

BINOCULARS, ASTRONOMICAL AND TERRESTRIAL TELESCOPES

ESTABLISHED 1907

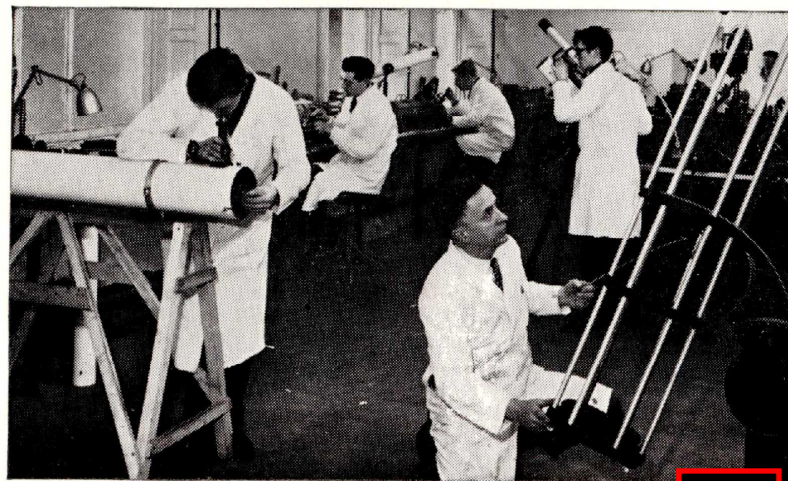
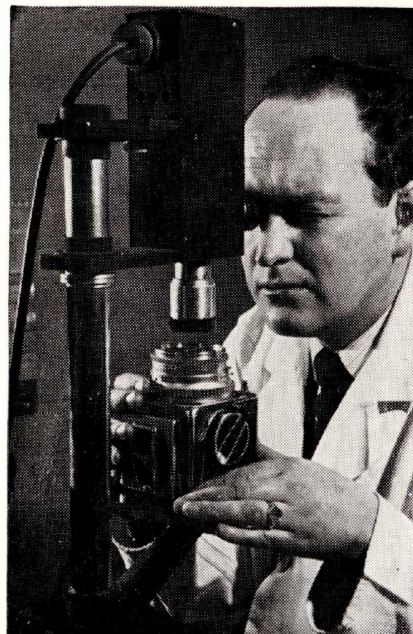
CHARLES

FRANK

GLASGOW

MB

Shown below are sections of our modern, well equipped workshops.



**CHARLES
FRANK
GLASGOW**

MB

Charles Frank Limited

Guarantee and Terms of Business

Our instrument shop is staffed by highly skilled technicians and we endeavour to ensure that all goods are checked before being offered for sale. Should any item prove unsuitable for any reason whatsoever, we undertake to repair, replace or refund purchase price provided the matter is brought to our attention within 14 days of purchase. We reserve the right to withdraw from sale any item listed in our catalogue, to amend descriptions and to alter prices without notice, and all offers are subject to availability of goods on receipt of order.

We will supply equipment or undertake repairs only on the distinct understanding that we will not be held liable for loss or damage—consequential or otherwise—due to any information supplied directly or indirectly, delays in delivery or unsuitable or faulty merchandise, and that in any case our liability at any time will be limited to a sum no greater than the original purchase price, or for cost of the repair or to replacement of the merchandise. All errors, shortages, damaged or faulty goods must be notified in writing within 7 days of receipt of goods.

Approval Facilities

Whenever possible, Charles Frank Limited will be pleased to supply instruments on approval on the understanding that return postage and also in certain instances forward postage will be the responsibility of the customer.



Frank-Nipole Outsize Binoculars

These outsize Frank Nipole binoculars are built to an extremely high standard of excellence and performance compares very favourably with others costing well over £100. Due to their high power and more particularly to their large object glasses they are larger than more conventional models.

The 9 × 63 and the 12 × 65 can be hand held but the 20 × 70 model normally requires some form of support such as a tripod.

MODEL 'A'—9 × 63

A truly magnificent glass of extremely high performance.

Height 8"; Weight 48 ozs. Price **£30.00.**

This is a binocular we can thoroughly recommend.

MODEL 'B'—12 × 65

This is for the man who wishes a binocular of greater than usual power and clarity. At 9" high and 48 ozs. in weight it is relatively compact and light for an instrument of this specification.

Price—**£32.00.**

MODEL 'C'—20 × 70

Although we recommend that this superlative high power binocular be tripod supported, it is extremely well balanced and some of our customers have assured us that they have no difficulty in using it as a hand-held instrument. It is the ideal binocular for mounting on a verandah, etc.

Price—**£36.00.**

A suitable Tripod and Mount can be supplied from £5.00 to £12.00.

A Carrying Case is not supplied with any of these outsize binoculars but if desired we can provide one of good quality hide at £7.

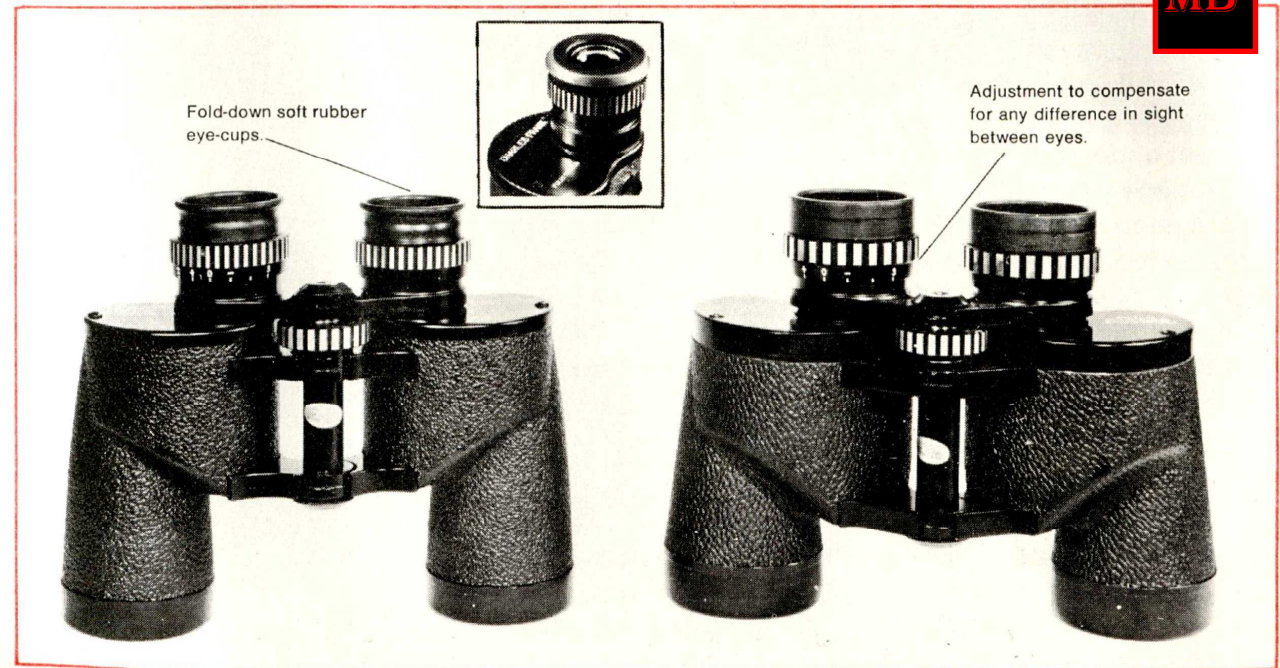
Two new 8 x 40 Frank-Nipole Binoculars

Bird Watchers and other serious binocular users have always regarded 8 × 40 an excellent specification. Within the past year, however, the popularity of this specification has increased to such an extent that we have been encouraged to introduce two new 8 × 40 models to our range. Special features of these new models include:—

- ★ Exceptionally wide field of 9°.
- ★ Turn-down rubber eyecups which enable the spectacle wearer to bring his eyes close to the eye lens and thereby take advantage of the wide field.
- ★ Finger-tip focussing control. ★ Extra large eye lenses for greater viewing comfort.
- ★ Coated optics for higher light transmission. ★ Newly designed streamlined body.
- ★ The Charles Frank 7-year guarantee.
- ★ Choice of Lightweight model (weight 25 ozs.) or Standard model (weight 36 ozs.).

Price of either model, complete with Case and Straps— **£23.00.**

N.B.—The Standard Model is bushed to accept an ordinary camera tripod.



Frank-Nipole Prismatic Binoculars



Officially approved by
Game Conservancy.



