light and is considerably cheaper. It combines an immense angle of field of view with the most useful magnifying power for all general purposes. It is invaluable for use in dull light or as a night-glass.

The "Mersa" Glass can be had either covered in pigskin, Russia leather, calf, or Morocco, as may be preferred.

The clear aperture of the Object Glass is $1\frac{1}{2}$ inch, and the height of the Glass when closed down is 3 inches.

PRICE.

The above Glass is supplied in best solid leather sling case, either black or brown, as may be preferred, complete **£3 2 6.**

W. Watson's
Naval "Mersa" Binocular Glass.



This Glass is identical in its optical qualities with the Glass described on page 4. It is however, mounted as depicted in the illustration in a manner specially suitable for naval and yachting purposes. The Object Glasses are provided with fixed shades, and the eyepieces with cup shades which can be folded down. Further, a jointed bar is provided so that the width apart of the eyepieces may be adjusted exactly to the centres of the eyes of the user.

The Object Glass is slightly larger in diameter than in the ordinary pattern, namely $1\frac{1}{4}$ in.

The above Glass is strongly mounted and covered in pigskin. As a night Glass at sea it has no equal, and we can with the fullest confidence recommend it to yachtsmen and naval men generally.

PRICE.

In best solid leather sling case **£3 15 0**

Prism Field Glasses.



The Prism Field Glasses which are offered in these pages are of the latest and best types obtainable.

It is now generally known that the object of the prism or prisms in the body of the Binocular Glass is to reduce the otherwise necessary length of body by causing the image formed by the Object Glass to travel up and down in the body, and finally—by erecting the image—to permit of the use of a Telescope Eyepiece, with the result that

A HIGH-POWER GLASS

in a very compact form is produced.

There is another very important feature associated with these Glasses, namely :—

THE ANGLE OF FIELD OF VIEW.

This is a quality which is always appreciated, but which is impossible of combination with high magnification in the ordinary type of Field Glass.

Watson & Sons'

“Perspect” Prism Field Glass.

(Registered). London made throughout.



This Glass is constructed on the Porro system, so well known in connection with the latest forms of Field Glasses, and possesses in the highest degree all the fine qualities which are associated with Prism construction. These advantages briefly recapitulated are :—

- (1) High magnification in exceedingly compact form.
- (2) Greatly increased angle of field of view.
- (3) Marked stereoscopic effect.
- (4) Improved definition and general optical effect.

In addition to the above, we may state with regard to the mechanical construction that it is of aluminium throughout, the eyepiece heads alone excepted. In every part it is of the best construction, and it is made throughout in London.

The focussing adjustment is made by turning each eyepiece individually, and so securing the best result from each eyepiece.

A scale is provided on each eyepiece, as shown in the illustration, and when once the best position is known the Glass can be immediately re-focussed and will thus be always ready for use.

It should be remarked that for objects lying beyond a certain short radius no re-focussing of the Glass is necessary, the focus being a constant one.

PRICE.

This Glass is made in one power only, namely, 8 diameters.

Price complete in solid leather sling case **£5 10 0**

The Penta-Prism Glass.

(Hensoldt's Patent.)



THAT PRISM



produces the
wonderful
effect.

It is unique.

This Glass, made by Messrs. Hensoldt, is of the construction shown in illustration, page 9, the effect being produced by means of a compound prism. The great feature of this prism is that it permits of the use of an Object Glass of large size, with the result of more brilliant illumination of image. In the Porro form the large object glass cannot be conveniently used because it would entail larger prisms and increased size of body.

