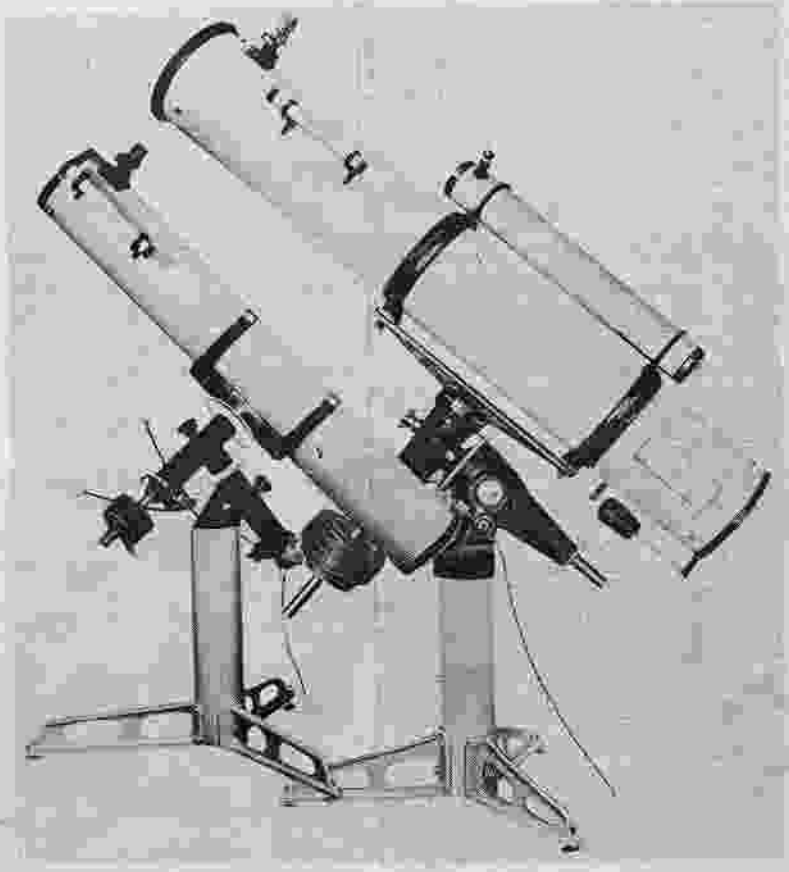
FULLERSCOPES®



ASTRONOMICAL SUPPLIES
LONDON
FULLERSCOPES
DOWN TO EARTH PRICES

760 FINCHLEY RD., LONDON, N.W.11

18, Addison Way,
London, N.W.11

"FORWARDS WITH FULLERSCOPES"

Firstly, thank you for your enquiry, please accept my apologies for not writing you a personal letter, but due to the large number of catalogues sent out this is not possible. All specific questions, however, are answered individually and in order to keep running expenses to a minimum (and the prices down for you), please enclose a stamped self-addressed envelope for reply.

The catalogue following is very comprehensive, and I hope you will find in it all you require. It is divided into three main sections, the first giving some advice on choosing a telescope, helpful hints, and information on telescopes in general, and FULLERSCOPES in particular. The second lists all accessories currently available together with accurate descriptions and where possible photographs. The final section embraces the large selection of telescopes within the FULLERSCOPE range.

Despite the surprisingly low prices, all FULLERSCOPES equipment is of extremely high quality. This is the result of eliminating all superfluous paper work, by precision machining only where working parts are involved, never where it would only be decorative, and carefully selecting raw materials from reliable suppliers. Last, but by no means least, by the unstinting help and advice freely given by professional astronomers, draughtsmen, engineers, librarians, writers, and many others without whose help FULLERSCOPES would cost very much more than they do. Even with FULLERSCOPE'S extremely moderate prices, astronomy can prove expensive, so to cater for those who must budget, be they private individuals, Schools, University Societies or Government Establishments, I have adopted a "Unit Purchase Plan" (fully described at the beginning of the Telescope Section), whereby you purchase only the parts you actually require.

As a further service, most components may be bought in their raw state i.e. unpainted and unplated, at a reduced rate.

My ultimate aim is for FULLERSCOPES to have the reputation of being able to supply everything that has any connection with astronomy, offering high quality at competitive prices.

I hope you will find this catalogue a good step in that direction.

Yours sincerely,

Dudley K.M. Fuller

DUDLEY K.M. FULLER, F.Sc., F.R.A.S.

P.S. CALLERS SHOULD TELEPHONE FOR APPOINTMENT (SPEedwell 9028)

N.B. TERMS AND CONDITIONS OF SALE ARE TO BE FOUND AT THE BACK OF THE CATALOGUE.



FULLERSCOPES at Exhibition 1964

ASTRONOMY IN THE SPACE AGE

Ever since the dawn of history Man has studied the stars and wondered over the ever-changing movements of the heavenly bodies. In the year 1609 speculation and myth gave place to science, when Galileo turned a telescope on to the night sky. Theories which had been held with religious zeal for close on two thousand years came tumbling down when he observed the phases of the planet Venus - an observation which can be made by a child with a telescope costing a few pounds.

In our day, astronomy has taken another great leap forward. To the power of giant telescopes has been added the knowledge gained by instruments sent out into space to explore the Moon and Venus.

Soon Man himself may set foot on the Moon; in the not too far distant future perhaps upon the mysterious planet Mars. Astronomy has taken on a new vitality and a new urgency. It is now an official subject in schools.

Astronomy is one of the most complex and advanced of the sciences; but it is also a fascinating hobby, which can be entered upon and enjoyed from the first moment when one buys a small telescope and repeats for oneself the thrill which Galileo must have felt three and a half centuries ago. It is a pastime which appeals to anyone with a sense of awe or a spirit of curiosity, whether they be aged eight or eighty.

With a very modest instrument there is so much that can be seen. The phases of Venus; the waxing and waning of the polar caps of Mars, and the changing colours of what may be its vegetation. There is the splendid sight of Saturn's rings, the nightly movements of Jupiter's moons. There is the Moon itself, with its craters and its mountain chains, its vast plains, and its mysterious domes. There are the strange visitors to our system called the Comets. You might even discover one for yourself, as more than one amateur has done with the aid of nothing but patience and a small telescope. Further out, there are variable stars, and double stars. Further still, unbelievable distances away, there are the great star systems, or galaxies, each with about a hundred thousand million stars.

There is so much to see and observe and record, that the task is beyond the capacity of all the professional observatories put together. *Astronomy is the one science where amateurs have always played, and may still play, a significant part.* Once possessed of a telescope, you may give yourself a few hours of excitement and pleasure, or you may, with a little practice, join the ranks of the thousands of amateurs around the world who have become infected with the fever of discovery and are practical contributors to the advance of human knowledge. A telescope is a welcome present to a child, or a valued possession to the old and wise.



DUDLEY K.M. FULLER.

WHICH TELESCOPE SHALL I CHOOSE?

Whatever your choice, the first consideration must be the accuracy of the mirror or lens. Granted that, there are two main types to choose from: the Refractor and the Reflector.

The Refractor has a lens for gathering and focussing the light. It needs to be made of compound glasses, because there would otherwise be severe colour distortion. For this reason, a Refractor is beyond the capacity of an amateur to make for himself. A largish Refractor, moreover, tends to be very long and unwieldy. Up to four or six inches, however, a Refractor does have some advantages, and it has to be borne in mind that, in smaller sizes - say up to 12" - a Refractor performs one and a half to twice as well as a Reflector of the same size. A six inch Refractor is equivalent, for most purposes, to a ten inch Reflector. Refractors, however, tend to be expensive.

Most amateurs use Reflectors, among other reasons, it is not impossibly difficult to grind one's own mirror - and, substantially, the mirror is the telescope. FULLERSCOPES can supply the blank and grinding compounds etc. (Instructions for grinding can be found in any good book on the subject.) It may take a bit of patience; but there is a good deal of satisfaction in viewing the heavens by the aid of one's own handiwork.

To repeat what cannot be repeated too often; the value and utility of a telescope depends upon the quality of its mirror or lens. For such quality you can depend on FULLERSCOPES.

WHAT IS A GOOD TELESCOPE?



Refractor

Most beginners, when they are looking at a telescope, ask: "what magnification does it give"? Strangely enough, there is no proper answer. The magnification depends upon what eye-piece one uses, and any eye-piece of almost any power can be bought for a small sum. A more sensible question, though less important than one might think, would be "what is the greatest power that can be satisfactorily used?"

The answer depends on two qualities in the telescope. First is the light-gathering power, which is relative to the size of the mirror or objective lens. The greater the magnification, the dimmer is the image seen. It follows that it would be absurd to put a very high power into a small telescope to look at a dim object.

The second quality, and the most important, is the resolving power of the telescope. This too depends upon the size of the mirror or lens, but also, and importantly, upon their accuracy. However large a telescope may be, it is little use for resolving, for instance, a close star pair, if the mirror or lens is not accurately shaped. The giant Palomar telescope with its 200" mirror, has great light-gathering power, it can pick up distant Galaxies quite out of the range of smaller instruments. This performance depends primarily upon the size of the mirror, and not upon magnification.

For some purposes, even size is relatively unimportant. The Palomar telescope is four hundred times as "powerful" as an amateur's ten inch. But, because of the limiting effects of our atmosphere, it can only take a good photograph of an object on the Moon, about a half or a third of the size which can be taken with a 12" in the back garden.

Some less than perfectly honest manufacturers are cashing in on the current boom in astronomy by advertising cheap telescopes with absurd magnifications. Anyone can put any power into any telescope. The question is, "what will the observer see?". If the power is too great, the answer will be a confused blur. There are only two questions which an intending astronomer should ask. How big a telescope can I make or afford to buy? How accurate an optical system can I contrive to make or purchase? Some idea of the required accuracy can be gauged from the fact that a good mirror is accurate to anything from a quarter to a 1/20th of the wave-length of light. If the optics are not accurate to such limits, even a moderate magnification will be impractical. If the accuracy is much less, the telescope will be useless; putting in a higher power will only make it worse. FULLERSCOPES specialise in producing telescopes, and telescope components, which are supplied with first-class optics, and which can be used with magnifications which are the greatest possible for the size of the instrument. The absurdity of some of the claims put forward can be judged by the accepted formula that the greatest magnification which can be employed usefully is fifty times the diameter of the mirror or lens in inches. Thus a 3" telescope has a useful limit of 150 magnifications; a 12" of 600 magnifications. These powers, moreover, can only be used in the best possible weather conditions and for some purposes. The general run of powers used by practical astronomers are substantially lower most of the time.



Reflector

The optics used throughout FULLERSCOPES are made by experts and craftsmen in this highly specialised field. In order to cater for a wide range of requirements we supply optics in varying degrees of accuracy, thus FULLERSCOPES can provide a ¼ wave "commercial mirror" at a low price which is ideal - and quite adequate - for the person who wishes to "star gaze" as a hobby. For the more discerning amateur, Universities and Research Establishments etc. FULLERSCOPES can offer the very best quality optics available.

FULLERSCOPE ACCESSORIES - MOUNTINGS

The importance of a good strong mounting for a telescope cannot be stressed enough. It must always be remembered that magnification, besides enlarging an image also amplifies any shake in the telescopes. It is for this reason that the best results are obtained when the mounting is bolted to a concrete or iron pillar. If this is impossible then choose, in order of preference, a pedestal stand, a heavy (braced) metal tripod, or, as a last resort, a sturdy wooden tripod which must be braced if it is to be of any use.