Manufactured in Japan to the specification of Charles Frank Limited, who are the sole distributors in the United Kingdom. In every respect this is indeed a first-class Binocular, and performance is equal to many others costing two or three times as much. Definition is unusually crisp and free from distortion right to the edges of the field. Chromatic aberration (colour fringes) has also been reduced to a minimum. It will be found that whilst cheaper and poorer quality Binoculars will often give an excellent image in the central region of the field, the quality of the image round the edges may leave much to be desired and pleasurable viewing can often be spoiled by distortion or colour fringes. The mechanical properties of a Binocular are also of considerable importance for it is essential that the instrument should be able to withstand a fair degree of rough usage without the alignment being affected. The Charles Frank Nipole Binocular passes all tests for optical and mechanical perfection, and it is with the utmost confidence that we guarantee each pair for a period of 7 years against defects arising from faulty materials, etc. "Proof of the Pudding" free home test. You are cordially invited to prove for yourself the excellence of this Binocular by testing it free for seven days at your own home. There are no strings attached to this offer, and you will not be involved in any obligation whatsoever.

Magnification	Dia. of Obj. Glass	Focus	Height	Nett Weight	Cash Price	Credit Terms
8x	30 mm	Centre Wheel	4½"	18 ozs.	£12.50 (with Case)	Deposit of £1.53 followed by 8 monthly instalments of £1.53 (total credit price £13.77).
10x	50 mm	Centre Wheel	7"	36 ozs.	£16.50 (with Case)	Deposit of £2.00 followed by 8 monthly instalments of £2.00 (total credit price £18.00).
10x	50 mm	Centre Wheel	7"	36 ozs.	£14.00 (without Case)	Deposit of £2.00 followed by 6 monthly instalments of £2.00 and 1 instalment of £1.50 (total credit price £15.50).

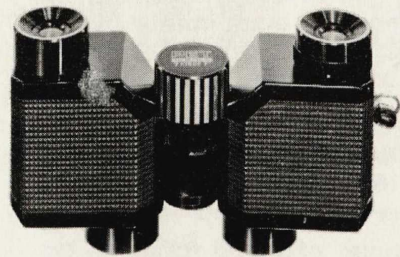
If these 10 x 50 Binoculars are purchased without Case and if at a later date the Case is required, it can be purchased for £2.55 cash.

A new concept in Binocular design

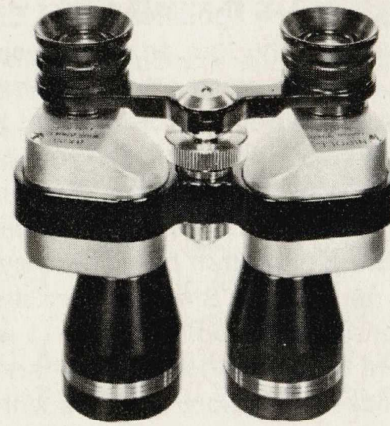
Introduced into the U.K. by Charles Frank Limited, the FRANK-NIPOLE range of miniature binoculars have been designed for the discriminating user who requires superlative quality combined with lightness and compactness.

The smaller models can be carried in pocket or handbag and the larger ones are still very much lighter and more compact than conventional instruments. Focussing is quickly achieved by adjustment of centre wheel with provision to compensate for any inequality in the user's eyes.

They are ideal for birdwatcher, mountaineer and holiday-maker. Incidentally they are also most elegant in appearance and it would be difficult to think of a more useful and acceptable gift.



** Model L is the newest in the range. It is extremely flat with a depth of under 1½" and it is undoubtedly one of the most elegant and desirable binoculars which we have ever handled.



G



I



K

MB

Frank-Nipole Miniature Binoculars

Model	Magnification	Object Glass dia.	Field of View	Width	Height	Weight	Price
D	10	20	4.3° Wide angle	3¾"	3¾"	8½ ozs.	£12.00
G	8	25	8.5° Wide angle	4½"	4"	14¾ ozs.	£15.50
I	10	40	7.1°	5"	5"	18¾ ozs.	£17.80
K	12	50	6°	5¼"	6"	21¾ ozs.	£19.80
**L	7	18	7°	4¾"	3"	10 ozs.	£15.75

L

Swift Binoculars

These fine instruments are manufactured in Japan under the inspection of Swift (U.S.A.) resident personnel. For Japanese binoculars they are relatively expensive but we consider that they represent extremely good value and we can thoroughly recommend them.

Special features of the Swift range :

- Retractable eyecups for spectacle wearers
- Bushed to accept ordinary camera tripod
- Extra long focussing wheel for easier focussing
- Lenses hard coated

Saratoga Mk. II 8x40



A popular model, ideal for nature study, horse-racing, etc.
Field: 488 ft. at 1000 yards
Weight: 34.9 ozs.
Complete with case **£28.50.**

Triton Mk. II 7x35



The most popular specification in the U.S.A.
Field: 630 ft. at 1000 yards
Weight: 33.2 ozs.
Complete with case **£27.50.**

Apollo Mk. II 8x30



A compact binocular, only 4½" high and weighing 21 ozs.
Complete with case **£25.50.**

Skipper Mk. II 7x50

A Day and Night Glass—
£32.00

Highland 8 x 35

Newly designed and flatter than conventional binoculars.
Weight 28 ozs.
Complete with Case **£25.50.**

Zoom Magnification 6x to 12x

Diameter of o.g. 32 mm. Thumb lever adjustment ensures effortless changing of powers from 6x to 12x. One of the best Zoom binoculars on the market.
Weight: 24.3 ozs.
Complete with case **£28.00.**

Newport Mk. II 10x50

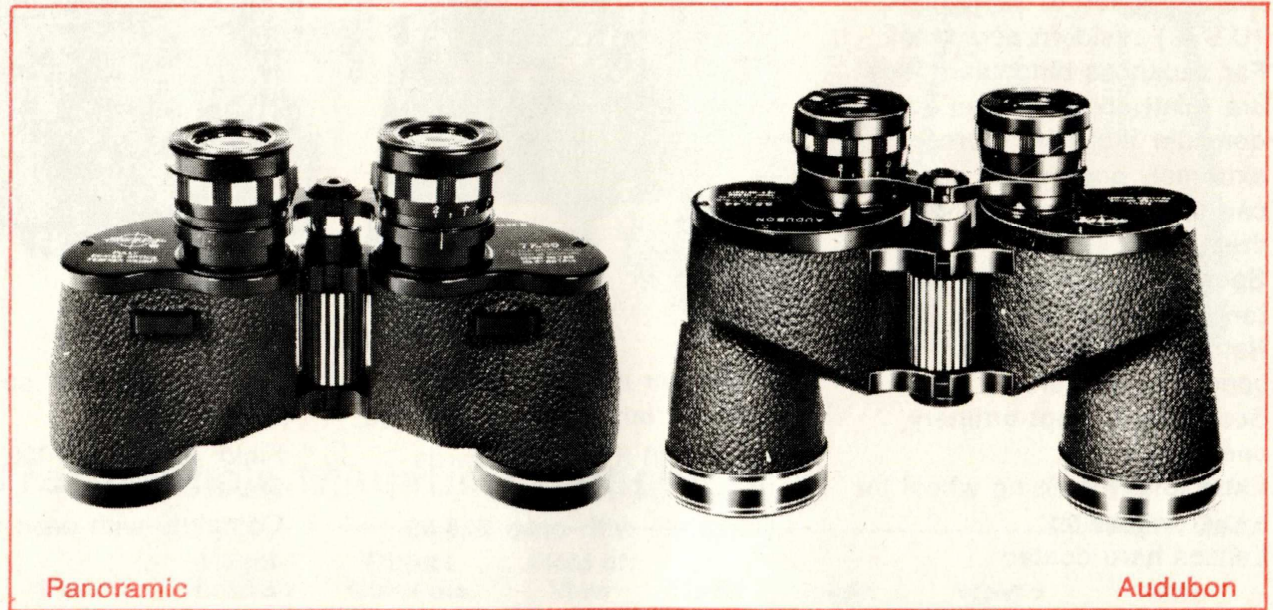
This redesigned binocular with its extra large oculars and wide field of view probably represents best value in the Swift range. The superb performance of this Glass will satisfy the most critical user.
Weight: 38.8 ozs.
Complete with case **£34.00.**



Two Specialist Binoculars for the Birdwatcher

Designed to the suggested specification of an internationally known group of ornithologists, these fine binoculars are considered by many to be the finest Nature Study instruments available today. The fields of both Glasses are fantastically wide, so important a feature for the tracking of birds in flight or as they hop from perch to perch. Extra close focussing to within approximately 12 ft. means that feeding and other activities of the bird can be closely watched as if only about 18 in. away. Other features include:

- Retractable eye cups for spectacle wearers.
- Can be fitted to ordinary camera tripod.
- Ve-Coating, providing extra white image.
- Cylindrical focus wheel for speedier focussing.
- Specially designed leather case for speedy removal of Binocular.
- Lifetime guarantee.



MB

**We will accept your old
binoculars in part exchange.**

Approval and credit facilities available.