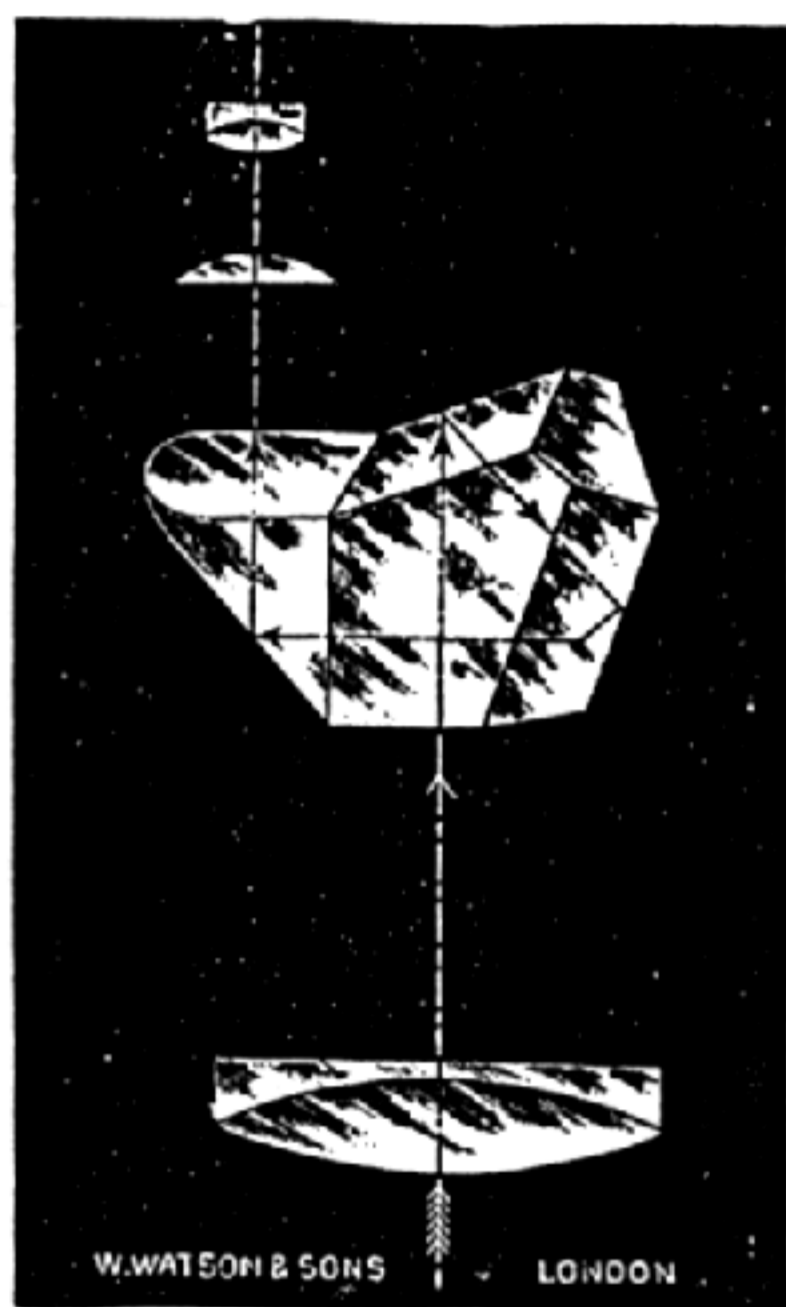
A jointed bar is provided so that the width apart of the user's eyes can be exactly suited.

As a general rule we prefer this glass to any other, and we can very strongly recommend it. It is made in two forms :—

(A) With focussing adjustment by rackwork.

(B) By adjusting each eyepiece separately only.

The Penta-Prism Glass—continued.



The above illustration shows the construction of the Penta-Prism Glass.

PRICES

AND SIZES OF OBJECT GLASSES.

(A Best Solid Leather Case is included with each Glass.)

Magnifying Power.	Diameter of Object Glasses.	BINOCULARS.		MONOCLES. With Adjustment to Eyepiece.
		Form A, with Adjustment to Eyepiece.	Form B, with Adjustment by Rackwork.	
4 diameters	$\frac{1\frac{1}{2}}{1\frac{1}{8}}$ in.	£5 10 0	£6 10 0	£2 10 0
7 "	1 "	6 10 0	7 10 0	3 0 0
9 "	$1\frac{1}{4}$ "	8 5 0	9 5 0	3 5 0
12 "	$1\frac{1}{2}$ "	9 10 0	10 10 0	4 0 0

Zeiss's Patent Binocular Field Glasses.

Prismatic.

"Porro" System.



Messrs. Zeiss were the first to introduce this pattern of glass, and their success in connection with it has gained for it the distinguished position that it enjoys.

A special feature of their glass is the marked Stereoscopic effect that is produced by its means.

The focussing is effected by adjusting each eye lens separately to the vision of each eye, a graduated scale being provided for recording the correct positions.

A jointed bar is fitted so that the width of eyes may be exactly suited.

A best Solid Leather Case is included with each Glass.