There are two main types of mountings for telescopes, the ALTAZIMUTH, which enables movement in a horizontal and vertical plane, and the EQUATORIAL mounting which is specially designed for the observation of celestial objects. The "horizontal" axis of the Equatorial mounting is tilted so that it is parallel to the Earth's axis (the latitude of the observer). The "Universal mounting" is a combination of the two types described above.

To be efficient, a mounting's two axis must be at 90° to each other, and in the case of the Equatorial, the polar axis should be adjustable for latitude. Slow motions to each axis are advantageous and provision should be made for the easy attachment of these, also setting circles. Both axis should have smooth action, some friction (preferably variable) should be present, but on no account must there be any "snatch". ALL FULLERSCOPE mountings have been carefully designed to meet the above requirements, and bearing in mind the first paragraph above, each mounting is listed with both its recommended and MAXIMUM carrying capacity (the maximum should only be resorted to if there is no alternative).

MK.I Universal Mounting

A sturdy, exceptionally low-priced mounting especially designed for FULLERSCOPES 2¼" to 2½" Refractors and 4½" Reflectors. The maximum carrying capacity is a 3" Refractor or a light-weight 6" Reflector.

The mounting is elegantly styled and the conversion from Equatorial to Altazimuth is simple and positive, having a fine aligning device for latitude setting which, once adjusted, automatically stops the polar axis at the correct angle.

Specification:

Cast alloy housings
Reamed bearings
¾" diameter solid steel shafts
Friction screws on each axis
3½" diameter base plate with 3/8" central fixing hole and flange
Fine adjustment screw for latitude setting
Special cradle will accept tubes up to 5" diameter.
Black wrinkle finish.

Price	£7.10.0
Utility model, unpainted, without straps	£5.10.6

(Carriage and insurance 7/6d)



MK.I Head

MK.II Equatorial Mounting

This sturdy mounting is intended to carry 6" Reflectors or 3" Refractors but will carry a SHORT 8" (Maximum capacity 3½" Refractors 8½" Reflectors). It is sold only in the Utility finish i.e. unplated and unpainted. It will accept all accessories (slow-motion, electric drive, setting circles, cradles, etc). Please note, there are three bases available for this mounting and the type wanted should be specified when ordering.



MK.II Equatorial

Specification:

Cast alloy housings 9" x 2½"
1" diameter solid steel shafts
Precision machined bearings
Friction screws on each axis
Saddle plate 12" x 2½" (Channel)
Base (1) 4" diameter flat with central screw, or
Base (2) "Pot" type to fit pedestal, or
Base (3) Base with tripod all in one part
German type
Weight (head only) 14 lb.

MK.II Equatorial Head (Flat Base) Price £10. 0.0.
MK.II Equatorial Head (Pot Base) Price £10.10.0.
MK.II Equatorial on Metal-braced wooden Tripod Price £12.10.0.

(For accessories see p. 6)

(Carriage & Insurance 10/-)

MK.III Universal Mounting

The MK.III Equatorial/Altazimuth mounting is a re-designed version of the MK.II, vastly more stable and includes those refinements usually found only in much higher priced models. Happily carries up to 5" Refractors, 8½" Newtonians and 10" Cassegrains. Maximum carrying capacity 6" Refractors and Short F. 10" Reflectors.

The elegantly styled castings are precision machined to ensure that the axis are at 90° to each other. Mounting incorporates P.T.F.E. thrust surfaces to ensure velvety smooth snatch-free operation. A fine aligning screw is provided for latitude adjustment, and conversion from Equatorial to Altazimuth action is quite simple, the original latitude setting remaining undisturbed. This mounting will accept all the accessories listed.



MK.III Universal

Specification:

German Universal Design
Cast alloy housings 9" x 2½" diameter
1" diameter solid steel shafts
(Exposed portion of Dec. Shafts Hard Chrome plated)
Accurately machined bearings
P.T.F.E. thrust surface on each axis
Fine aligning device
Finish: Black wrinkle stoved enamel and plated fittings.
Base: Two types available as under:-
(1) Flat base 4½" diameter with central screw
(2) "Pot" base for Pedestal or standard 4" steam pipe.
Weight of MK.III head approx. 17 lb.

MK.III Head (Flat Base) Price £14.10.0.
MK.III Head (Pot Base) Price £15. 0.0.

(Carriage & Insurance 10/-)

The MK.II and MK.III mountings are provided with lugs and holes to accept the accessories listed. Fitting of gears etc. is simple and only elementary tools are necessary.



List of Accessories for the MK.II and MK.III Heads

1. Equatorial/Universal Heads *(preceding pages)*
2. Cradles
3. Weights
4. Pedestal (or tripod)
5. Slow-motion R.A.
6. Synchronous electric drive R.A.
7. Slow-motion Dec.
8. Setting Circles
9. Variable frequency drive control.

N.B. Where accessories for the mountings are ordered WITH the mountings, carriage and insurance is the same as for the mount alone. When accessories are ordered separately, carriage is charged as shown below the price of each item.

2. Cradles

The saddle plate of the mounting is channel-shaped in cross-section and so will accept all sizes of tube, which may be bolted direct to the plate. Special cradles can be provided however, offering the following advantages: the tube can be turned round within the cradles thus avoiding awkward observing positions. The telescope can quickly be released from the cradles for easy storage. The centre of gravity of the tube can be altered at will to preserve perfect balance. The cradles give added rigidity to the telescope.



Standard black wrinkle finish felt lined.	Price
Price per pair for 2½" to 4" Refractors	£3. 0.0.
Price per pair for 7" Reflector tubes	£3.17.6.
Price per pair for 10" Reflector tubes	£4.17.6.

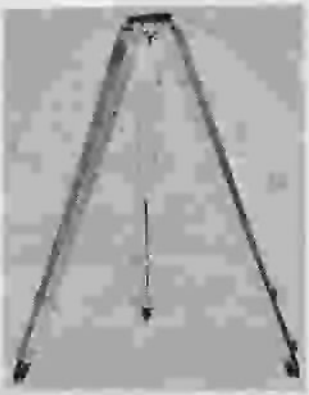
(The above prices less 7/6d if unpainted and unlined)
Postage and packing 4/6d to the above prices

3. Weights

Counterweights can be provided as follows:
2½lb, 5lb, 10lb with two fixing collars Price 2/- per lb
(Carriage 2/6d on complete order of weights)

4. Pedestal and Tripods

The FULLERSCOPE Pedestal stand will provide first class stability for your telescope if it is impossible to have a permanent pillar. This unit weighs 30 lb., and it provides mass where it is most needed. The three, specially designed, cast feet can be removed for easy storage.
Price £8.0.0. Unpainted Price £7.10.6.
(Carriage and insurance 10/-)



For a permanent mounting, standard 4" galvanised steam pipe sunk in concrete is near perfect. This may be obtained from any large builder's merchant. (The o.d. of 4" pipe is actually 4½" the "pot" bases for the mountings MK.II & MK.III will fit this pipe exactly.)

4b. For Refractors, the ex. W.D. all metal tripod is ideal. It is very rigid and extends from 3' to 5'. The MK.I, II, & III heads all fit this tripod. Price £5.0.0.

4c. 2'6" metal braced wooden tripod with flat top (non-folding) Price £2.0.0.

N.B. This tripod may be ordered at the same time as the MK.II Head, in which case the tripod top and mounting base are all one unit for added stability. *(see p.5)*

Price £2.10.0. in addition to the price of the mounting.
(Carriage and insurance on tripods 7/6d)

FULLERDRIVES

When your equatorial mounting has been aligned correctly, it is only necessary to move the polar axis once the object is centred in the field of view. This becomes difficult at even moderate magnification without some form of slow-motion system. At high powers it is also desirable to have a geared system for Dec. and is a "must" if you are considering astro-photography.

FULLERSCOPES can solve all your problems of guiding and following, as well as adding ease and comfort to observing with the following slow-motion drive units.

5 5. Slow-motion R.A. (Manual)

This consists of a hellical worm/wheel gear system with a precise number of teeth so that when used with the Synchronous motor it will drive the telescope 1 rev. in 24 hours. The main gear is friction clutched so that it is possible to swing the telescope by hand without having to disengage the gears, thus avoiding the possibility of stripping the teeth. The worm, to eliminate any back lash, can be adjusted. A flexible cable is provided.

(Postage & packing & insurance 2/6d) Price £7.10.6.

6. Synchronous Electric FULLERDRIVE

When used in conjunction with the R.A. manual Slow-Motion, this very powerful electric motor (2lb/in) will drive your telescope at one rev. in 24 hours. The unit is clutched so that either manual or automatic driving is possible.

Motor/Clutch Price £4.10.6.
(Postage & packing & insurance 2/6d)

(If you already have the R.A. Manual drive, please return this with your order for fitting the motor.)

Total price of R.A. Manual and Electric drive Price £12.0.0.

(Postage & packing 2/6d)



7. Slow-motion Dec.

Consists of worm and wheel unit fully clutched as in the R.A. Model.

Supplied with flexible cable Price £7.10.6.

(Postage & packing & insurance 2/6d)

8. Setting Circles

These circles are machine divided with great accuracy. They are 6" diameter. Clearly calibrated as illustrated. They are rigid plastic and being translucent may easily be rear-illuminated.

Price £2.17.6.

(Postage & packing 1/6d)



Setting Circles

9. Variable frequency Drive Control Unit MK.I

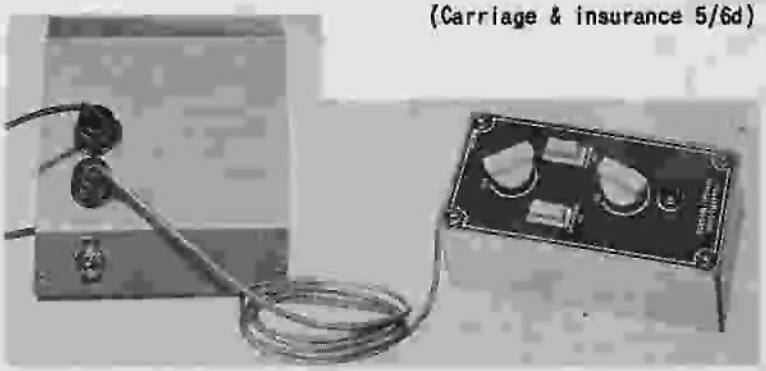
Now you can have a really accurately controlled electric drive for your telescope. The MK.I unit will give variable speeds to your synchronous motor enabling you to regulate its speed to match the apparent motion of the plants, moon etc. and to give true siderial rate. Fast forward speed is also provided. It is operated by means of an on/off switch and a control knob and scale giving it an infinitely variable range of frequencies between 47 and 120 cycles. The unit control is hand-held on a flexible lead and will reach the eye-piece in all positions.

(For safety, a small transformer unit is plugged into the mains supply, so that only a nominal voltage is led to the telescope.)

For 240-250 V. mains a.c. only.

Price £20.0.0.

(Carriage & insurance 5/6d)



FULLERSCOPES "Knightmaster" MK.II *(see p.11)*

FULLERSCOPE MK. IV EQUATORIAL MOUNTING

Massive in construction (the head alone weighs 50 lbs.) yet finger light in action; this heavy duty Equatorial Mounting will handle with ease, Refractors up to 8," Newtonians up to 12½" and Cassegrains of 15". Compare its size with other Mountings! The steel shafts run in precision machined bearings with P.T.F.E. thrust surfaces which give that extra silky movement to each axis, and make the MK.IV the finest available.