6

Model	Magnification	Dia. of o.g.	Field of View at 1000 yds.	Weight	Size Closed	Price
Audubon	8.5	44	455 ft.	38½ ozs.	6¼"	£42.50
Panoramic	7	35	578 ft.	32½ ozs.	4¼"	£39.50

Ex-Government Monoculars

These Monoculars are in fact binoculars which have been halved. The Monocular has many points in its favour such as portability and the fact that it is virtually impossible for it to go out of adjustment. Contrary to popular belief, field of view of a Monocular is exactly the same as a Binocular.

Ross of London 7x50

This monocular is one half of the well known Day and Night Binocular made by Ross and N.L.I. At under 20 ozs. it is relatively light for a 7 × 50 monocular. **£9.75**

Barr & Stroud Monoculars

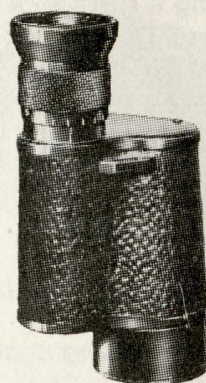
A choice is available between the 7 × 50 and the more compact 7 × 42 model. These instruments are of the highest quality and are fitted with three internal filters. Offered at— **£10.75**

Bausch & Lomb Canadian Naval 6x30 Prismatic Monocular



This is one half of the Ex-Admiralty 6 × 30 Bausch & Lomb or Canadian Naval Binoculars. Its well designed optical system and precision lenses produce excellent clarity of vision. Height 4 $\frac{3}{4}$ ". Weight 9 ozs. Price— **£6.50**

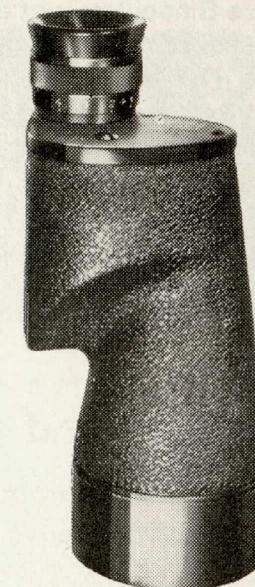
Taylor Hobson & Kershaw 6x30 Prismatic Monocular



An instrument of high quality, which will withstand a considerable amount of rough usage. Height 5". Weight 9 ozs. Price— **£4.95**

MB

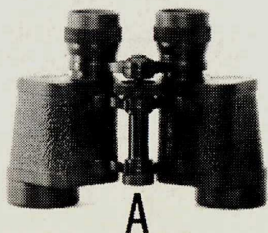
7x50 Canadian Naval Prismatic Monocular



This superb instrument combines good magnification with enormous light-gathering power. A wonderful day and night glass and we can thoroughly recommend it. Height 7 $\frac{1}{4}$ ". Weight 22 ozs. Price— **£11.75**

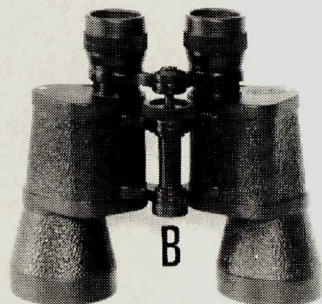
Binoculars by two world famous British makers

Barr & Stroud of Glasgow, and Ross of London have been known for over seventy years among naval and military authorities throughout the world as leading designers and makers of optical instruments. The binoculars produced by these two great British firms are of magnificent quality, both optically and mechanically. We can particularly recommend the undernoted Binoculars but illustrated brochure of the complete range of Barr & Stroud, and Ross models may be obtained on request.



Barr & Stroud 8x30.5 CF.24

Introduced to meet the demand for a high quality instrument with a wide field of view, can be recommended for viewing rapidly moving aircraft and for sporting events such as racing, cricket, yachting, etc. Weight 21½ ozs.
Price—£52.52



Barr & Stroud 10x42 CF.43

A Binocular of large field and high light gathering power. The high magnification is particularly useful for the appreciation of fine detail. It is especially compact for a glass of this specification and can be used in perfect comfort for long periods without fatigue. Weight 28 ozs.
Price—£66.70

Ross Models

Well balanced and streamlined, these popular lightweight Binoculars are ideal for bird-watching, racing, holidays, etc.

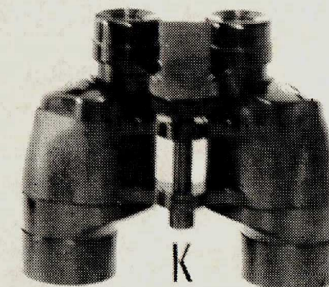
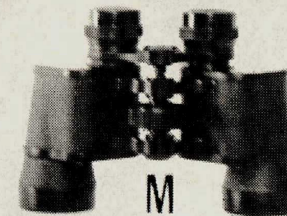
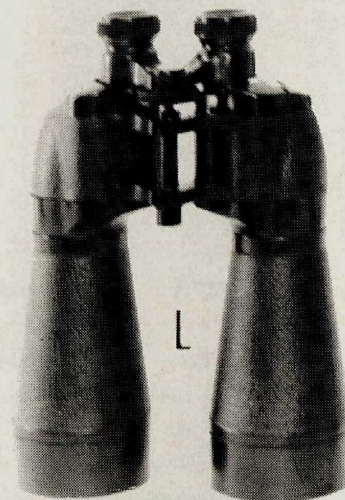
Lancaster 9 x 35	£25.87
Spectacle 8 x 35 (illus. K)	£35.52
Norfolk 8 x 40	£24.20
Kent 12 x 40	£33.52
Cornwall 16 x 60 (illus. L)	£40.72

9x35 Stepruva (Illus. M)

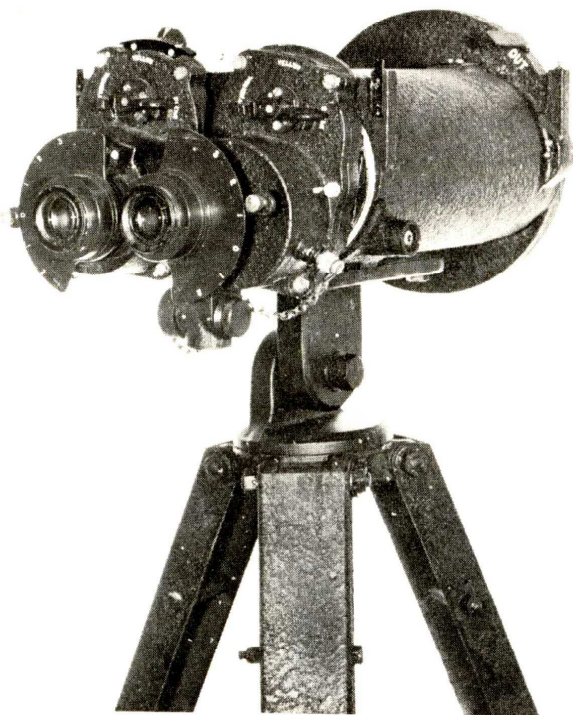
The Stepruva is one of the world's finest Binoculars and this opinion is shared by many leading ornithologists. Compact, and weighing only 21 ozs., it can be carried all day without discomfort.

With fine quality Hide Case.

Price £50.09



Ross of London Heavyweight Gunsight Binoculars



Heavyweight Gunsight Binoculars (three models)

These remarkable instruments are of extremely robust construction and can be left out in the open without fear of damage. Performance is outstandingly good even in poor lighting conditions. All three models are similar in general appearance. Cost of making even the smallest model today would possibly be in the region of £150.00

All three models complete with Tripod.



Model	Magnification	Dia. of o.g.	Weight	Size	Price
A	3½	25 mm.	11¾ lbs.	10½"	£15.00
B	7	50 mm.	16 lbs.	12"	£25.00
C	10	70 mm.	22 lbs.	14"	£42.00

10 × 80 Ex-Admiralty Battleship Bridge Binoculars



The Admiralty commissioned Ross of London to produce a binocular which would have good penetrating and resolving power even under the dullest of lighting conditions. The resultant 10 × 80 binocular proved to be one of the finest tripod supported instruments ever to be produced. The instrument is fitted with internal filters which can be used to advantage in strong sunshine or in haze. This large binocular is 20" in length and weighs 18 lbs., and is supplied complete with extremely rigid metal tripod. Price complete—£75.00

Second-hand Tripod Mounted Binoculars and Telescopes

EX-GOVERNMENT GERMAN RECONNAISSANCE BINOCULARS

Magnification : 25 Diameter of o.g. : 105 mm.
Nett weight of Binoculars: 32 lbs.
Complete with rigid Mount and Tripod—**£280.00**
(Limited Stocks—enquire first whether still available).

TRIPLE POWER (GIANT) ZEISS BINOCULAR (as illustrated)

This triple power tripod-mounted Carl Zeiss JENA Binocular with its 110 mm. object glasses and powers of 33×, 52× and 72×, is reputed to be the largest and most powerful ever made. It measures 59½" x 13½" x 4½" and is mounted on an extremely robust wooden tripod with rising column. The Binocular weighs 76 lbs. and the tripod and mount 86 lbs. Offered at fraction of present-day cost—**£485.00** plus Carriage.