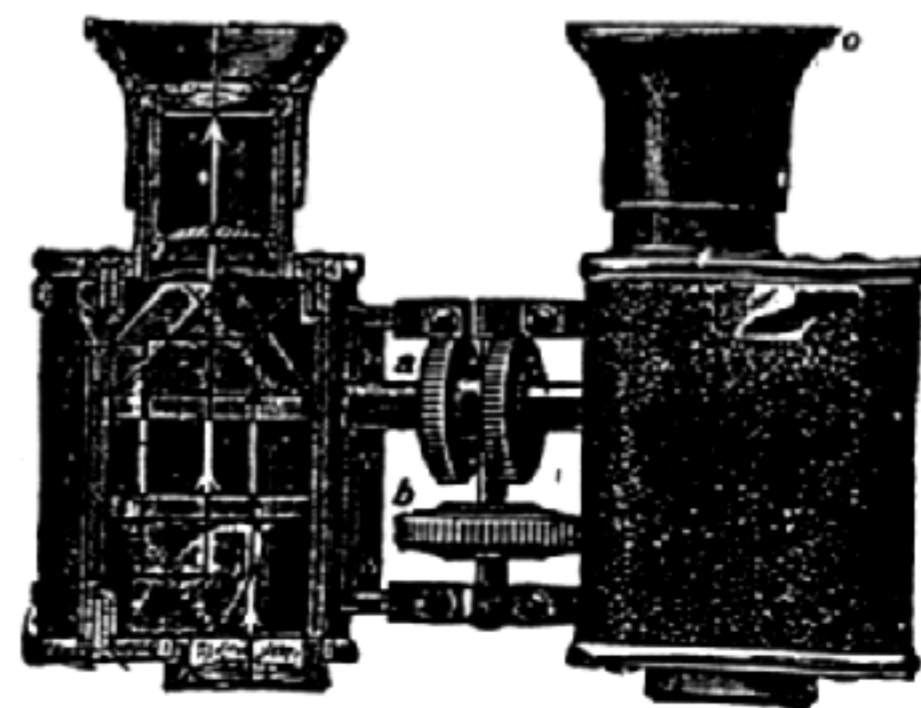
PRICE LIST.

	Magnification.	Extreme Length of the Instrument.	Extreme Width of the Instrument.	PRICES.	
				BINOCULAR.	MONOCULAR.
		Inches.	Inches.		
970	4	2 $\frac{3}{4}$	5 $\frac{1}{2}$	£5 10 0	£2 10 0
971	6	3 $\frac{1}{2}$	5 $\frac{1}{2}$	6 0 0	2 15 0
972	8	4	5 $\frac{1}{2}$	6 10 0	3 0 0
973	5 (Night marine)	5 $\frac{1}{4}$	6 $\frac{1}{2}$	8 15 0	4 0 0
974	7 $\frac{1}{2}$ " "	4 $\frac{1}{2}$	6 $\frac{1}{2}$	8 15 0	4 0 0
975	12 (Day marine)	4 $\frac{3}{4}$	6 $\frac{1}{2}$	9 5 0	4 5 0

The Goerz-Trieder Binocular Glass.

“Porro” System.

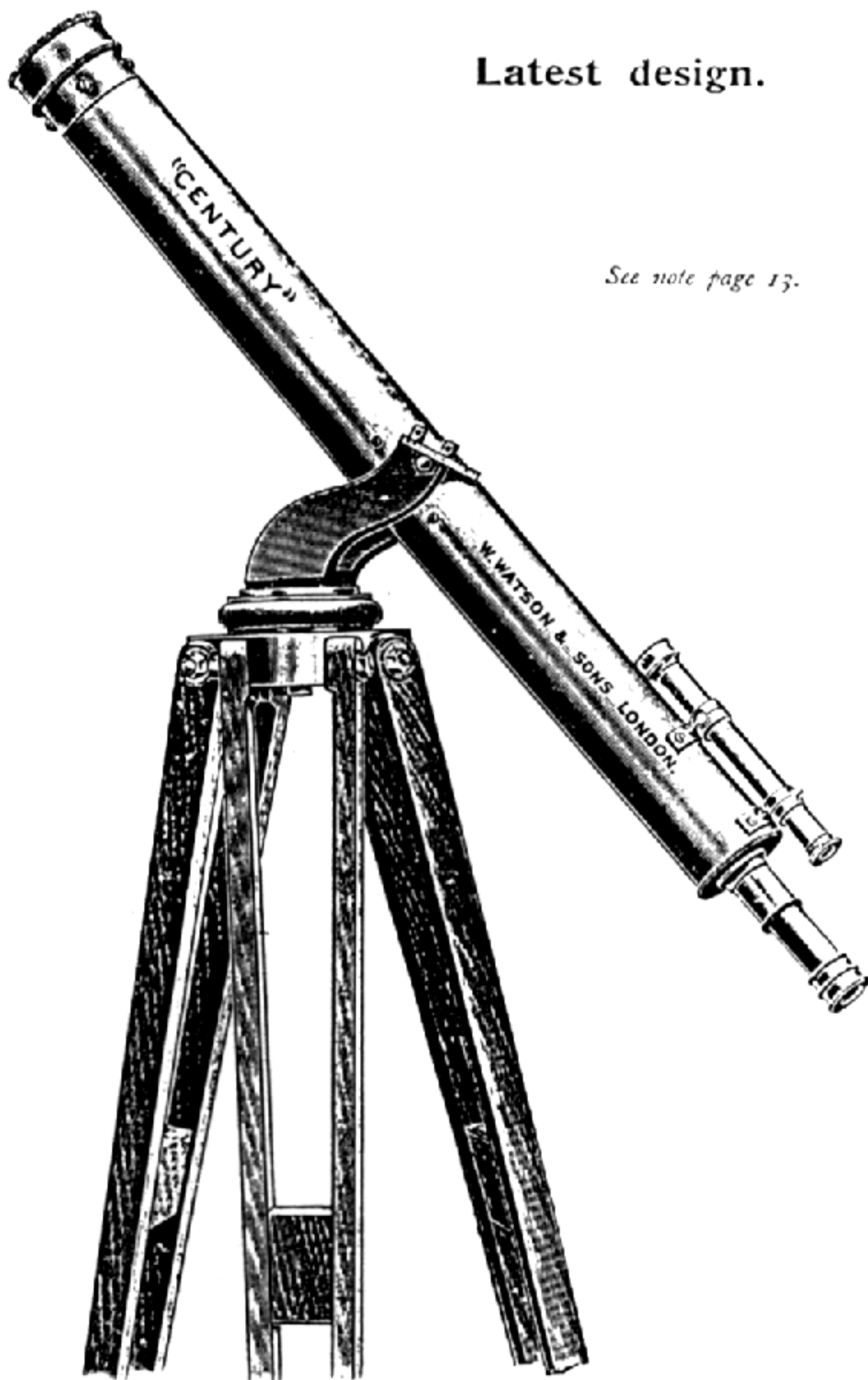
This, like the “Zeiss” Binocular Glass, has prisms in its construction, and the direction taken by the rays entering the object glass is indicated by the arrows in illustration. The rays pass through the object glass O_1 , fall upon the two prisms and are deflected by its surfaces P_1 and P_2 at right angles to their previous course. They are thus brought to the lower prism, where a similar deflection takes place at the surfaces P_3 and P_4 , and the rays are turned upward again, passing outside the upper prism into the eyepiece O_2 . The distance travelled by the rays in this manner obviates the necessity for the long body tubes of the ordinary Binocular Glass. The focussing may be effected for both eyes simultaneously by the ordinary rackwork, or if it be necessary to adjust for each eye independently, suitable provision is made for this. It is also made in Monocular form, for one eye alone. Directions for use can be supplied. It is made in four powers as follows:—