Specification

Heavy cast alloy housings
Precision machined bearings
1¼" diameter heavy steel shafts
6"diameter P.T.F.E. thrust surface in R.A.
5" diameter P.T.F.E. thrust surface in Dec.
Flat saddle plate 24" x 5½" wide
Base is 9" x 6" flat
Fully adjustable for latitude

MK.IV Head — **Price £60.0.0.**
Same model with plain shafts unpainted — **Price £50.0.0.**
(Carriage & insurance 20/-)

Slow-motion R.A.

Having a 6" diameter gear wheel with a precise number of teeth fully slip-clutched to avoid any danger of stripping teeth and to enable the telescope to be swung by hand. The large worm is set in ballraces for absolute lash-free action. Supplied with manual flexible cable. This gear unit R.A. must be fitted by FULLERSCOPES.

Price £20. 0.0.

Electric Motor Unit

Synchronous electric motor giving a torque of 8lb/in. which drives the R.A. gear system to give one revolution to the polar axis in 23 hours 55 minutes (virtually Siderial Rate). The motor may be released from the worm for storage or when it is desirable to use manual control.

Price £9.10.6.
(Postage & packing 2/6d)

Slow-motion in Dec. MK.I is essential if you want the best from your telescope. Easily fitted to the declination axis this worm and wheel unit (with the worm in ball races) is fully clutched and supplied with a flexible cable. **Price £10. 0.0.**
(Postage & packing 2/6d)

Slow-motion Dec. MK.II

This model is 5' in diameter and thus far more stable than the MK.I Dec. Unit. The unit must be fitted at time of purchase. The large worm is fitted in ball races.

Price £17.10.0.

Electric Drive Dec.

This unit drives the declination slow-motion either forward or in reverse, incorporating a hand-held control unit.

Price £15.0.0.



MK.IV Equatorial

Setting Circles

These Circles are accurately machine divided and are the same as those shown for the MK.II and MK.III Mountings.

Price £2.17.6.
(Postage & packing 1/6d)

Cradles

The Saddle plate for the MK.IV Mounting is flat and so it is necessary to have cradles if a round tube is used. The cradles for the MK.IV add strength and give extra support to your tube since they are spaced two feet apart. They are all metal, felt lined and are provided with lugs which will take guide telescopes up to 5" diameter (see illustration of 8½" observatory telescope).

For 4", 5" & 6" tubes	**Price £4.10.0. pair**
For 7", 9" & 10" tubes	**Price £6. 0.0. pair**
For 12" & 14" tubes	**Price £8.17.6. pair**

Pedestal Stand

For a mounting as solid as the MK.IV it is really advisable to have a permanent pillar. If this is not possible, then the pedestal stand is the only other support which will do the mounting justice. This is a very solid base having three adjustable feet which may be removed for storage.

Price £15. 0.0.
(Carriage 10/-)

Pedestal Stand

Specially made for Refractors, this model is supplied with a pillar from 4' to 5'6" or as required.

Price £17.10.6.
(Carriage 10/-)



Mounts shown together to indicate relative sizes.

FULLERSCOPES "KNIGHTMASTER" MK. II

(Variable Frequency Drive de luxe)

FULLERSCOPES are the first in the world to manufacture this special frequency changer speed control for telescope drives. To our knowledge there is nothing like it available to the amateur astronomer, although similar systems are found in professional observatories.

Now, not only can you accurately track astronomical objects with spot on siderial rate, with compensation for the motion of the moon and planets, but you can track both forward and reverse fast or slowly without upsetting the selected drive rate. The correct speed is selected by means of a pointer and scale which gives an infinitely variable frequency range between 47 and 53 cycles. A second pointer and scale varies the "over-riding" frequency between 45 and 120 cycles. A push button switches in the "Over-ride" control and another button reverses the motor for backtracking. On releasing the buttons the pre-selected frequency automatically cuts back in and takes over the drive. The main dial is illuminated and the remote hand-held control unit will reach the eyepiece in all positions. A 24 V outlet is provided for illuminating setting circles etc.

The unit is isolated by means of a transformer, so that the voltage to the telescope is nominal and completely safe.

	Price
220 to 250 V. a.c. mains supply 110 V. a.c. mains supply	£30.0.0.

(Postage, packing & insurance 10/-)

N.B. *This unit will ONLY operate the synchronous motor (heavy duty type) as supplied by FULLERSCOPES.*

If required, this type of motor can be supplied with a basic speed to suit your own telescope drive provided the gear ratio is known.

FULLERSCOPES will be pleased to quote for special units to suit your own synchronous motors - please supply FULL details and a stamped addressed envelope.

Both the above models are available in the following voltages at an extra cost of £5.0.0.

12V. d.c. 24V. d.c. 24V. a.c. 110V. d.c.

NOTE *In ALL cases the unit MUST be earthed with the earth probe supplied, this is a* condition of sale.

FULLERSCOPES ACCESSORIES

TELESCOPE TUBES

There has been much discussion on the pros and cons of actual tubes or fabricated and open framework "skeleton" types, for telescopes.

My personal view is that the advantages of a proper tube vastly out-weigh those of the open types. Let me put it this way:-

Providing that there is no stray light, no dust, no unexpected rain and that your body temperature is no higher than the night air, or if you have a proper observatory, then the open tube might be the best proposition! They are, of course, more or less essential if your telescope is over 15" aperture.

Fibreglass, Rigid plastic or insulated metal tubes are considered to be the best for small telescopes, provided that the mirror end of the tube is well ventilated (as it is in all "FULLERSCOPES".

FIBREGLASS TUBES

At long last FULLERSCOPES can offer the ultimate in telescope tubes - FIBREGLASS. This type of tube is recommended by nearly every modern book on telescope construction. It is exceptionally strong, its co-efficient of expansion is low; it is light; annoying tube currents are virtually non-existant. The exterior is finished in a high gloss white and most important of all the inside is finished a matt black on a very rough surface entirely eliminating "bouncing" light.

Available only from FULLERSCOPES and appointed stockists.

Stock sizes:-	Price	
7" i.d. x 4' long	£8.10.6.	(Carriage & Insurance 5/-)
10" i.d. x up to 5'6" long	£14.10.6.	(Carriage & Insurance 7/6)
12" i.d. x up to 6' long	£20.15.6.	(Carriage & Insurance 10/6)

Larger diameters quoted for (also sold pro-rata per foot).

FULLERSCOPES lightweight Rigid plastic tubes have been found to be quite adequate for the smaller Reflecting telescopes. They keep tube currents to a minimum, are easy to cut and drill and all FULLERSCOPES accessories are designed to fit the sizes below.

The finish is light grey exterior with dull matt black interior.

Stock sizes (all with 1/8" wall thickness)	Price	
For 6" & 6¼" mirrors 7" i.d. x 4' long	£4.15.6.	(Carriage & Insurance 5/-)
For 7¾" & 8" mirrors 9" i.d. x 5' long	£8. 0.0.	(Carriage & Insurance 7/6)
For 8½" mirrors 10" i.d. x 5'6" long	£8.10.0.	
For 9" & 10", 11¾" mirrors 12" i.d. x up to 6'long	£12.15.6.	(Carriage & Insurance 10/6)
For up to 13" mirrors 14" i.d. x 6'3" long	£17.10.0.	

The above tubing is also sold pro-rata per foot.

For an extra charge of 30/- the hole at the eyepiece end of the tube can be drilled and a door cut in the other end to enable the mirror to be covered.

N.B. *Instructions for the position of the eyepiece hole or the focal length of the mirror MUST be given with the order. Tubes can be supplied with white gloss exterior finish for an extra 30/-.*

Mirror Cells

Now you can have a mirror cell at a low price and yet having all those things usually found only in more expensive models. These mirror cells are the three-point sprung suspension type, in which the mirror rests on three mathematically determined points with a cell. The cell itself being fully adjustable for collimation by spring-loaded screws, thus alleviating any stress on the mirror. The unit may be removed from the telescope if required without disturbing the alignment of the mirror.

The finish is Dull black and mirror retaining clips are provided.



Mirror cell

Stock sizes:	Price
For 6" mirrors 7" tubes	£3. 5.6.
For 6¼" mirrors 7" tubes	£3.10.6.
For 7¾" mirrors 9",10" tubes	£4. 5.6.
For 8" mirrors 9",10" tubes	£4.15.0.
For 8½" mirrors 9",10" tubes	£5.15.6.
For 10" mirrors 12" tubes	£9.10.6.
For 11¾" mirrors 12" tubes	£12.12.6.
	(Postage & packing 2/6d)

Other sizes to order

For an extra 30/- nine point suspension cells can be supplied for mirror of 10" and over.

N.B. *Please state if mirror cell is required for a Cassegrain. All the above cells may be purchased unpainted at 5/6d off the above prices.*

Spider and Flat Supports

The Spider is the most difficult part of a telescope to produce commercially at a low cost and there is only one type on the British market which could be classified as near perfect, at any price. This type has thin off-set vanes which provide very stable support for the flat and at the same time give a reasonable diffraction pattern. The flat itself is held lightly yet safely in a cell which is provided with a dust cover. The flat is easily adjustable in all directions for perfect collimation with the main mirror. Unfortunately this type is not cheap, but is highly recommended. It is only supplied with FULLERSCOPES Flats.

The other types of holder available either from FULLERSCOPES or elsewhere, all have some drawbacks but will still give relatively good performance.

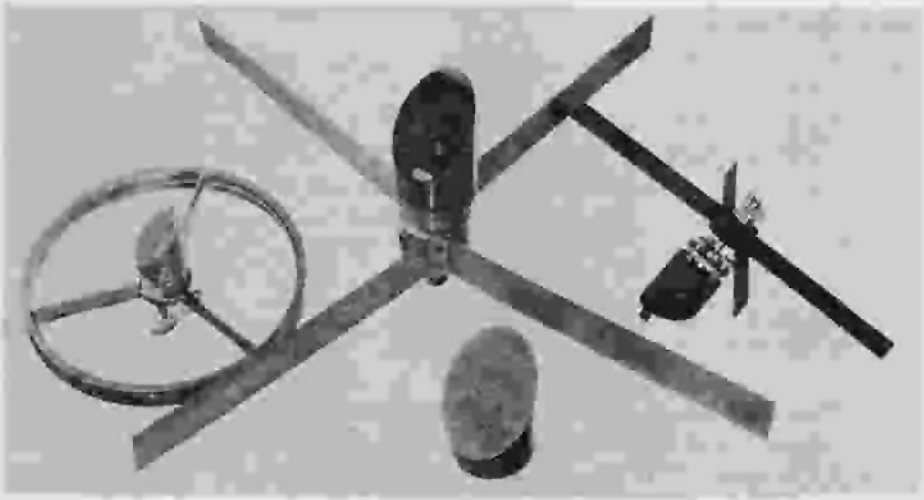


3 Point Suspension cell

Spider Support MK.I

The Super Spider as described above:-	Price
For 1.3/8" elliptical flats all tube sizes	£4.10.0.
For 1.1/2" elliptical flats all tube sizes	£4.15.6.
For 1.3/4" elliptical flats all tube sizes	£5. 0.0.
For 2" elliptical flats all tube sizes	£5.10.6.
For 2.1/4" elliptical flats all tube sizes	£5.15.6.
For 2.1/2" elliptical flats all tube sizes	£7.10.6.
	(Postage & packing 2/6d)
Secondary support for Cassegrain sets or as price stated for respective telescopes	£7.10.6.
	(Postage & packing 2/6d)

The above supports can be supplied for your own flat if it has the same minor axis as those above. Please send your flat for fitting (registered post please).



MK III MK I MK II

Spiders

Spider Support MK.II

The elliptical flat is held safely in a cell which is adjustable for collimation. Four thin vanes hold the cell unit in the tube. This model is robust and stable.