TRIPLE POWER CARL ZEISS (MEDIUM SIZE) TRIPOD MOUNTED BINOCULAR

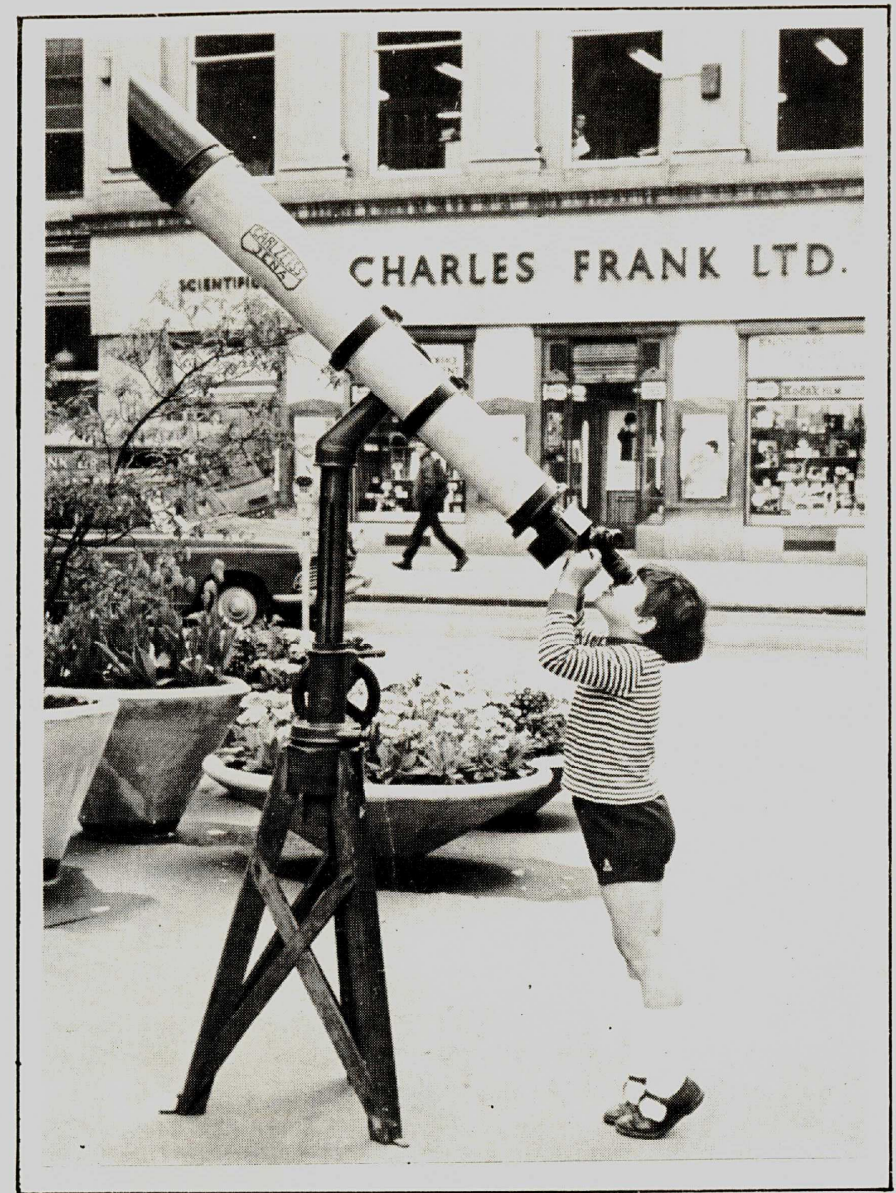
Of all the verandah mounted binoculars which world-famous Carl Zeiss of Jena have made in the past, this is perhaps the most sought after model. With this remarkable instrument magnifications of 12×, 20× and 40× can be selected by merely rotating the eyepiece turrets. The large object glasses of 80 mm. diameter ensures adequate light transmission even at the highest powers. The binocular at 21" long is not unduly large and the well-made full-length tripod graduated and mounted ensures absolute rigidity and ease of viewing.
In good second-hand condition—**£325.00**

4½" CARL ZEISS TELESCOPE

One of the finest and most complete tripod mounted outfits which we have ever handled. **Price—£750.00**
Details on request.

3" FRANK - SWIFT Tripod mounted Telescope—**£97.50**

4½" PILLAR MOUNTED Telescope—**£275.00**



New Zeiss Binoculars (East and West zones)

Zeiss Binoculars are still being produced in the original Zeiss factory in the Eastern Zone of Germany. These Binoculars bear the well-known Zeiss trademark—Carl Zeiss-Jena. It is interesting to note that after the last war an independent Zeiss factory was set up in the Western Zone of Germany and here also is produced a fine range of Binoculars of extremely high quality. Here are brief descriptions of the models from both factories. Illustrated leaflets available on request.

JENOPTEM 8 × 30 (CARL ZEISS JENA—East Zone)

This new Zeiss Binocular represents truly amazing value. It is a wide angle, compact and lightweight instrument, produced to the same high standards for which Zeiss is world renowned. Yet with Case, the price is only **£29.50**
(This is about £20 less than might have been expected for a Zeiss glass of this quality).

OTHER EAST ZONE ZEISS MODELS

Pentakarem	15 × 50	.....	£84.50
Deltrintem	8 × 30	.....	£45.00
Zeiss Theatis	3½ × 15	.....	£45.03
(for theatre and opera)			
Septarem	7 × 40	.....	£75.00

CARL ZEISS 10 × 50 (West Zone) Illus. G

A high performance glass employing a special objective for maximum colour correction. Ideally suitable for horse racing, ornithology, etc. Weight 37 ozs. Price—**£149.00**

CARL ZEISS 15 × 60 (West Zone) Illus. H

The highest power binocular in the West Zone Zeiss range, this instrument is of the highest possible quality. It is particularly suitable for certain aspects of ornithology and for astronomy, etc. In view of its extremely high power, it is recommended that it should be used with a light tripod or monopod, which can be supplied as an extra. Weight 37 ozs. Price—**£186.65**

CARL ZEISS 7 × 50 B/GA (West Zone) Illus. I

Completely encased in rubber for protection against rough handling and is the ideal marine binocular. N.B.—No case is provided for this binocular. Weight 41 ozs. Price—**£117.09**

DEKAREM 10 × 50 (CARL ZEISS JENA—East Zone) Illus. J
A high performance glass, favoured by naturalists, ornithologists, meteorologists and astronomical observers. Price—**£78.50**

CARL ZEISS 8 × 30B DIALYT (West Zone) Illus. E

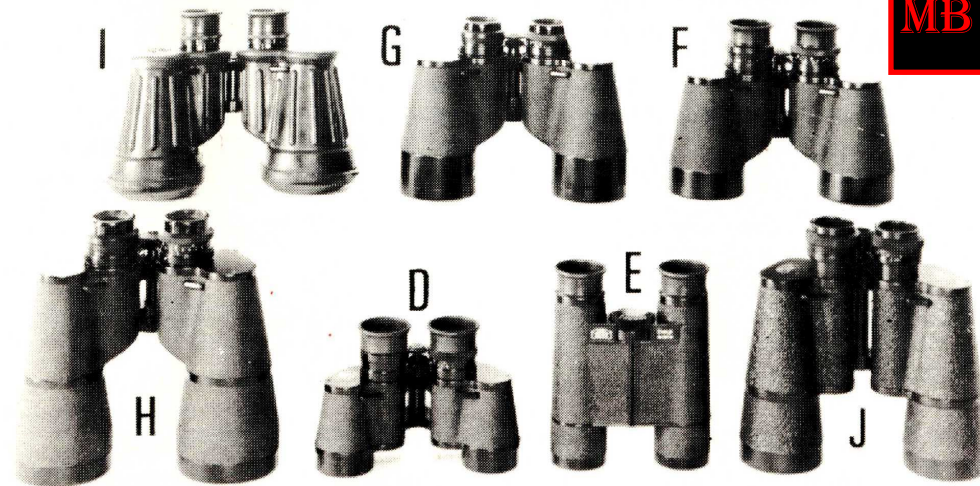
A new prism system is the outstanding feature of this Binocular, giving an elegant slender form. It is fitted with reversible eye-cups for spectacle wearers. Weight 23 ozs. Price—**£98.00**

CARL ZEISS 8 × 50B (West Zone) Illus. F

Considered by many to be the last word in Binoculars, this 8 × 50B is a favourite with ornithologists. For racing, hunting, etc., it provides a wide field of 130 yards and unusually good performance, even under failing light. At 38 ozs. it is surprisingly light. This Binocular is also suitable for spectacle wearers. Price—**£142.00**

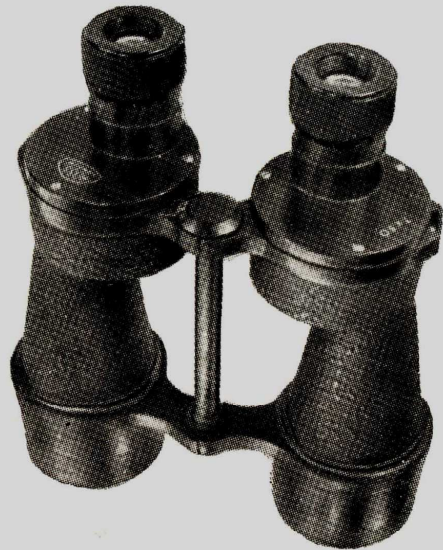
CARL ZEISS 10 × 40B DIALYT (centre focus) (West Zone)

The newest Binocular in the West Zeiss range, it is of revolutionary design and performance. With a height of only 5¾" and width of 4½", it is amazingly compact, and weight is only 24 ozs. Performance has to be seen to be believed, and field of view is just the same whether or not spectacles are worn. A Binocular we can thoroughly recommend. Price—**£103.75**
With Case.