	No.	Magnifying Power.	Actual Field of View.	REMARKS.	PRICES.	
					BINOCULAR PRICE.	MONOCULAR PRICE.
980	10	3 diameters	13'3°	An excellent glass for Theatre use and for dull weather	£5 0 0	£2 10 0
981	20 The 'Universal.'	6 "	6'7°	A good glass for all purposes	6 10 0	3 0 0
982	30	9 "	4'4°	A very fine marine glass and for military purposes	7 5 0	3 5 0
983	40	12 "	3'3°	A high-power glass for extreme distances in bright weather	9 10 0	4 0 0

Watson's
"Century" Telescope.

Latest design.



See note page 13.

For full particulars of the "Century" Telescope please refer to
Catalogue No. 6.

Watson's "Century" Telescope.

(See Illustration, page 12.)

The illustration on page 12 shows the improved and latest form of Watson's well-known "CENTURY" TELESCOPE. In consequence of the large number of the instruments which have been sold, we have been able to add several features which will increase the efficiency. We have designed a new head and cradle, which imparts a freer movement and more substantial fitting. This will be seen in the illustration on page 12. The beautiful Watson-Conrady Objectives which are supplied with the "Century" Instruments are unsurpassed.

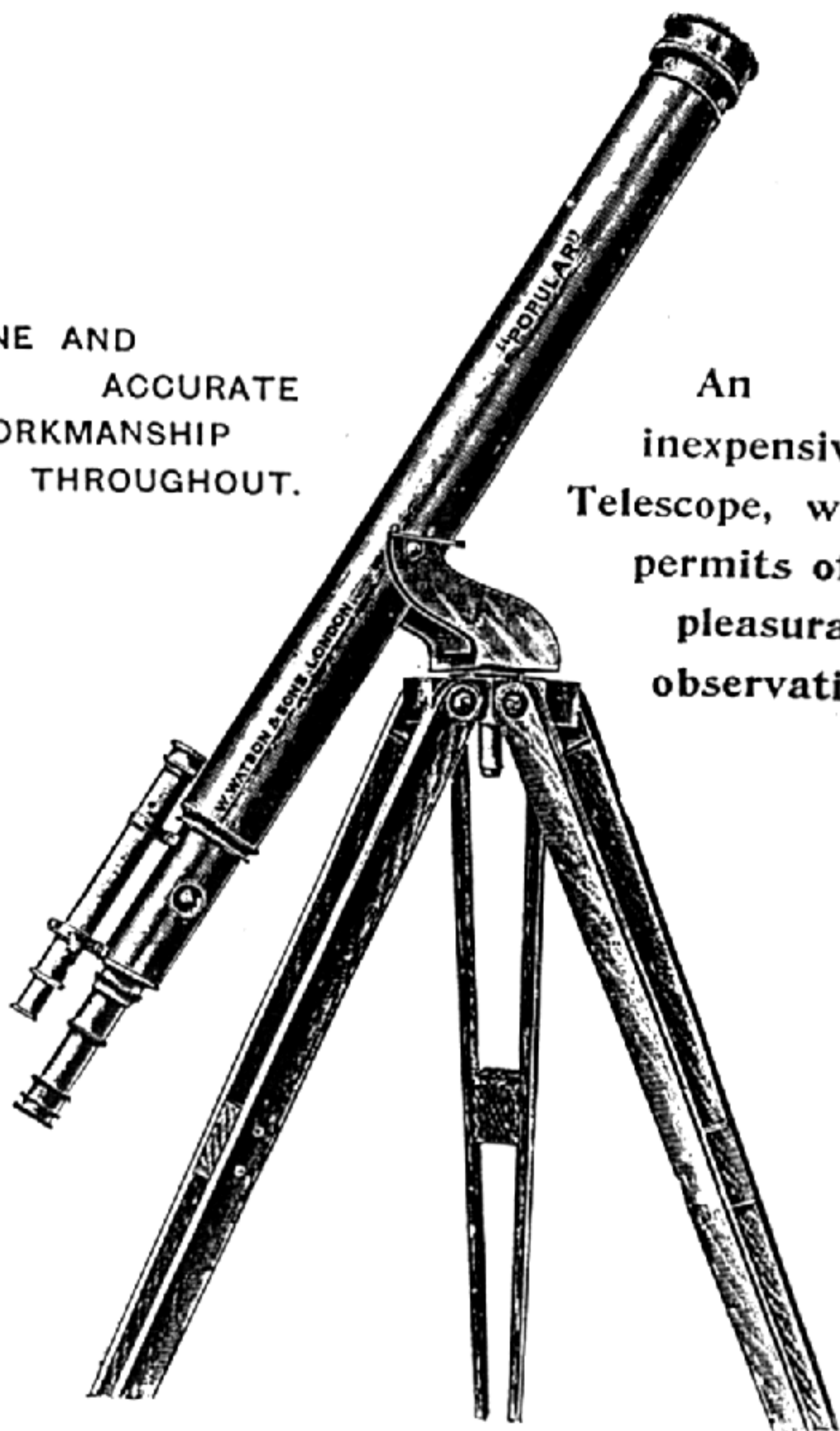
Accessories for Astronomical Telescopes.

Zollner Star Spectroscope, with three Cylindrical Powers	£2 2 0
Sun Diagonal, 21/- ; Star Diagonal	2 2 0
Combination Sun and Star Diagonals	2 10 0
Double Nosepiece for Telescope	3 10 0
Book—"Astronomy for Everybody," by Newcombe	0 7 6

Watson's
"Popular" Telescope.

FINE AND
ACCURATE
WORKMANSHIP
THROUGHOUT.

An
inexpensive
Telescope, which
permits of
pleasurable
observations.



Watson & Sons'

“Popular” Telescope.

The general lines of this Telescope are similar to those prevailing in our well known “Century” Telescope, the principal differences being—The eye-end of the Telescope is constructed in a somewhat less expensive manner, and the Telescope body itself, instead of being finished in bright brass, is enamelled black. The tripod is somewhat lighter, and the cradle centre is of less costly design. At the same time we can most emphatically assure prospective purchasers that accuracy, stability and efficiency have not been subordinated.

It has been our aim to produce a high-class Telescope at a considerably lower price than usually prevails, and this is the result of our effort.

Optical Parts.

The Object Glasses are of our Second Series. These are in reality better than many houses offer as their best, and we can strongly recommend them to people who may wish to possess a Telescope of good aperture at moderate cost.

The following is the Specification of the instrument:—Telescope as described, with star finder, body finished black varnish, mounted on mahogany tripod stand with metal cradle, fitted with one astronomical and one day eyepieces.

PRICES.

Object Glasses, 3 in., Second Series...	..	...	£9	10	0
Do. do. 4 in. ...	...	...	£28	0	0

EXTRA.