		Price
For 7" tubes	1.1/4" flats	£2.17.6.
	1.3/8" flats	£2.17.6.
For 10" tubes	1.1/2" flats	£3.15.0.
	1.3/4" flats	£3.15.0.
	2" flats	£4.17.6.
	2.1/4" flats	£4.17.6.
	2.1/2" flats	£4.17.6.

(Postage & packing 2/6d)

N.B. *If ordered for your own flat, this MUST be sent to FULLERSCOPES for fitting. (Registered post.) Fitting charge 10/-.*

FULLERSCOPES MK.III Spider

This is a cheap cast spider which fits the tubing supplied by us. The flat is adjustable for collimation.

	Price
For 7" i.d. tubes	£1.10.6.
For 10" i.d. tubes	£1.17.6.

(Postage & packing 2/6d)

RACK & PINION FOCUSING MOUNTS

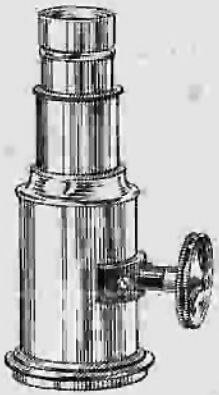
There are several types of focusing mount available today, simple push-in; Hellically threaded and True Rack and Pinion action. FULLERSCOPES now supply and recommend three types of Rack-mount as well as the Charles Frank Hellical Focusing Mount. The three types of Rack Mount will accept FULLERSCOPE Barlow lens. The Hellical focuser takes the Charles Frank Barlow lens. All types take standard R.A.S. Threaded eyepieces.



FULLERSCOPES MK I RACK MOUNT

Designed for 6" to 8½" telescopes or long focus 10" scopes this mount will fit all sizes of tube between 6½" to 14" diameter as well as flat slabsided tubes. The mounts are provided with an R.A.S. threaded draw-tube 3½" long which slides into a 3" rack tube thus giving ample adjustment for positive or negative eyepieces as well as the FULLERSCOPE Barlow lens. The finish is Black wrinkle with plated tubes.

Packing & Postage 2/6d. Price £4. 4. 6



MK II FULLERSCOPE RACK MOUNT (With Micro-Focusing)

This focusing mount is the first of it's type on the British Market. Besides having a rack-tube and standard R.A.S. draw-tube it also incorporates dual purpose focusing. The mount has two knobs. One gives normal coarse focusing, and the other provides ultra slow-motion, thus ensuring very precise focusing. This model is ideal where high powers are used. The finish is black wrinkle with plated fittings. It is supplied with a base to fit all tubes from 7" diameter and is also available for cassegrain telescopes. The standard model will fit also flat tubes.

Packing & Postage 2/6d. Price £7.10. 6

BROADHURST CLARKSON RACK MOUNTS

Made of heavy anodised brass this rack mount can be provided to fit all sizes of telescope (Reflector or Refractor). Please state type and size of tube when ordering.

Packing & Postage 3/-. Price £8.15. 6
plus 30/- for tube adaptor



CHARLES FRANK HELLICAL FOCUSER

A low priced efficient spiral focuser which will accept standard R.A.S. threaded eyepieces and the Charles Frank Barlow Lens.

N.B. This mount will not accept the FULLERSCOPE Barlow lens.

Packing & Postage 2/6d. Price £2.12. 6

FULLERSCOPES - OPTICS

A telescope's performance depends entirely upon the quality of the optics used and the only certain way of obtaining high-grade guaranteed mirrors; flats, objectives and eyepieces is to insist on optics backed by a Name.

FULLERSCOPES do NOT make any optics but are in a position to supply the very finest. All are guaranteed to perform to the limits laid down on nights of "good viewing" conditions.

Parabolic Mirrors and flats

FULLERSCOPES now supply three grades of mirrors. The Parabolic ¼ wave mirrors which are made for FULLERSCOPES by a London firm of Optical Workers are quite adequate for the beginner or those who wish to "star gaze" as a hobby. At the price these mirrors are unbeatable. They are of Pyrex and are aluminised and Silica hard coated.

The best quality mirrors and flats are made specially for FULLERSCOPES by H. Wildey F.R.A.S. whose mirror and lens making prowess is internationally known, and by Optical Surfaces Ltd. whose mirrors are to be found in Professional Observatories and Research Centres throughout the World.

¼ Wave Mirrors

1.4" Elliptical flat £1. 8.6.
6" f.8 Parabolic mirror 48"focus £9.15.0.
8½" f.8 Parabolic mirror 64" focus £18. 0.0.
1.9" Elliptical flat £2. 5.6.
(Postage, packing & insurance 3/-) (Postage, packing & insurance 7/6d)

Parabolic Mirrors by H. Wildey, F.R.A.S. (10th wave or better).

	Mirror	Flat
4½" F.5 Richfield	£9. 0.0.	£2. 0.0.
4½" F.8	£7.15.6.	£1.15.0.
6" F.8	£11.10.0.	£2. 0.6.
6" F.5.5	£12.10.0.	£2.15.0.

(Postage, packing & insurance 3/-)

	Mirror	Flat
7¼" F.8	£18.15.6.	£3. 0.0.
7¼" F.5.5	£19.10.6.	£3.10.6.
8½" F.8	£21.10.6.	£4.10.6.
8½" F.41"-50"	£23.10.6.	£5. 0.0.

(Postage, packing & insurance 7/6d)

10" F.50" - 60" Richfield	£29.15.6.	£5.15.6.
11¾" F.7	£44.10.0.	£6.15.6.

(Postage, packing & insurance 12/6d)

Cassegrain Mirrors (H. Wildey, F.R.A.S.)

Consisting of a matched Perforated primary mirror and Secondary mirror aluminised and silica hard-coated. These mirrors are so calculated that the primary mirror may be used as a Newtonian if so desired by substituting a flat for the secondary mirror. (Prices of secondary holders, matching flats for Newtonian focus, and dual purpose spider Flat/Secondary holders are shown below the Cassegrain section).

6" Cassegrain sets £30. 0.0.
8½" Cassegrain sets £50. 0.0.
(Postage, packing & insurance 7/6d)

10" Cassegrain sets £65. 0.0.
11¾" Cassegrain sets £90. 0.0.
(Postage, packing & insurance 12/6d)

Spider Secondary Holders

For 6" sets £7.10.6.
For 8½" sets £9. 0.0.
(Postage, & packing 2/6d)

For 10" & 10½" sets £11. 0.0.
For 11¾" & 12¾" sets £12.10.6.

Conversion sets for the H. Wildey Cassegrain/Newtonian optics

Consisting of Companion Flat to the primary mirror, spider and two inter-changeable holders, one for the secondary and one for the flat.

Flat and dual purpose Spider/holder for 6" Cassegrain set.	£17.10.6.	
ditto for 8½" set	£21.15.6.	
ditto for 10" set	£24.17.6.	(Postage & packing 4/6d)
ditto for 11¾" set	£25.18.6.	

Parabolic Mirrors (Optical Surfaces Ltd.)

The mirrors produced by this firm are undoubtedly the best available. Each mirror goes through a series of Null tests and is figured until it is virtually optically perfect. This takes time and delivery of these fine mirrors can take several months depending upon size and stock position. The 6" and 8½" mirrors and their flats can usually be supplied from stock. All prices of Newtonian mirrors include Flat.

6"	Parabolical mirror & Flat. Focus 48"	£15.17.6.	(Postage, packing & insurance 7/6d)
8½"	Parabolical mirror & Flat. Focus 60"	£33. 0.0.	
10¾"	Parabolical mirror & Flat. Focus 70"	£45. 4.0.	(Postage, packing & insurance 10/-)
10¾"	Parabolical mirror & Flat. Focus 60"	£47.10.0.	
11¾"	Parabolical mirror & Flat. Focus 80"	£57. 6.0.	(Postage, packing & insurance 12/6d)
11¾"	Parabolical mirror & Flat. Focus 70"	£60. 0.0.	
12¾"	Parabolical mirror & Flat. Focus 90"	£70.14.0.	(Postage, packing & insurance 15/-)
12¾"	Parabolical mirror & Flat. Focus 80"	£75. 6.0.	

Objectives and Eyepieces

All FULLERSCOPES Lenses and Eyepieces are made by one of the following: H. Wildey, F.R.A.S.; Optical Surfaces Ltd.; H.N. Irving or Broadhurst Clarkson Ltd. Optics from other sources are so marked.

Objective Lenses (Refractors)

FULLERSCOPES offer a wide range of achromatic object lenses, a few of which are priced below. We are in a position to supply some of the finest lenses available and will be pleased to quote for larger lenses than are listed below, on receipt of a stamped addressed envelope.

2¼" Air spaced achromat **£4.15.6.**
2½" Air spaced achromat **£5.10.6.**
(Postage, packing & insurance 3/-)
3" Air spaced achromat **£9.10.6.**
3" Aperture Air spaced achromat **£17.10.6.**
(Postage, packing & insurance 5/-)

4" Aperture Air spaced achromat **£40. 0.0.**
5" Aperture Air spaced achromat **£60. 0.0.**
(Postage, packing & insurance 10/-)
6" Aperture Air spaced achromat **£90. 0.0.**
(Postage, packing & insurance 12/6)

Also by Optical Surfaces Ltd.

4½" Aperture Lenses of Superb Quality **£70. 0.0.** (Postage, packing & insurance 7/6d)
5½" Aperture Lenses of Superb Quality **£100. 0.0.** (Postage, packing & insurance 12/6)
6" Aperture Lenses of Superb Quality **£175. 0.0.** (Postage, packing & insurance 15/-)

NOTE: *The Cassegrain sets and objective lenses are usually made to order only and delivery times vary from one week to three months depending upon size etc. In all cases orders are despatched as soon as possible and notification is given of approximate delivery dates.*

Eyepieces

There is now quite a large selection of eyepieces available on the market but care should be taken to ensure you obtain good quality products, as it would be false economy to use a poor eyepiece with a highly accurate objective or mirror.

Unfortunately there is no such thing as a "perfect" eyepiece suitable for all applications, and each type has its own characteristics. A complete description of each type can be found in several of the books on telescopes.

Subject to stock position FULLERSCOPES can supply the following types.

(Postage & packing on all eyepieces 2/6d per order)

Huyghens

Suitable for Refractors, Cassegrains or for use in conjunction with a Barlow lens on a Reflector. Medium field, small eye-clearance, slight distortion at edge of field, should not be used below about F.12.

1", 3/4", 5/8", 3/8" **£3.3.6.** 1/4", 1/3" **£3.10.6.** 1/5", 1/6" **£4.4.6.**

Ramsdens

Suitable for Reflectors and for use with short focal length objectives, up to F.9 Medium field, reasonable eye-clearance, slight distortion and some false colour.