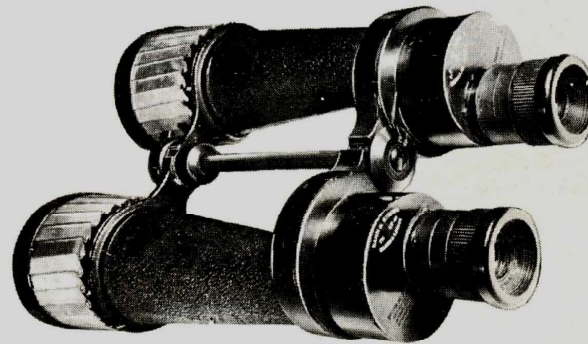
Military and Naval Binoculars 7x50 Ross Binocular

These 7 × 50 eyepiece focussing binoculars were made by Ross of London and Associated N.L.I., Nottingham, to meet wartime demands for a Day and Night Glass. The resultant instrument not only passed the required tests, but in common with other instruments of similar specification, possesses "fixed focus" characteristics. Such an instrument, once focussed, can be used for all distances with little need to re-focus. The binocular provides a good field of view of approximately 125 yards at 1000 yards. At 40 ozs. this binocular is not unduly heavy and should prove useful for racing, yachting, etc. Offered in good condition. With leather Case. Price **£22.00**



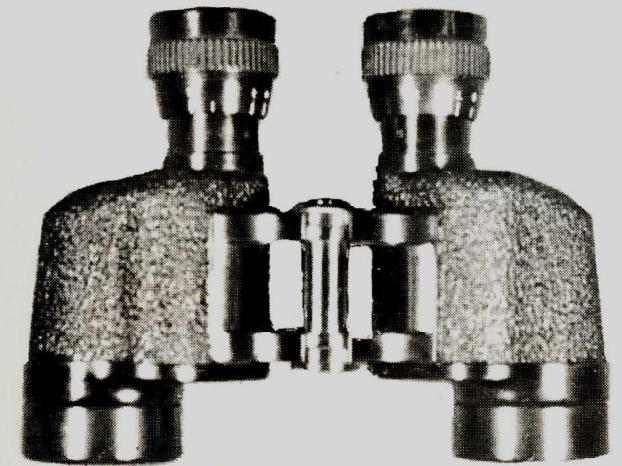
Ex-Admiralty Barr & Stroud 7x42 Binocular

We have been successful in purchasing from the Admiralty a quantity of the famous 7 × 42 (Model C.F. 25) Barr & Stroud Eyepiece Focus Binoculars. This is a Binocular of average magnification and ideal for all general purposes. Due to its original optical design, it is particularly suitable for use in conditions of poor visibility. Field of view is extremely wide being 381 feet at 1000 yards. Height is 8". Nett weight 32 ozs. These fine Binoculars are fitted with the Barr & Stroud patented collapsible ray shades and internal filters. Another special feature is the rubber eye shield which ensures the exclusion of stray light when making observations. The general condition of these Binoculars is extremely good and many of them appear to be new and unused. The original hide case provided with it is of the highest quality. Current cost of a Binocular of this type would be in the region of £56. We offer them at **£24.00**



USA Military 6x30 Wollensak (eyepiece focus) Binocular

It is generally conceded that instruments made to Government requirements, although built to highest standards of optical and mechanical perfection, may lack the streamlined finish of their civilian counterparts. With this Wollensak binocular one gets the best of both worlds; here is the perfect example of high optical quality combined with a modern streamlined design resulting in a lightweight binocular, weighing 17½ ozs. which is a positive pleasure to handle. With Case. Price—**£13.00**



Russian Binoculars

Although not, perhaps, as well known as Japanese or German Binoculars, this Russian Binocular is nevertheless of first-class quality both optically and mechanically. The instruments are built to stand up to a tremendous amount of rough usage. Of the various models produced, the one that stands out head and shoulders above the others is undoubtedly the 7 × 50 Eyepiece focus binocular. This instrument, although inexpensive, compares favourably with certain other models by Europe's leading makers. Performance is outstandingly good with an excellent field of view of 6° 40'. Height is 8" and at 38 ozs. it is not unduly heavy. Filters are provided for use in strong sunshine or haze.

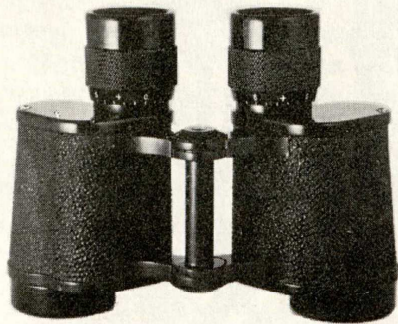
Price, with Case and Straps—**£17.10**

Centre focussing Russian binoculars cannot be quite so strongly recommended but are nevertheless excellent value.

The following models are supplied with Russian made Case and Straps.

8 x 30 centre focus—**£12.50**

12 x 40 centre focus—**£16.85**



8 x 30 Russian.



8 x 30 Frank's Economy Model
(Japanese)

MB

Japanese

8 × 30 **ECONOMY**. A precision centre focussing binocular which we can thoroughly recommend. Nett weight only 18 ozs.

Complete with Case and Straps **£8.00**

10 × 50 **HILKA**. This is a centre focus binocular of outstanding performance and is ideal for all long distance viewing, Nature study, horse racing etc. Weight 36 ozs. Height 7 ins.

With Pigskin Case **£16.50**

8 × 24 **NIKON**. Nikon of Japan, renowned makers of high quality cameras, have now produced this delightful miniature binocular. It weighs only 16 ozs.

With Soft Pouch **£26.85**

Noctovist (German)	8 x 30		£15.40
Genira (German)	8 x 30		£12.30
Asahi Pentax	8 x 40	9.5° wide field	£30.25

Hong Kong (Empire Made)

Regent (centre focus)	8 x 30	(wt. 18 ozs.)	£7.75
Regent (centre focus)	7 x 50	(wt. 34 ozs.)	£9.40
Regent (centre focus)	10 x 40	(wt. 18 ozs.)	£13.70
Regent (centre focus)	12 x 50	(wt. 23½ ozs.)	£14.85

*Wanted for
The
Charles Frank
Museum*

*Early scientific
instruments including
tripod mounted
telescopes, sextants,
microscopes, globes
chronometers etc*

*Excellent prices will be paid for
suitable items*

MB

Leitz Trinovid roof prism binoculars

Of the more expensive binoculars on the market, the Leitz Trinovid range are well worthy of consideration. With these remarkable new instruments, compactness is combined with "big-glass" performance. A popular model in the Trinovid range is the 8 × 32, an excellent all-round instrument suitable for birdwatchers, Naturalists and other lovers of the outdoor. Also available is the more powerful 10 × 40, which combines the highest magnification recommended for freehand use.

If you wear glasses and prefer not to remove them when using Binoculars, the Trinovid 7 × 35B is tailor-made for you.

All are supplied complete with Case.