Strong Pine Case to contain Telescope and Eyepieces:—

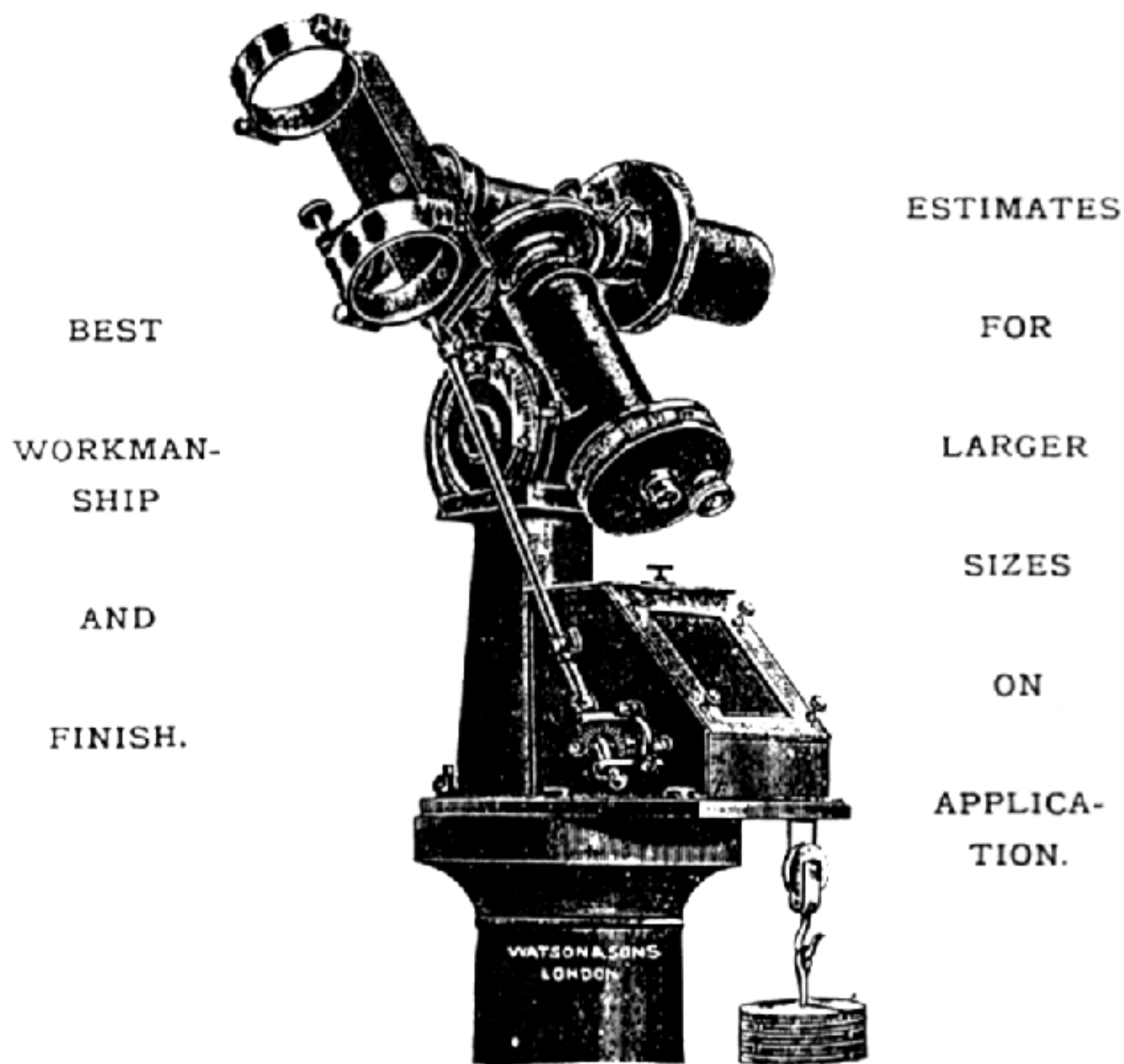
For 3 in., **15s.** For 4 in., **25s.**

The above instruments may be supplied by progressive payments extending over twelve months, at an extra cost of 10 per cent. on the above prices, thus:—

The cost of the 3 in. by Progressive Payments would be £9 10s. + 10 per cent. = £10 9s. If payment be spread over twelve months, the instalments will be 17s. 5d. each.

For full particulars of our Progressive Payment System see Catalogue No. 6, page 1.

Equatorial Mounts for Telescopes of 3 and 4 inches aperture.



Specification for 3-inch Telescope.

Equatorial mount, suitable for a 3-inch telescope, with driving clock controlled by governors, and adjustable for either the Northern or Southern Hemispheres. The Hour circle, 4 inches in diameter, reading by verniers to 20 seconds, and fitted with setting circle worked by rack and pinion. Declination circle 5 inches in diameter, and reading to 1 minute of arc. Slow motion in Right ascension, independent of clock, controlled by Hook's joint and handle.

Adjustment in latitude, 70 degrees from the equator, 3 or 4 degrees adjustment in Azimuth. The axes are of hard brass, ground into the boxes, and the whole instrument is finished in the best possible manner throughout, and is especially suitable for astronomical work and Celestial Photography.

Price (without stand or pillar)	£35 0 0
The above supplied without driving clock	£23 0 0

For 4-inch Telescope.

Equatorial mount similar to the above, but with Declination circle 6 inches in diameter, reading to 1 minute of arc, and Right ascension circle 4½ inches in diameter, reading to 5 seconds, suitable for telescopes of 4 inches aperture, with clock complete ...