1.1/2", 1.1/4", 1", 3/4", 1/2" **£2.11.6.** 1/3", 1/4" **£3.3.6.**



Charles Frank convertible eyepiece

A dual power eyepiece giving powers of about 1/8 and 3/8 as advertised. The change from one power to the other being made by removing one element. **£3.15.6.**

Kelner (achromatic Ramsden)

An ideal eyepiece for low-power use, has wide flat field with reasonable eye-clearance, colour correction is excellent, slight spherical aberration, unfortunately it has more ghosts than Borley Rectory!! 1½", 1¼", 1" **£4.10.6.**

Orthoscopic

An excellent eyepiece having good colour correction, a very flat, wide, dark field, only slight ghosting, ample eye-relief. ½", 1" **£7.7.6.** 1½" **£7.10.6.** ¼" **£8.8.0.**
(subject to availability)



Tolles

Makes a good "Planetary" eyepiece. Good correction and light transmission, poor eye-relief, small field. 11 mm only. 11 mm. **£4.10.6.**

Monocentric

Probably the best eyepiece available, unfortunately is only available in one focal length at the moment 3/8" (in short supply). **£7. 0.0.**



Erfle

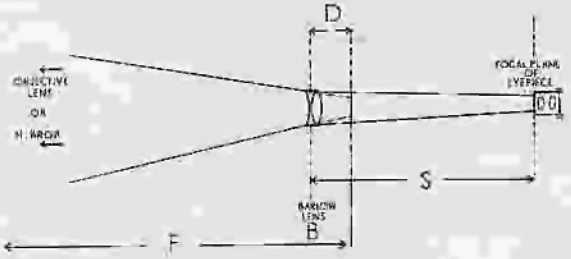
These eyepieces have a huge field of view, and personally I like using them with a barlow lens for Lunar study. They are an Ex W.D. eyepiece which have been entirely rebuilt. Unfortunately they are in short supply and no more are being made. While stocks last (5/8" only) **£5. 0.0.**



Barlow Lenses
A Barlow lens is a negative achromat which, when placed a little inside the focal plane of an Objective lens or Parabolic mirror, increases its effective focal length by up to three times the original value. Thus the use of a Barlow lens and a medium power eyepiece results in high magnification. The eye relief of the eyepiece being used is unaffected, as is the **apparent** field of view, this, in my opinion, outweighs the slight loss of light due to the extra air-glass surfaces.

The increase in effective focal length of the telescope can be varied by altering the position of the Barlow in relation to the eyepiece and the focal plane of the objective. The diagram and formulae below show how this works.

Where :
A = Amplification given by the Barlow lens.
B = Negative focal length of the Barlow lens.
D = The Distance the Barlow lens is placed inside the Prime focus of the Objective.
S = Separation between the eyepiece and the Barlow lens (measure from the stop on the eyepiece to the centre of the Barlow lens).
F = Focal length of Objective or Mirror in inches.
M = Magnification.
E = Focal length of eyepiece.



$$A = \frac{S + B}{B} \qquad S = B\,(A-1) \qquad D = \frac{(A \times B) - B}{A} \qquad M = \frac{A \times F}{E}$$

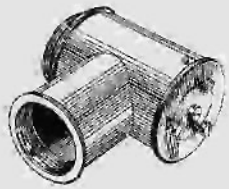
Barlow Lenses (for non-technically minded)
Place Barlow lens in lower end of draw tube and eyepiece in the threaded end. Place assembly back in rack-mount ensuring that the Barlow lens is inside the focal plane of the mirror or objective, by a small amount - focus in the normal fashion.

-2" Barlow Lens for Reflectors
Achromatic Barlow lens almost 1" in diameter (to ensure maximum light entry) which will increase the effective focal length of your telescope by up to three times when used in FULLERSCOPES standard 3½" draw tube. (As supplied with the Rack & Pinion Mounts)
Price £4.10.6.

-4" Barlow Lens for Refractors
Designed to fit Broadhurst Clarkson and FULLERSCOPES Refractors. This Barlow will increase the effective focal length of the telescope by up to three times. (NOT suitable for Reflectors).
Price £3.17.6.

Star Diagonals
Used with Refractors to avoid difficult observing angles. Containing an optically perfect right angled prism in R.A.S. threaded cell provided with alighing screws.
Price £6.15.0. (Postage, packing & insurance 2/6d)





Sun Diagonals
Designed to be used with REFRACTORS **ONLY** the Sun diagonal makes possible the observation of the Sun in safety. **NEVER** point any telescope at the Sun unless the Sun diagonal is in postion, and **NEVER** use a finder on the Sun. **Price £6.0.0. (Postage, packing & insurance 2/6d)**
(It is also advisable to stop down the aperture of the telescope.)

Finderscopes
Even with moderately low powers it is difficult to find celestial objects, but by having a small telescope of low power mounted on the large 'scope, this difficulty is easily overcome. FULLERSCOPES Finders have cross hairs and are provided with mounting rings in which the finder is fully adjustable.

8 x Finder Scope Erecting 1" Objective lens	**£5.10.6.**
5 x Finder Scope Non-erecting	**£4.15.6.**
2" Aperture Finder Telescope 12 x	**£15. 0.0.**
2" Aperture Finder with illuminated hairs	**£17.10.0.**

(postage & packing 2/6d)



4" Guide Slope

4" Guide Telescope
If you are going to undertake celestial photography, in order to get the best results, it is necessary to be able to keep the object stationary in the field of view. With the aid of FULLERSCOPES 4" Guide telescope this is simple - the object to be photographed is centred in the field of view of the guide 'scope, then the image is "exploded" by pushing the eyepiece out of focus so that the resulting image nearly fills the field of view. Any deviation becomes evident at once and is easily corrected. Comprising:- 4" spherical mirror Newtonian with 30x eyepiece. Plastic tube. Supplied with mounting rings for your own telescope or bolts directly on to the Cradles of all FULLERSCOPES over 8½" (1965).
Price £12.15.0. (Postage & packing & insurance 7/6d)



Finderscope



Broadhurst Clarkson Finders
These finders and mounting rings are designed to fit the Refractor range. **Price £6.0.0.**
(State size of tube when ordering.) **(Postage & packing 2/6d)**

Sun Projection Screen
Yet another new line from FULLERSCOPES, this latest addition to the accessories range. Now you can view the Sun in safety. The screen is mounted to the telescope with the adjustable clamp provided and the image of the sun is projected, greatly enlarged, onto the screen where it may be viewed with safety. **Price £3.12.6.** **(Postage & packing 2/6d)**

NOTE: *On NO account use the finderscope on the sun, and NEVER look at the sun directly with a telescope - even a glimpse will permanently blind you.* **This is a serious warning.**
(Reflectors should also be stopped down to about 2½".)

Camera Brackets
This item is still in the prototype stage and will be available shortly. If you send a S.A.E. requesting information, this will be sent as soon as possible.
The unit will consist of a bracket for the telescope tube, and an adjustable bracket to hold any standard camera, (screw fitting) and a Back & Pinion focussing device which moves the camera up and down relative to the eyepiece.

Approximate Price £4.17.6.

(Postage & packing 2/6d)

FULLERSCOPE'S UNIT PURCHASE PLAN (F.U.P.P.)

For many months now, customers living in the London area have been able to come along and choose a telescope for themselves. The advantages of this being that not only can they choose what they want in the way of accessories, but they can to an extent, modify the existing telescope to suit their own requirements. This is indeed the main difference between a rigidly priced telescope and a FULLERSCOPE; that extra facility to take into consideration the special requirements of a client. The opportunity to allow him to buy advantageously and economically, to have, in fact, a say in the shaping of his own telescope.

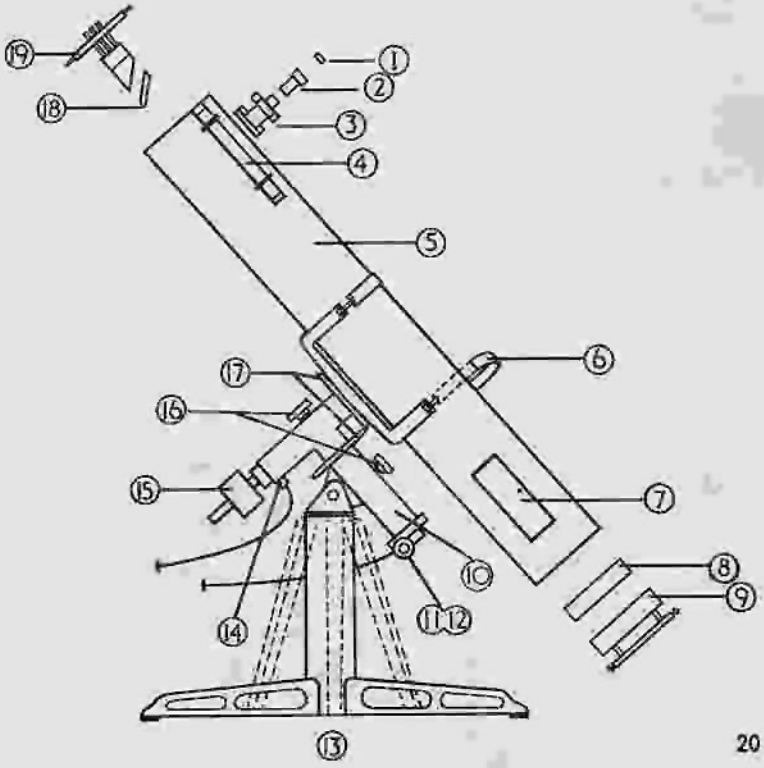
The difference, in other words, between an impersonal "Take it or leave it offer" and a more amenable "Look, choose and buy as you wish service" - A FULLERSCOPE SERVICE. These facilities are now available to everyone by the medium of FULLERSCOPES UNIT PURCHASE PLAN which applies to nearly all telescopes within the FULLERSCOPE range.

In the section following, each suggested telescope has its component parts listed and priced, thus any substitution, alteration to the original design or the incorporation of additional accessories can be made quite simply by referring to the accessory list and altering the prices accordingly.

For the benefit of the newcomer to telescopes, below is shown an exploded view of a typical Newtonian Telescope with each part named.

"FULLERSCOPE"
IDENTIFICATION CHART

①	EYE PIECE
②	DRAW TUBE
③	FOCUSING MOUNT
④	FINDER
⑤	TUBE
⑥	CRADLES
⑦	DOOR
⑧	MIRROR
⑨	MIRROR CELL
⑩	MOUNTING
⑪	SLOW MOTION R.A.
⑫	ELECTRIC DRIVE
⑬	STANDS
⑭	SLOW MOTION DEC.
⑮	COUNTERWEIGHT
⑯	LOCKING KNOBS
⑰	SETTING CIRCLES
⑱	ELIPTICAL FLAT
⑲	SPIDER



NEWTONIANS

FULLERSCOPES now provide an extension to their range of Newtonian Telescopes, offering the widest selection in the country; these include apertures from 4" to 11¾", and introduce the 4½" Richfield Telescope and 10" Comet Seeker R.F.T. (larger apertures will be quoted for on request).

4½" Richest Field Telescope

Almost any low-power short focus telescope will give striking views of the heavens, and is called a Richfield Telescope, but the *Richest* Telescope is the 4" or 4½" telescope which is so designed that it will show a greater number of stars in a given field than any other size of telescope be it larger or smaller.

FULLERSCOPES now make this telescope available to the general public for the first time. As it is essentially a low power special instrument, it is NOT available under the Unit Purchase Plan.

Comprising 4½" F.4 Parabolic mirror and companion Flat, flat support, adjustable mirror cell focussing device and a special eyepiece. This telescope can be used without a mounting and is used tucked under one's arm. A mounting can of course be supplied if required.

Telescope Price £26.17.6. (Carriage extra)

4½" FULLERSCOPE

This telescope is ideal for the beginner who wants a really high quality easily portable telescope. The mirror is figured to 1/10th wave or better as is the 1" elliptical Flat. Mounted on the MK.I Universal mounting with folding tripod it is extremely stable.