Model	Field of View at 1000 yards	Weight	Dimensions length × width	Price
8 × 32	150	17.3 ozs.	4.5" × 4.5"	£92.31
10 × 40	122	19.4 ozs.	5.5" × 4.8"	£103.46
7 × 35B	150	18.3 ozs.	5.25" × 4.6"	£102.21
8 × 40B	128	20.0 ozs.	6" × 5"	£109.11

Japanese roof prism binoculars

Since Leitz introduced their magnificent roof prism binoculars certain Japanese makers have produced similarly designed instruments. We have selected the following models which appear to compare very favourably with the Leitz binoculars in general performance and prices are considerably lower:—

Swift 7 × 35 Trilyte—£49.50

Swift 9 × 35 Trilyte—£59.50

FRANK SPECIAL 8 × 32

A magnificent dust and moisture-proof roof prism binocular weighing 24 ozs. Rubber eyecups. Complete with soft zip case. Remarkable value at— £39.50

Admiralty Release 7x50 Canadian & USA Naval day & night Binoculars

MB

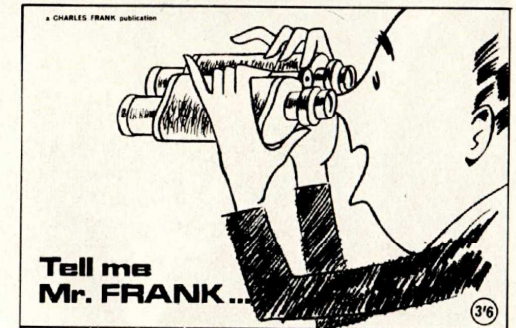
Manufactured under licence or by arrangement with Bausch & Lomb of America and recognised to rank amongst the world's finest Binoculars. The advanced optical system and precision optics, produce an extraordinarily high light transmission, and maximum performance is obtained under the dullest conditions. Another feature of these eyepiece focussing Binoculars is the weatherproof construction which enables them to be used under the most adverse conditions. Fixed focus characteristics ensure that once focussed the binocular can virtually be used for all distances without need to re-focus. Weight approx. $2\frac{3}{4}$ lbs. This is a binocular we can thoroughly recommend. Overhauled and guaranteed for 7 years.

Complete with case. £24.00



'How to choose and use binoculars'

Our new publication, "Tell me, Mr Frank" (17p post free), will tell you everything you want to know about Binoculars.



Credit terms

Practically any binocular can be purchased on easy credit terms. We will try where possible to suit your convenience but a deposit of 20% (20p in the £) of the cash price is usual. A credit charge of 10% is then added to the balance. Payment is then made in eight equal monthly instalments.

For example:—The Admiralty 7 × 50 binoculars listed on this page at a cash price of £24.00 could be purchased on credit terms as follows: 20% (20p in the £); Deposit £4.80 leaving a balance of £19.20 on which is added 10% (10p in the £)—£1.92. The £21.12 is then paid in eight monthly instalments of £2.64.

INVERTED IMAGE

It should be noted that as in all Astronomical telescopes, the image is upside down.



The Charles Frank Junior Astronomical Telescope

Inclusive Cost £4.50 Post Free

MB

This is an instrument of the refracting type. It has a single lens Object Glass of 47 mm. external diameter and a Kepler type eye lens. It is, in fact, a similar type of telescope to that used in the past by famous astronomers such as Galileo, Kepler and Cassini. Magnification is approximately $30\times$ linear (equal to area magnification of $900\times$).

This is an ideal 'first' instrument and under favourable observing conditions the craters and mountains of the Moon can be viewed and the rings of Saturn can just be discerned. Length of telescope with draw extended in using position 42 in.

Supplied with each telescope is a complimentary copy of '**Frank's Book of the Telescope**'—an illustrated guide to instruments for the amateur astronomer, together with our newest publication—'The Stars Above Us' by Sir Harold Spencer Jones, an exciting and beautifully written book by the former Astronomer Royal. The telescope is supplied complete with table tripod, all packed in colourful presentation box.

The New Charles Frank 8½" Reflector Telescope

MB

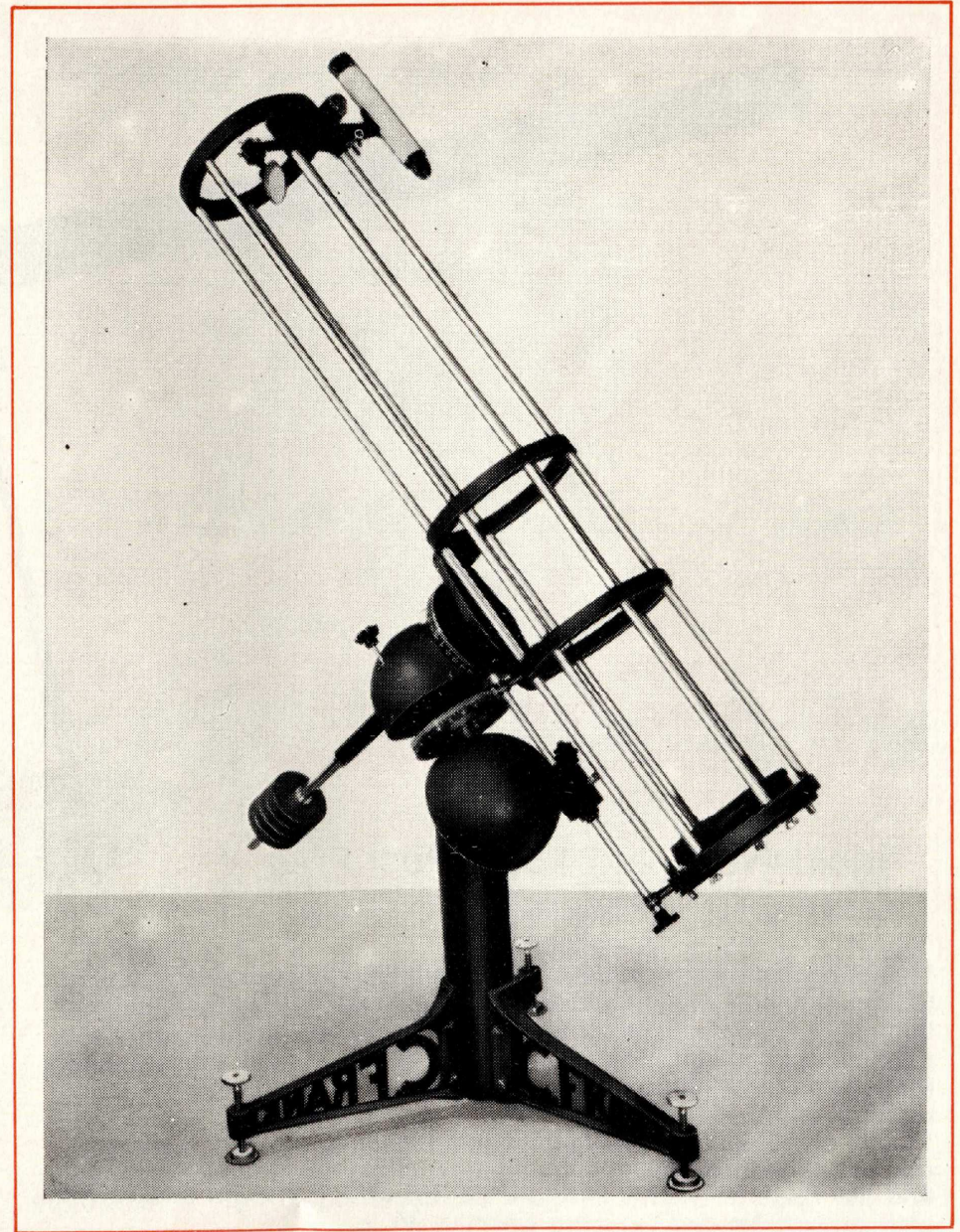
Designed and built in our Glasgow workshops this telescope possesses several unique features which we think will make it of particular interest to school or college as well as the serious amateur.

Specification :

Mirror—8½ in. diameter parabolized Mirror, in Low Expansion Glass worked to an extremely accurate figure. A choice of two focal lengths is offered, 51 in. giving a focal ratio of F6, and 64 in. giving a focal ratio of just under F8.

Mirror Cell and Mounting Bracket—Fully ventilated mirror cell on 3-point precision suspension, permitting rapid and accurate alignment. The mounting bracket is attached to the tube by 3 thumb nuts, and rests on 3 accurately machined surfaces. The outstanding feature of this mount is that both mirror cell and mount can be removed from the telescope for storage or protection and instantly replaced without altering the accurate alignment.

Telescope Tube—This is of the open frame skeleton tube pattern, consisting of six ¾ in. diameter high tensile alloy tubes spaced equidistant around four circular alloy formers. Outside diameter of tube is 12 in. with an overall length of 5 ft. 1 in. for the 64 in. focal length Mirror and 4 ft. 1 in. for the 51 in. focal length Mirror. It attaches to the mount by two bolts and is therefore easily removed and replaced for transportation, storage. etc.



Special Mount for Elliptical Flat, Focussing Eyepiece Mount, and Star Finder Bracket

A special casting is fitted to two of the $\frac{3}{4}$ in tubes which make up the framework at the eyepiece end. This casting is a sliding fit on these tubes and can be moved up or down as required before fixing with four clamping screws. To this one casting is mounted the Single Arm Spider mount carrying the Elliptical Flat, the Focussing Eyepiece Mount and the Star Finder. The great advantage of this method is that the Elliptical Flat together with the eyepiece and mount can be moved nearer to the main mirror without disturbing the alignment. This then brings the focal point outside the eyepiece mount and enables focal plane photography to be carried out. This system uses neither eyepiece nor camera lens. One of the problems of the standard reflecting telescope is the limited focussing range, which is sometimes insufficient to accommodate both long and extra short focus eyepieces. The long extending draw tube as used in refractors cannot be used as it would protrude into the main tube of the telescope when pushed in. The system used in our 8½ in. Telescope eliminates this problem. The Elliptical Flat itself is fully adjustable for precise alignment.