	£45 0 0
--	----------------

IRON PILLAR suitable for a 3-inch telescope, with adjustable base plate	£8 10 0
Iron pillar, for a 4-inch telescope	£9 0 0

Solid Oak Stretcher tripod stand with brass toes, iron centre and adjustable base plate, with levels, suitable for a 3-inch telescope	£7 7 0
--	---------------

Solid Oak Stretcher stand as above suitable for a 4-inch telescope	£8 15 0
---	----------------

For cheaper forms of equatorial mountings and stands (see page 47 of No. 6 Catalogue).

Estimates given for Observatories, &c., and W. WATSON & SONS' Catalogue No. 6 of Telescopes and Field Glasses, sent post free on application.

**The Watson-Conrady Telescope Objectives
are superb in performance.**

Send for Special List.

W. Watson & Sons'
“DISTAX”
 Pocket Prism Telescope.

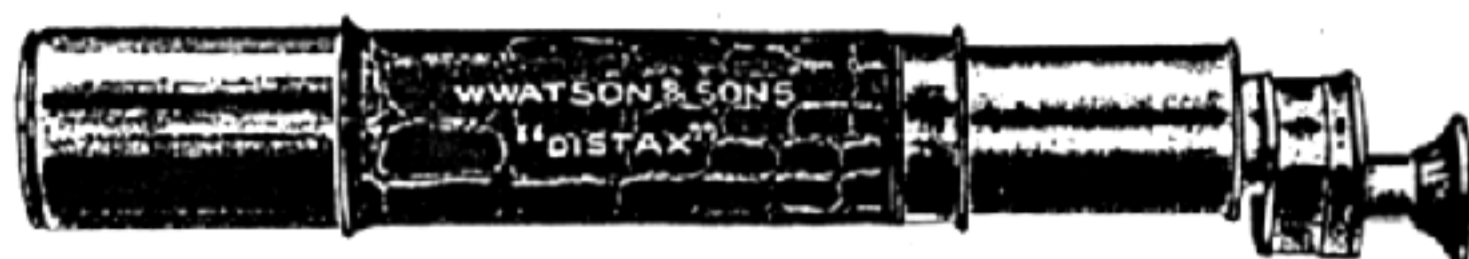


Fig. 6.

To describe a Telescope as suitable for carrying in the pocket, has hitherto been regarded—and justly so—as tantamount to saying that it is low in power, and that efficiency is compromised in the portable shape.

In Watson's new “Distax” Prism Telescope there is no sacrifice of performance in any respect; in fact, an added efficiency is imparted to the instrument.

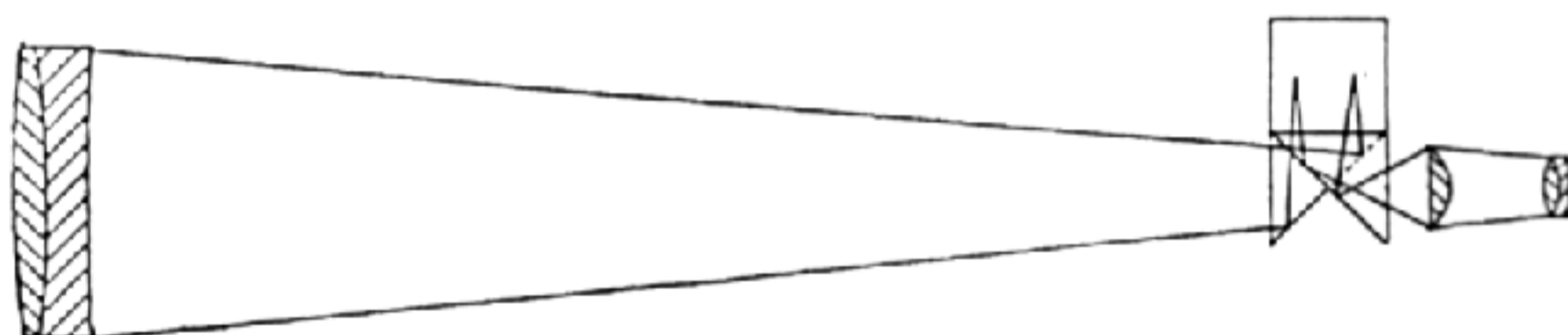


Fig. 7. Optical Construction of Telescope.

Optical Construction.

The very finest objectives and lenses are employed, specially selected and computed for this particular instrument. Four important objects have been kept prominently in view:—

- | | |
|-----------------------------|------------------|
| 1.—Light Gathering Power. | 3.—Light Weight. |
| 2.—Sharpness of Definition. | 4.—Small Size. |

It is generally known that in Telescopes of the Terrestrial or Portable type, a lens has to be employed to erect the image of the object viewed. If this were omitted, objects would be seen inverted. Both this and the usual type of eyepieces are rendered unnecessary by the placing at the point where the erecting lens would, in normal circumstances, be fitted, our new Compound Prism, as shown in the diagram above. Before entering this Prism, the image is inverted, but when it emerges it is erect, and is magnified by an eyepiece. The eyepiece used is a high-power achromatized one.