Comprising:-	Price
4½" Parabolic mirror	7.10.6.
1" Elliptical Flat	1.15.6.
Hellical Focuser	2.17.6.
Adjustable cell	1.15.6.
Single pole flat support	12.6.
Rigid plastic tube	1.10.6.
"Peep-sight" finder	5.6.
MK.I Universal mount	7.10.6.
Folding tripod	2. 5.6.
Weight	7.6.
1" Ramsden eyepiece	2.11.6.
	£29. 2.6. (Carriage extra)

FULLERSCOPE NEWTONIANS

The 6" and 8½" Utility (MK.II mounting)

These models were originally called "kits" as they consist of completely unpainted and unplated components in their cheapest and most functional forms. All necessary holes are, however, drilled and the assembly is straightforward and self-explanatory. The mirrors supplied are ¼ wave Pyrex, aluminised and silica hard-coated. These telescopes are unmatched at the price.



6" and 8½" Utility

6" FULLERSCOPE (Utility)

	Price
6" Parabolic mirror ¼ wave	9.15.0.
1.4 Elliptical Flat	1. 8.6.
1" Ramsden eyepiece	2.11.6.
Rigid plastic tube	4. 0.0.
Rack focussing mount	3. 0.0.
MK.III Cast spider	1.10.6.
7" Cradles	3. 2.6.
MK.II Mounting on wood tripod	12.10.0.
Weight and collars	1. 3.6.
Adjustable mirror cell	3. 0.0.
	£42. 1.6.

(Carriage & insurance extra)

8½" Utility FULLERSCOPE

The same specification as above, in fact, the 8½" "kit" with a new name, all parts of both models are unpainted and unplated otherwise they are complete telescopes illustrated.

	Price
8½" Parabolic ¼ wave mirror	18. 0.0.
1.9 Elliptical Flat	2. 5.6.
1" Ramsden eyepiece	2.11.6.
Rigid plastic tube	7.18.6.
Rack focussing mount	3. 0.0.
MK.III Cast spider	1.17.6.
Mirror cell	5. 0.0.
10" all metal cradles	4. 0.0.
MK.II Mounting on tripod	12.10.0.
Weights (30 lb) and collars	3. 3.6.
	£60. 6.6.

(Carriage & insurance extra)



Remember that the above FULLERSCOPES are subject to the F.U.P.P. and you are free to alter or add to them as desired.

6" FULLERSCOPE (MK.I mount)

The same as the 6" FULLERSCOPE below but having a MK.I Universal mounting in place of the MK.II. Price £32.14.6.

(Carriage & insurance extra)

←

NEWTONIANS

Unless otherwise stated the de luxe FULLERSCOPES following are listed in their basic form, the only "extras" being a finder, one suggested eyepiece and, of course, the "finish". Under the "Unit Purchase Plan" you may add any other accessories you require or substitute items in the basic de luxe at will.

6" FULLERSCOPE DE LUXE

	Price
6" Pyrex parabolic mirror 1/10th wave	11.10.0.
1¾" Elliptical Flat	2. 0.6.
Super-spider MK.I	4.10.0.
Rigid plastic tube	4.15.6.
Door in tube and "trim"	1.10.0.
Rack focussing Mount	4. 4.6.
Mirror cell	3.10.6.
5 x finder	4.15.6.
MK.III Universal Head	14.10.0.
Cradles	3.17.6.
Counter weight/collars	1. 3.6.
1" eyepiece (Ramsden)	2.11.6.
	£58.19.0. (Carriage & Insurance extra)

8½" FULLERSCOPE DE LUXE

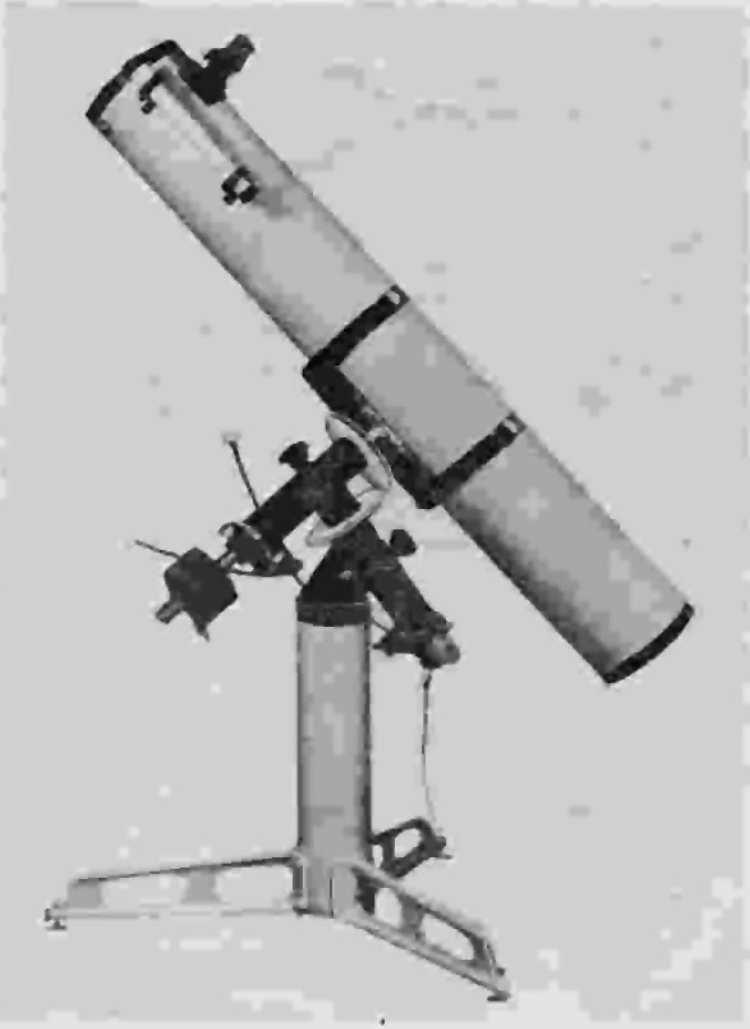
This model has nearly twice the light gathering power of the 6" and thus higher powers and better resolution are obtained.

In order to get the best results from the mounting, a short focal ratio is suggested, F.6 is about right. This makes the instrument more portable and adds stability.

Comprising:-	Price
8½" F.6 Parabolic Mirror 1/10th wave	23.10.6.
1.9" Elliptical Flat	5. 0.0.
Super Spider MK.I	5. 0.0.
Rigid Plastic tube	8.10.6.
Door in tube and end-trim	1.10.6.
Rack focussing mount	4. 4.6.
Mirror cell	5.15.6.
8 x finder	5.10.6.
MK.III Universal Mounting	14.10.0.
All metal cradles	4.17.6.
Counter-weights/collars	3. 2.6.
1" Orthoscopic eyepiece	7. 7.0.
	£88.19.0. (Carriage extra)

FULLERSCOPE/Wildey 10" Comet-seeker

This specialist instrument is the same as that designed for the British Astronomical Association's Comet Section. The optics and special eyepiece have been designed and are made by H. Wildey, F.R.A.S. The 10" parabolical mirror has a focal length of only 48" thus necessitating a very high degree of accuracy in the figuring. The eyepiece is also specially designed so that it provides the largest possible field. Because of its very short focal length the 10" comet-seeker is mounted on the MK.III mounting provided with slow-motion in R.A. together with all metal tripod. The tube is fibreglass. The whole instrument is therefore fully portable despite its 10" aperture. **Price £120.0.0. (Carriage extra)**



FULLERSCOPE 6" De luxe

8½" FULLERSCOPE advanced (Observatory Model)

Here is one of the most up-to-date telescopes on the market. At F.6 mounted on the massive MK.IV equatorial it is ideal for Schools, Universities and anyone interested in Astro-photography.

It is listed and pictured here in its entirety, but is, of course, subject to the F.U.P.P. should you wish to leave out any of the many accessories:-

	Price
8½" Mirror and elliptical flat	28.10.6.
Super spider MK.I	5.10.6.
Fibreglass tube with door	14.10.6.
Rack focussing mount	7.10.6.
Mirror cell	5.15.6.
2" finder (illuminated x wires)	17.10.0.
* 4" guide 'scope 30 x	12.15.6.
MK.IV Equatorial Mounting	60. 0.0.
R.A. Slow-motion	20. 0.0.
* Electric Drive R.A. (Reversible)	9.10.6.
Dec. slow-motion	10. 0.0.
Setting circles	2.17.6.
All metal cradles	8.10.6.
5" pipe and top for permanent fitting (2'6" above ground)	10.12.6.
W.A. Kelner eyepiece 1¼"	4.10.6.
2 Orthoscopic eyepieces	14.15.0.
-2" Barlow lens	4.10.6.
* Sun Projection Screen	3.12.6.
* Camera bracket	3.12.6.
* Variable frequency control unit	30. 0.0.
(Carriage & insurance extra)	£274.15.0.

10" FULLERSCOPE basic de luxe

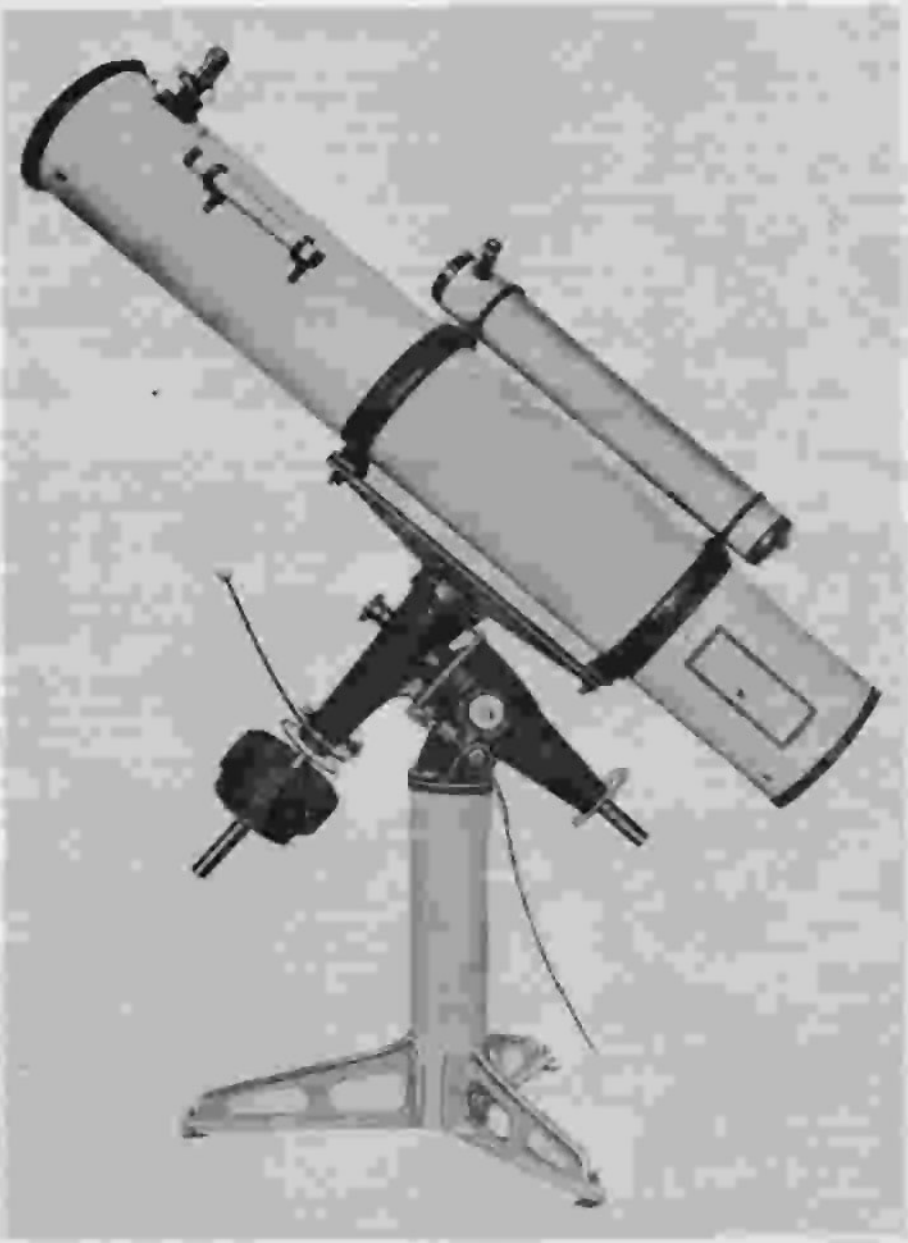
This telescope and its larger brother the 11¾" are superb instruments ideal for University, School or enthusiastic amateur use. They are unexcelled on the market, and yet the price can be astonishingly low if full advantage is taken of the "F.U.P.P." Both models have been listed in their most basic form, although we have included the Right ascension Slow-motion gears. (This may, of course, be omitted if so desired.) Accessories may be added as desired and no extra fitting charge will be incurred.