Equatorial Mount—This is an entirely new design of heavy duty mount, with 1½ in. diameter steel axles revolving in roller bearings. It has built-in geared slow motion

hand drives to both Polar and Declination axis, using a 7 in. diameter phosphor bronze worm wheel with a drive ratio of 214 to 1. One outstanding feature of this design is that all bearings and gears are totally enclosed to protect them from dirt and damage. Since the German Equatorial Mount was first designed many years ago it has been common practice to leave all geared drives totally exposed, and the damaged gears we have so often seen on second-hand telescopes convinced us of a definite need for adequate protection for this vital component. We have done this in such a way as to present a pleasing modern design combining looks and efficiency. To enable the slow motions to be operated whilst viewing, no matter what position the tube is in, we have provided flexible drive connectors. A Synchronous Motor Drive to the Polar axis is available as an extra.

Pillar Stand—A special version of the Charles Frank Pillar Stand is used with the above mount and the mount is permanently set for the latitude of the British Isles, variation between North and South being taken care of by the adjustments in the feet. Telescopes for use in latitudes other than the British Isles must be ordered specially and we then fit the mount to the stand at the required angle.

Star Finder—Model 344 (see page 33).

Eyepieces—The focussing Mount accepts standard R.A.S. thread eyepieces and the

telescope is normally supplied with two eyepieces and a Barlow Lens plus an adaptor to accept the push-fit "Swift" eyepieces.

Setting Circles—One of the great failings of many high-class telescopes is the provision of small, finely engraved circles, which require a good light plus a powerful magnifying glass to read them. The circumstances under which circles are normally used demand a large diameter with plain, easily read figures and divisions, which is what we have provided. Dials are 8 in. dia. anodised black, with white heavily engraved figures $\frac{1}{4}$ in. high, and divisions which can be plainly seen without recourse to magnifiers.

The Telescope weighs approximately 1½ cwt. and with the tube in its highest position measures 6 ft. 4 in. high for the 64 focal length and 5 ft. 8 in. for the 51 focal length.

Price £285.00

Ex Works (Crate Returnable).



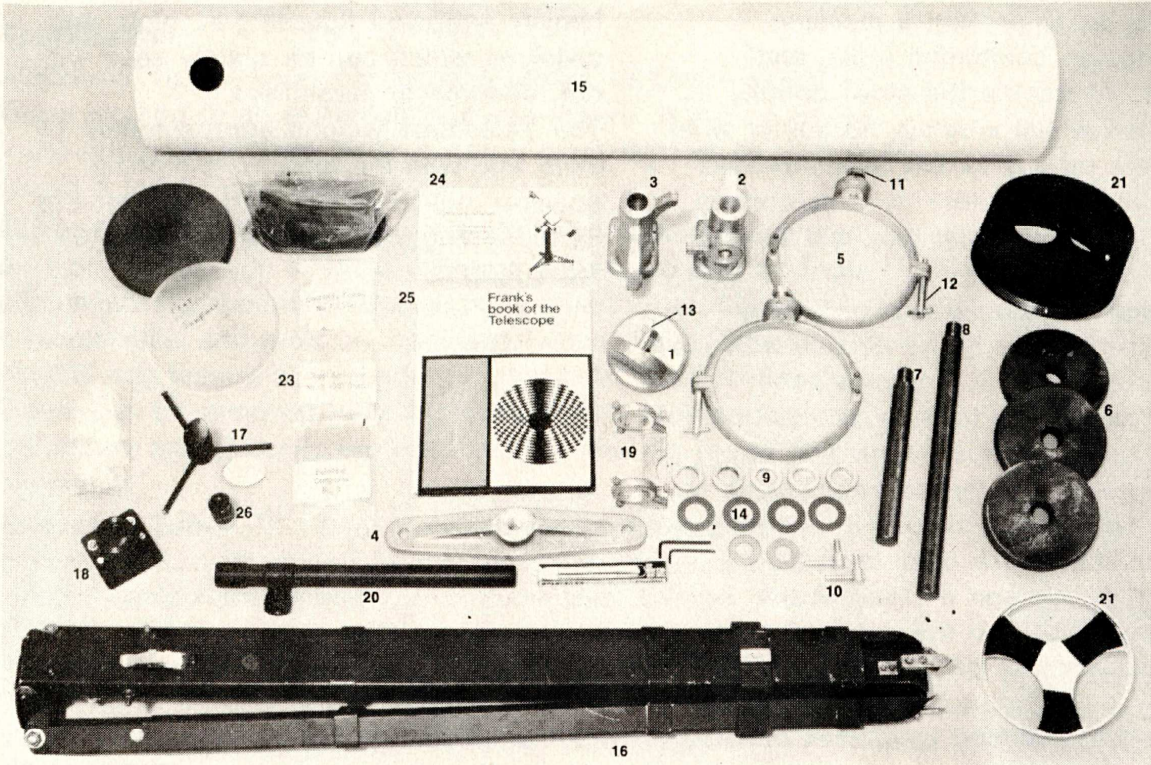
MB

The Charles Frank Construction Kit for a 6" Newtonian Reflecting Telescope

This Kit will build up to virtually the same as the Charles Frank 6" Reflecting Telescope shown elsewhere in this catalogue. The main differences are that the castings in the Kit are unpainted and that a Tripod is supplied in lieu of Pillar Stand. Also the Kit does not include setting circles or geared slow motion drive. These, however, can be supplied if desired as an extra. The mechanical assembly will present no difficulty to anyone of moderate mechanical skill who has access to a drilling machine. The Kit can be supplied in two forms:

Form A: Complete with finished aluminised mirror, secondary mirror, and one eyepiece, all for the price of **£69.50**

Form B: Complete Kit as above but in lieu of finished mirror the new Charles Frank Mirror Kit is supplied. This consists of 6" + Blank pregenerated to correct curvature and cast metal tool with polishing agents and full instructions. All for the price of **£56.50**



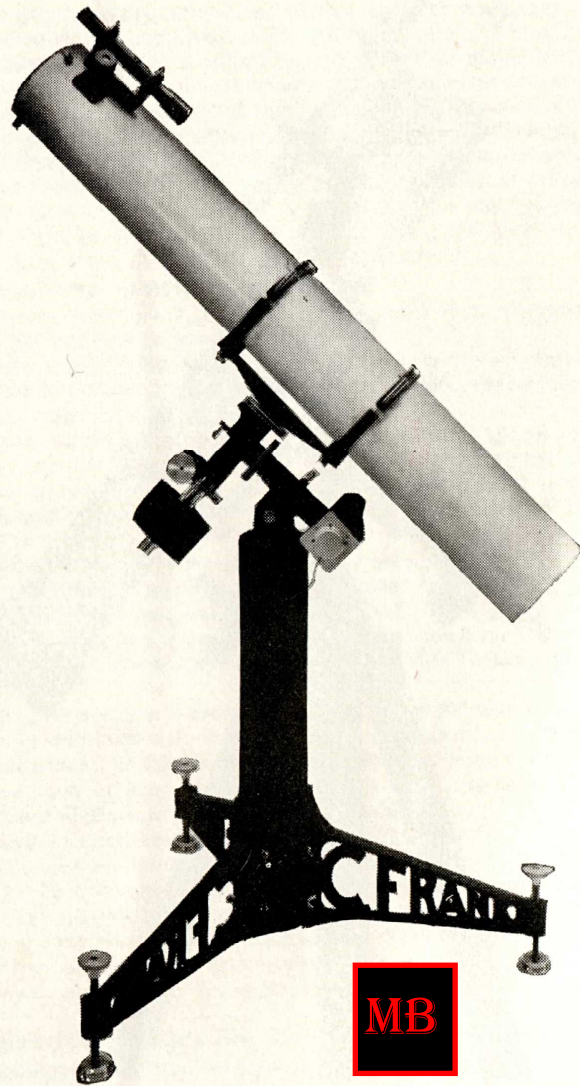
An Ideal Project for Schools and
Colleges

MB

Parts List

Part No.	Description	No. Off
1.	Base	1
2.	Polar Axis Housing	1
3.	Declination Axis Housing	1
4.	Saddle Bar	1
5.	Tube Clamps	2
6.	Balance Weights	3
7.	Polar Axis Shaft	1
8.	Declination Axis Shaft	1
9.	Spacing and Retaining Collars	5
10.	Axis Clamping L Bolts	2
11.	Tube Clamp Securing Bolts	2
12.	Tube Clamp T Bolts	2
13.	Polar Axis Securing Bolt	1
14.	½ in. Washers	3
15.	45¼" x 6⅝" P.V.C. Tube	1
16.	Heavy Duty Tripod	1
17.	Spider complete with secondary mirror (elliptical optical flat)	1
18.	Focussing Mount (for Eyepiece)	1
19.	Star Finder Mounting Bracket	1
20.	Star Finder. No. 344	1
21.	Mirror Cell and Bracket	1
22.	Completed Mirror (with Form A) not shown	1
23.	The Charles Frank Mirror Making Kit (with Form B)	1
24.	Instruction and Assembly Booklets	1
25.	Frank's Book of the Telescope	1
26.	Eyepiece	1
27.	All Necessary Screws, etc.	