It will be seen from this that the ordinary erecting lens and eyepiece which is fitted to the Telescope of the usual type is entirely displaced by the new Prism Eyepiece which is substituted for it, as illustrated Figs. 6 and 7.

W. Watson & Sons'

"Distax" Pocket Prism Telescope—cont.

The Advantage Gained.

The special and distinct gain by this construction is the possibility of making a Telescope of high efficiency in an exceedingly compact shape and size, with corresponding saving in weight.

The Telescope which is used with the Prism, measures $9\frac{1}{2}$ inches closed and $14\frac{1}{4}$ inches when extended for use. The same Telescope if fitted with the usual type of erectors and eyepieces, measures $17\frac{1}{2}$ inches closed and 26 inches extended.

The Mechanical Construction.

The mounting is very light, being of hard-drawn German silver, finished oxidized black, and lacquered in exposed parts.

The total length of this body is 7 inches, and it is fitted with a single draw-tube. It is provided with a shade for sun and spray, and covered in Russia leather, pigskin or crocodile, as may be preferred.

General Particulars of the "DISTAX" TELESCOPE.

Diameter of Object Glass, which is of best quality, $1\frac{1}{16}$ ins.

Magnification, 16 diameters.

Angle of Field of View, $1^{\circ} 55''$.

Length of Telescope over all, with Prism Eyepiece in position, $9\frac{1}{2}$ inches.

The Case for the Telescope.

This is made specially to be carried in the pocket, if it be desired to do so. In addition, it is fitted with a Sling, so that it may be conveniently carried over the shoulder. The weight of the complete Telescope in case is 1 lb. $3\frac{1}{2}$ ozs.

PRICE.

"Distax" Telescope, complete in case £4 0 0

Watson's "Pencil" Telescope.



This is a small Telescope, having an outside diameter of $\frac{1}{4}$ in. It has two draw-tubes, and measures, when closed, 5 inches. It is contained in a washleather bag.

It is a thoroughly serviceable, well-made instrument, magnifying 12 diameters, having the exceptionally large angle of field of view of $2^{\circ} 14'$.

We can strongly recommend this Telescope to those who require extreme portability. It is really a very efficient little Telescope.

Price **£1 1 0**

Latest Scientific Novelty.

Watson's Diffraction Buttons.

These buttons are made of highly polished steel, upon the face of which is engraved a series of spiral lines $\frac{1}{5000}$ -inch apart. When the surface is looked upon, a beautifully soft series of radiating colours appear in the order of the Solar spectrum; and if the button be held closely to the eye, a regular spectrum will at once be observed. Apart from their actual scientific interest, and the very striking effect which they produce, these buttons, in the large size, can be used for ladies' jackets, etc., and form a most uncommon, yet beautiful button. In the smaller size, they can be used for similar purposes, also for gentlemen's waistcoats, etc.

PRICE.

Sample Button, about $\frac{3}{8}$ -inch diameter	... ..	£0 4 6
Set of 6, in leather case	... ..	1 5 0
Sample Button, $\frac{1}{2}$ -inch diameter	... ..	0 2 6
Set of 6, in leather case	... ..	0 15 0

NOTE.— These buttons may be kept free from tarnish by occasionally wiping with a soft cambric handkerchief.

Latest Scientific Novelty . . .

WATSON'S DIFFRACTION BUTTONS.

These buttons are made of highly polished steel, upon the face of which is engraved a series of spiral lines $\frac{1}{5000}$ -inch apart. When the surface is looked upon, a beautifully soft series of radiating colours appears in the order of the Solar spectrum; and if the button be held closely to the eye, a regular spectrum will at once be observed. Apart from their actual scientific interest, and the very striking effect which they produce, these buttons, in the large size, can be used for ladies' jackets, etc., and form a most uncommon, yet beautiful button. In the smaller size, they can be used for similar purposes, also for gentlemen's waistcoats, etc.

Price:—

Sample Button, about $\frac{3}{4}$ -inch diameter	. . . . .	£0 4 6
Set of 6, in leather case	. . . . .	1 5 0
Sample Button, $\frac{1}{2}$ -inch diameter	. . . . .	0 2 6
Set of 6, in leather case	. . . . .	0 15 0

Note:— These buttons may be kept free from tarnish by occasionally wiping with a soft cambric handkerchief.

W. WATSON & SONS,

313, HIGH HOLBORN, LONDON, W.C.

Branches:—

16, FORREST ROAD, EDINBURGH,

2, EASY ROW, BIRMINGHAM.