10" Comprising:-	Price
10" (Wildey) Parabolical mirror and flat	35.11.0.
MK.I Super Spider	6.15.6.
Fibreglass tube with door	21.15.6.
Mirror cell	9.10.6.
MK.IV Equatorial mounting	60. 0.0.
R.A. Slow-motion (Manual)	20. 0.0.
Cradles	8.17.6.
Rack focussing mount	7.10.6.
Counterweights	4. 0.0.
(Carriage & insurance extra)	£174 0.6.

11¾" FULLERSCOPE basic de luxe

11¾" Parabolical mirror and flat	51. 5.6.
MK.I Super Spider	6.15.6.
Mirror cell	12.12.6.
Rack focussing mount	7.10.6.
Fibreglass tube with door	22. 5.6.
MK.IV Equatorial mounting	60. 0.0.
Right Ascension Slow-motion	20. 0.0.
Cradles	8.17.6.
Counterweights	5.10.6.
(Carriage extra)	£194.17.6.

FULLERSCOPES will be pleased to give a quotation for any size telescope up to 15" on receipt of stamped addressed envelope and exact specification of requirement.



8½" Advanced Observatory Model

FULLERSCOPE CASSEGRAINS

FULLERSCOPES once more scoop the market by offering a range of Cassegrain systems in the following apertures: 6", 8½", 10" and 11¾". Larger sizes on specific request.

A Cassegrain is a highly compact instrument with a long effective focal length, thus permitting high powers with low power eyepieces. Due to the fact that the tube is very short, great stability is possible. For an extra few pounds the Cassegrain may be purchased as a Newtonian/Cassegrainian system in which case, by merely substituting a flat for the secondary, you have both a low power Richfield instrument at a Newtonian focus of about F.5 and a high power long focus Cassegrain of about F.20. Unless otherwise requested, all FULLERSCOPES Cassegrain telescopes are designed so that the Newtonian focus may be incorporated at a later date. (This entails the return of the telescope to FULLERSCOPES so that necessary conversion may be effected.)

All Cassegrains are subject to the Unit Purchase Plan, and any required accessories may be found in the Accessory Section of the Catalogue.

The following are some suggestions of possible Cassegrain Telescopes.

6" Cassegrain	Price
High quality perforated Pyrex Primary and Secondary Mirror	30. 0.0.
Secondary Spider support	7.10.6.
Mirror Cell (Special Model)	5. 0.0.
Rack focussing mount (Special Model)	5. 0.0.
Tube with white gloss finish and door in tube	5. 0.0.
Assembly charge	10. 0.0.
MK.III Equatorial/Universal mount	14.10.0.
All metal tripod	5. 0.0.
Fixing bracket	2.15.6.
Counterweights	1. 2.6.
1" Eyepiece	2.11.6.
	£88.10.0.

Extra for Newtonian Conversion £25. 0.0.

(Carriage & insurance extra)

8½" Cassegrain FULLERSCOPE	Price
High Quality Cassegrain mirror set	50. 0.0.
Secondary Spider support	9. 0.0.
Special mirror cell	8.10.6.
Special Rack mount	5. 0.0.
Fibreglass tube with door	14.10.6.
MK.III Universal Mounting	14.10.0.
Pedestal stand 4'6"	12.10.6.
Cradles	4.17.6.
Counterweights	3.10.6.
Eyepiece	2.11.6.
Assembly charges	15. 0.0.
	£140. 1.0.

(Carriage & insurance extra)



8½" Cassegrain/Newtonian Observatory Model

This superb instrument is of course available under the Unit Purchase Plan, but here we have listed it complete with every accessory. It is a dual purpose instrument which may be used as a Newtonian Richfield telescope at about F.5, and also as a high power Cassegrain at F.20 - "The Best of Both Worlds."



Comprising:-

	Price £ s. d.
8½" Perforated primary and matching secondary	50. 0.0.
Flat mirror for the Newtonian focus Dual purpose interchangeable spider	21.15.6.
Special mirror cell	8.10.6.
Special Rack Mount	5. 0.0.
Newtonian Rack Mount (MK.II)	7.10.6.
Fibreglass tube with door	14.10.6.
5 x finder	4.15.6.
12 x finder with illuminated cross hairs *(Can be used as a Guide scope for photography)*	17. 0.0.
MK.IV Equatorial Mounting	60. 0.0.
R.A. Slow-motion Gears (Manual)	20. 0.0.
Synchronous (Reversible) Electric Drive R.A.	9.10.6.
De luxe MK.II variable frequency control	30. 0.0.
Slow-motion in Declination	10. 0.0.
Setting circles	2.17.6.
Pedestal stand with adjustable feet	17.10.6.
Star Diagonal	6.15.6.
Sun Projection Screen	3.15.6.
Erfle 5/8" eyepiece	5. 0.0.
1" Orthoscopic eyepiece	7. 7.0.
1½" Kelner eyepiece	5. 0.0.
½" Orthoscopic eyepiece	7. 7.0.
-2" Barlow lens	4.10.0.
Assembly charges	25. 0.0.
	£343.16.0.

(Carriage and insurance extra)

FULLERSCOPES 10" Cassegrain

This model and the 11¾" are both shown in their most basic form (but we have included the R.A. gears), any extra accessories may be incorporated as required and, of course, the system may be supplied as a Newtonian/Cassegrain.

Comprising:

	Price
10" Cassegrain optics	65. 0.0.
Spider	11. 0.0.
Special mirror cell	12.10.6.
Special Rack mount	5. 0.0.
Fibreglass tube with door	21. 5.6.
MK.IV Equatorial mount	60. 0.0.
R.A. Slow-motion	20. 0.0.
Assembly charges	25. 0.0.
	£219.16.0. (Carriage extra)

Assembly charge if Cassegrain/Newtonian £10 extra plus components

FULLERSCOPES 11¾" Cassegrain

	Price
11¾" Cassegrain	90. 0.0.
Spider secondary support	12.10.0.
Special cell	15. 0.0.
Special rack mount	5. 0.0.
Fibreglass tube with door	21. 5.6.
MK.IV Equatorial mounting	60. 0.0.
R.A. Slow-motion	20. 0.0.
Assembly charges	28. 0.0.
	£251.15.6. (Carriage extra)

Assembly charge if Cassegrain/Newtonian £10 extra plus components



FULLERSCOPE REFRACTORS

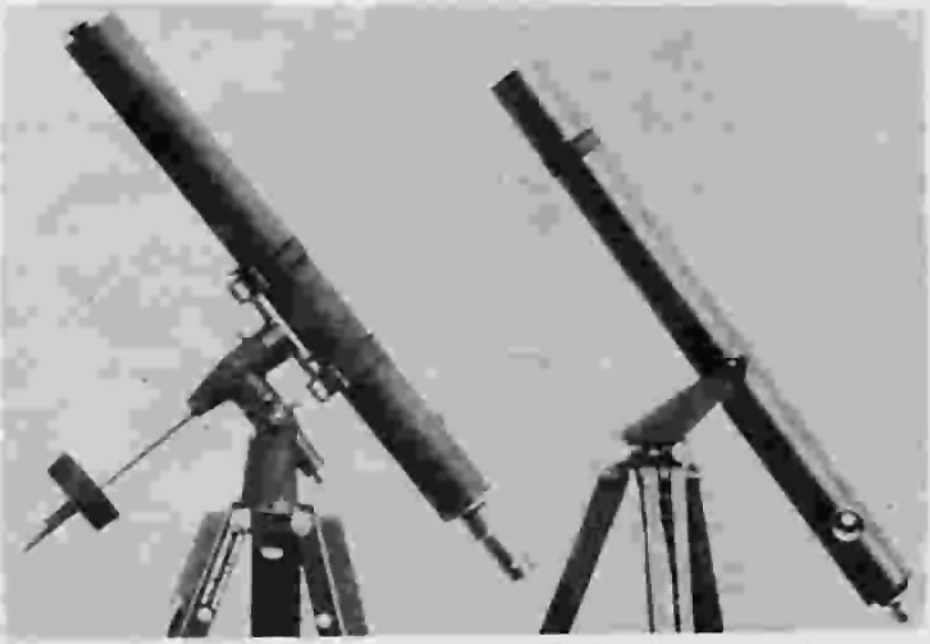
FULLERSCOPES '65 offer a large selection of all British Refractors in various apertures from 2¼" upwards. These instruments are specially manufactured for FULLERSCOPES by selected firms and only the highest quality optics are employed. *(NOT Japanese.)*

All FULLERSCOPES Refractors are finished gloss white or black wrinkle with anodised or plated fittings depending upon the model. The price shown for the telescope alone includes one eyepiece. (1", ⅞" or ½") There is a free choice of mountings and the prices of the various suitable models are shown separately. As a further service each Refractor up to 3" may be purchased either with a Rack focussing device or with a plain sliding tube. All models will accept Barlow lenses and R.A.S. threaded eyepieces. Carriage on all Refractors extra.

Additional accessories may be found on the following pages of the Catalogue. Eyepieces page 17, finder page 19, Star and Sun Diagonals, camera brackets and sun projection screens pages 18/19. Drives, setting circles, slow-motions pages 7/8.

Junior Series	Price
2¼" Refractor. Air spaced Achromat	15.15.0.
As above with Rack & Pinion focussing	20. 0.0.
2½" Refractor. Air spaced Achromat	16.10.0.
2½" as above with Rack and Pinion focussing	20.15.0.
2¼" Aperture cemented Achromat	16.10.0.
2½" Aperture as above with R/P focussing	20.15.0.
3" Refractor. Air spaced Achromatic lens	22.10.0.

Suitable Mountings for the above telescopes	Price
Altazimuth mounting with garden tripod	24.10.0.
MK.I Universal Mounting with tripod and weight	10.18.0.
MK.II Equatorial Mounting with tripod and weight	18.17.6.
MK.III Universal Mounting with tripod and weight	23. 7.6.



2½" Equatorially mounted *2½" Altazimuth mounted*

Senior series

The FULLERSCOPES Refractors in the Senior Series are all instruments which are capable of serious amateur work. All these models have rack mounts and drawtubes and are finished in every way to the highest possible standards.

3" Senior: With air-spaced achromatic objective lens, and one eyepiece, finished in stoved enamel white with black fittings.

Price £33. 0.0.

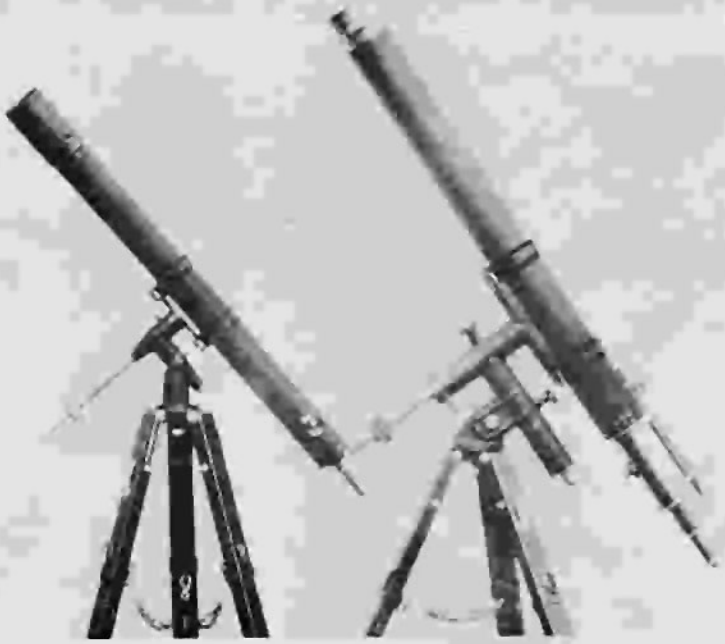
3" Aperture: Air-spaced achromat, focus one eyepiece stoved enamel with white or black wrinkle finish.

Price £45. 0.0.

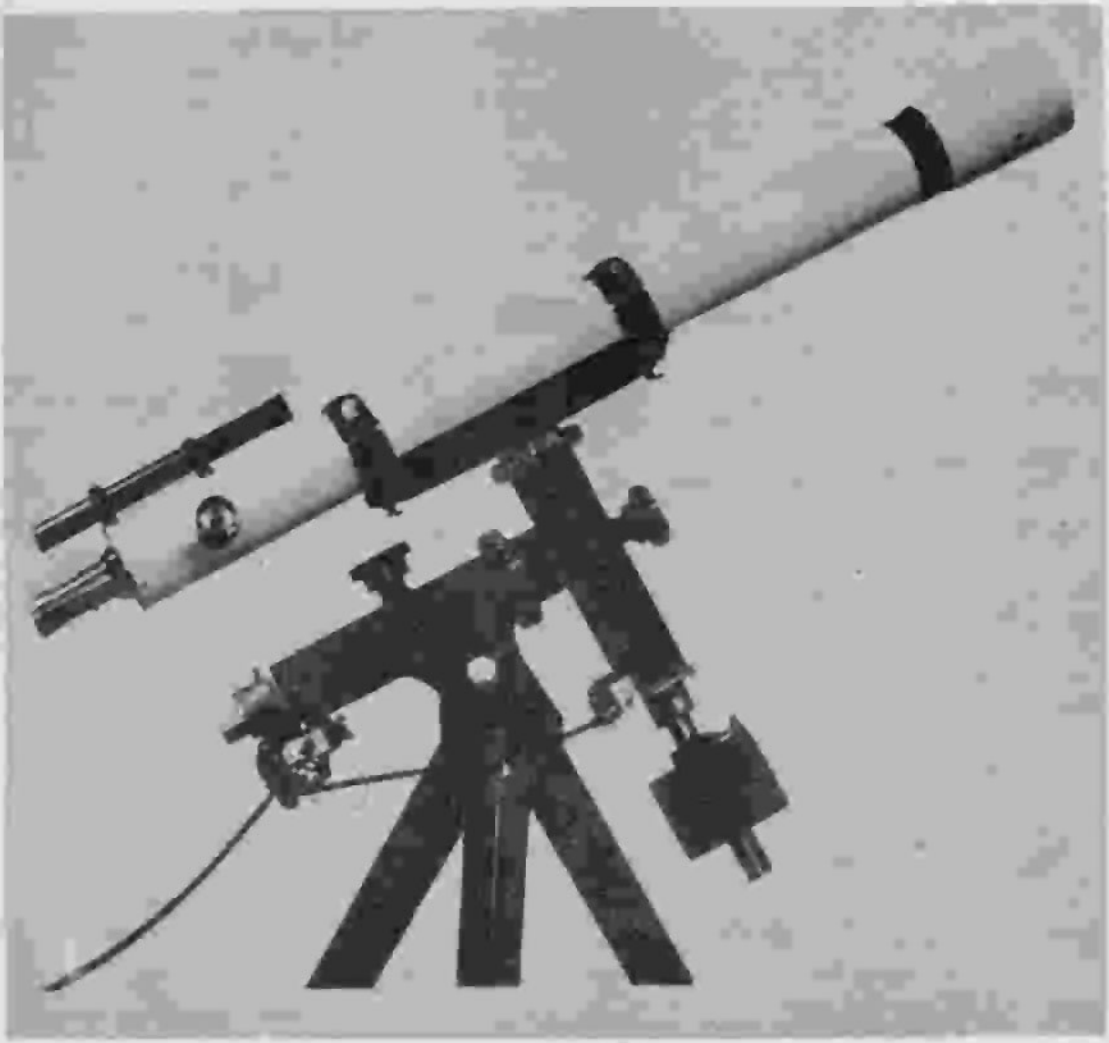
Available Mountings

MK.III Equatorial/Universal Head and extending tripod and counterweight
Price £25.10.0.

Altazimuth with tripod
Price £30. 0.0.



3" on MK.I Equatorial *4" on MK.III Equatorial*



3" Senior on MK. III Complete

FULLERSCOPE REFRACTORS

FULLERSCOPE Refractors 4", 5", 6" and above

The prices of these Refractors can vary considerably depending upon many factors and so no set prices are stated here. However, we will be pleased to quote for any size between 4" and 8". Full details of your requirements must be given, and your enquiry should be accompanied by a stamped self-addressed envelope.

The following are some indications of prices for the various apertures:-

	Price
4"	from £125 to £250
5"	from £150 to £450
6"	from £175 to £600
8"	from £250 to £1,000

FULLERSCOPE 6" Refractor (as illustrated)

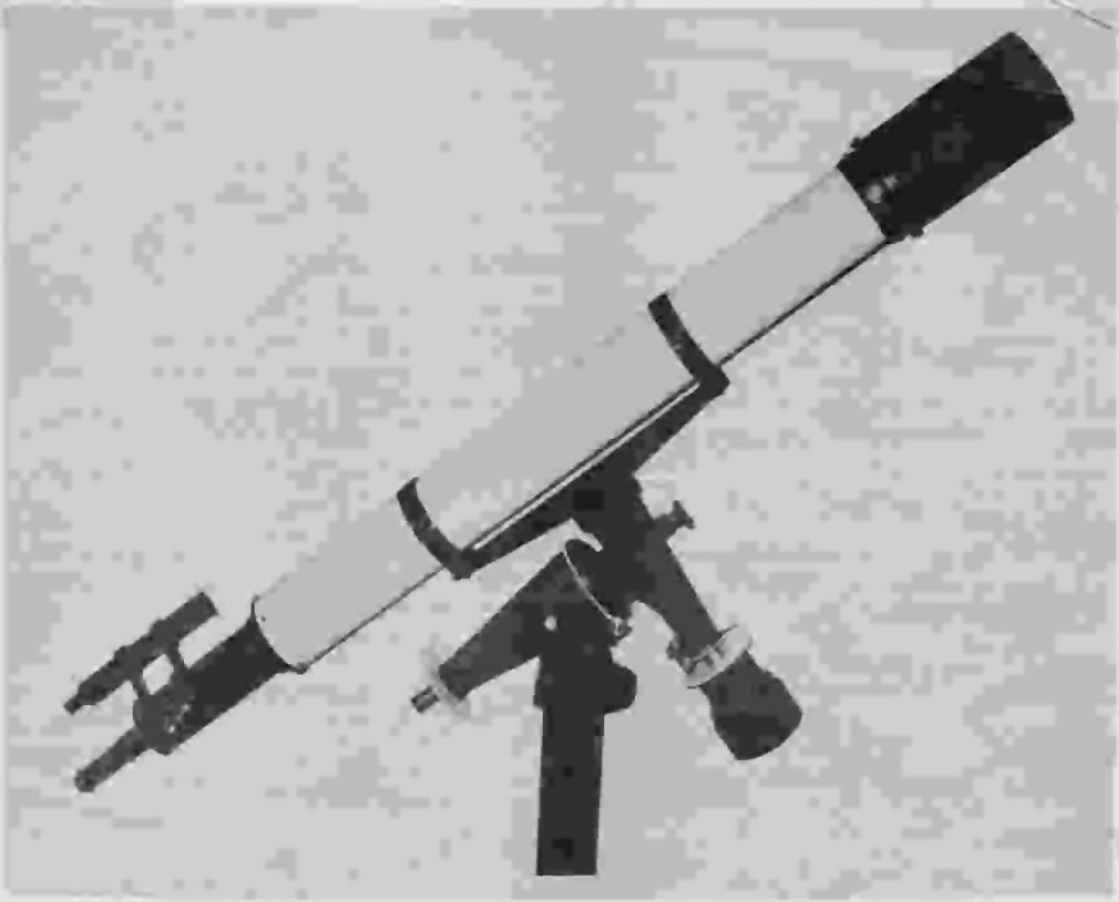
This magnificent instrument is illustrated here complete in every respect. When it is fully equipped it is suitable for photography and serious study, it is an ideal instrument for Colleges and Schools and its equal at the price cannot be found. We have listed it here with all accessories, and point out that all the other Refractors may also have a host of accessories added in the same manner. (Subject to the type of mounting chosen.)

6" Aperture Achromatic objective lens in fully adjustable cell, dew-cap and lens cover, rack and pinion focussing mount. Finish gloss white enamel with black fittings.

Finder telescope (illuminated x hairs)
Star Diagonal
Sun Projection screen
MK.IV mounting with R.A. Slow-motion
Electric drive
Slow-motion dec.
Counterweights and radial weights
Fully adjustable pedestal stand
Electronic drive control de luxe
Boxed set of eyepieces and Barlow lens
(Giving full range of powers)
2½" guide telescope and brackets

} Price £500.0.0.

Larger sizes will be quoted for on request for Universities etc.



FULLERSCOPES 6" Refractor

FULLERSCOPES

TERMS

Payment should be made with order by Cheque; Postal or Money Orders which should be crossed & Co. and made payable to: "FULLERSCOPES".

Official order forms are accepted from Schools, Universities and Government Departments. Receipts and acknowledgment of orders are sent by return. All goods are insured in transit. Small items are sent by post. Mountings, tubes and telescopes are either sent via B.R.S. or delivered by FULLERSCOPES.

Carriage and insurance charges are indicated for each item. Where more than one item is ordered the carriage is the same as that of the largest item.

All orders are dealt with strictly in rotation and accessories are usually despatched within fourteen days. Delivery of Parabolic mirrors and Flats depends upon size and quality.

The prices shown herein are subject to alteration without notice, and cancel all previous prices. The right is reserved to make design changes without notice where considered necessary or advantageous. Whereas we do our best to ensure delivery of accessories within fourteen days, we cannot guarantee this. If delay is unavoidable the customer is notified within the fourteen days. The material in this Catalogue is COPYRIGHT and no portion of it may be reproduced without prior permission in writing from FULLERSCOPES.

Looking for a desirable freehold Moon plot ?

or a villa on Mars ?

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The key to successful astronomical viewing can be obtained at once from the enormous and unique range of Newtonian, Cassegrain and Refracting telescopes manufactured in their entirety by **FULLERSCOPES.** We have Europe's largest and most comprehensive selection of instruments and accessories for the amateur — and professional Astronomer.

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We repair cameras, binoculars and optical instruments of all types and we also have a speedy Aluminising service.

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