The Charles Frank 6" Reflecting Telescope Equatorially Mounted



Since the original introduction of this 6 inch telescope, a number of improvements and modifications have taken place and the present instrument represents outstanding value. Abridged specification as follows:—

Mirror—6 in. diameter, 48 in. focal length, with resultant aperture of F8. It is of pyrex low expansion glass and worked to an extremely accurate Parabolic figure. The aluminised surface has an exceptionally high degree of reflectivity. The companion flat is made to a correspondingly high standard.

Mirror Cell—The mirror cell mounting bracket is fitted inside the tube and secured with three screws. The Mirror Cell is attached to the bracket with a 3-point suspension, and is instantly adjustable for alignment.

Telescope Tube—This is in either 16 gauge seamless aluminium or fibre glass construction depending upon the availability of materials. White gloss outside and matt black inside.

Eyepiece Focussing Mount—Helical Spiral Focusing Mount accepting Standard R.A.S. threaded eyepieces. (Also 24.5 mm. Swift eyepieces by means of an adaptor available as an extra).

Star Finder Bracket—This is now mounted to form one unit with the eyepiece focussing mount. Three-point suspension for rapid and easy adjustment.

Star Finder—Model 344 (see page 33).

Eyepiece—With this pillar mounted telescope, two eyepieces of approximately 1½ in. and ½ in. focal length are supplied giving 32× and 84×. A fully achromatic Barlow Lens is also supplied giving 72× and 190× respectively when used with the 1½ in. and ½ in. lenses.

Equatorial Mount—This is fully described elsewhere in this catalogue, and the mount fitted to this model has graduated setting circles and geared slow motion drives to both axis.

Pillar Stand—Extremely rigid single pillar stand with 3 specially designed supporting feet with levelling adjustments.

Geared Slow Motion Drives—Hand operated slow motion worm and pinion drives with 96-1 ratio, and operated through an adjustable slipping clutch are fitted to both Polar and Declination axis.

Setting Circles—The Polar Axis (or right ascension) circle is engraved in hours 0-24 and sub divided into 20 minute and 4 minute divisions. The Declination circle is divided into degrees and engraved into 4 sections 0 - 90 - 0 - 90 - 0.

Spider Mount—A 3-arm Spider is fitted for mounting the optical flat diagonal mirror, and fine 3-point adjustment provided for easy and accurate alignment.

Finish—Mount and Stand in black crackle and chrome. Tube—gloss white with matt black interior.

Price—De Luxe Model Telescope complete on Pillar Stand, with Setting Circles and Slow Motion Drives, 2 Eyepieces and Achromatic Barlow Lens. Ex Works. Crate returnable. £140.00. Synchronous motor drives for the above are priced under accessories,

The Charles Frank Mk. III 4" Reflector Telescope Equatorially Mounted

Manufactured in our Glasgow Workshop, this well-made instrument is the smallest in our range of reflectors for the serious observer. Abridged specification as follows:—

Mirror—Precision ground and polished to the finest quality with highly reflective aluminised coating. Diameter 4 in., focal length 32 in., with resultant aperture F8.

Mirror Cell—Fully Floating 3-point suspension type, featuring quick and positive adjustment for alignment of mirror.

Spider Mount—An entirely new design of 2-arm Spider mount, comprising an alloy ring which fits over the end of the telescope tube, the optical flat with its 3-point adjustment being carried on two tapering arms recessed into the tube.

Telescope Tube—High impact P.V.C. white outside and matt black inside.

Eyepiece Mount—Helical Spiral focussing, accepting standard R.A.S. threaded eyepieces (an adaptor is available to enable our Swift range of 24.5 mm. push fit eyepieces to be used).

Star Finder Bracket—This is now mounted to form one unit with the eyepiece focus-

ing mount. Three-point suspension for rapid and easy alignment.

Star Finder—Model 344 (see page 33).

Eyepiece—Supplied with the telescope is an eyepiece of approximately $\frac{3}{4}$ in. giving a magnification of $44\times$. Eyepieces of 1 in. or $\frac{1}{2}$ in. focus giving either $32\times$ or $64\times$ can be supplied in lieu if requested without additional charge.

Equatorial Mount—This is a precision die cast mount. (The same mount is used for both 4 in. and 6 in. Telescopes).

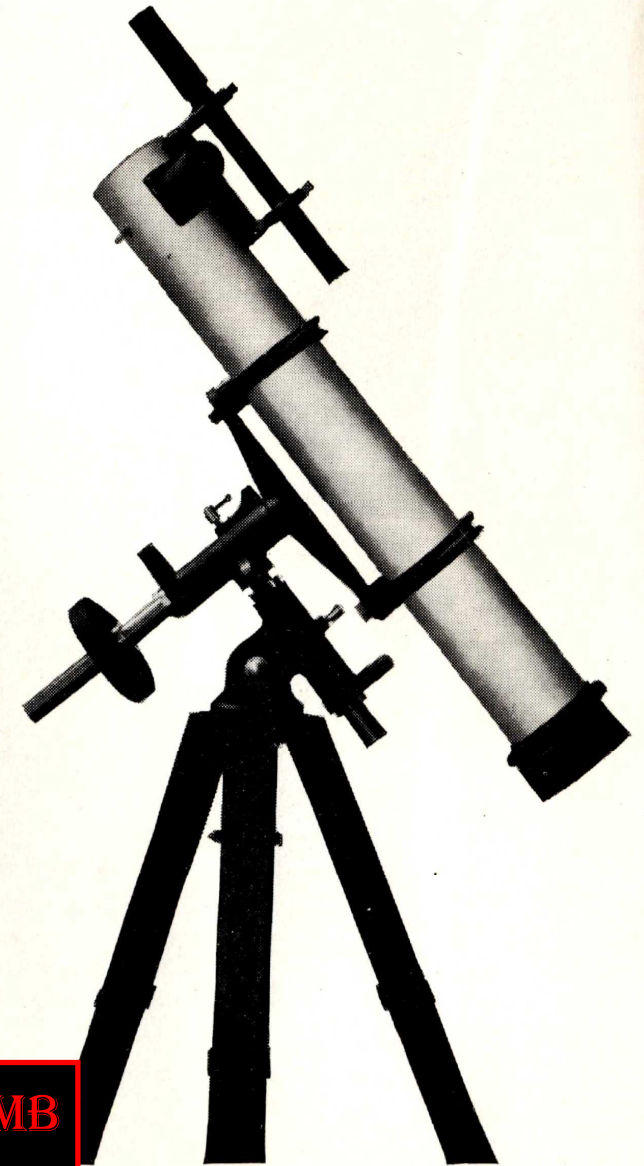
Tripod—Extremely rigid, in non-rusting alloy.

General Finish—Tripod, Mount, Mirror Cell, Finder Bracket and Eyepiece Mount in fine black crackle instrument finish, with small metal parts plated.

Price £54.50

Carriage, etc., in U.K. £1.50.

MB



The Charles Frank 'Saturn' Astronomical Telescope

This British-made Newtonian reflecting telescope has been designed primarily for the beginner.

Its good quality aluminised mirror ensures adequate light transmission combined with good definition. The altazimuth mount on the table tripod provides smooth movements in altitude and azimuth. It should be noted, however, that as the mount and tripod are of light construction there is a lack of the sort of rigidity which is desirable in an astronomical telescope. This lack of rigidity can make observations difficult and frustrating but the young astronomer who is prepared to put up with this drawback or better still to use his ingenuity to improve the mount, is likely to get a great deal of satisfaction from this otherwise fine instrument.

ABRIDGED SPECIFICATION

Mirror: The mirror is f/8 spherical form. It is aluminised and of 95 mm. clear aperture.

Tube : 28½" long alloy tube finished in white enamel.

Mount: Column mount supported on widely spaced table tripod. Pillar Height 19½".

Open Sights: This system, whilst providing a guide of sorts for the main telescope, is in no way as satisfactory as the optical starfinders normally provided on more advanced instruments.

Magnification: The instrument is provided with one eyepiece of 31× power.

Weight: The total weight of the telescope is 4 lbs.

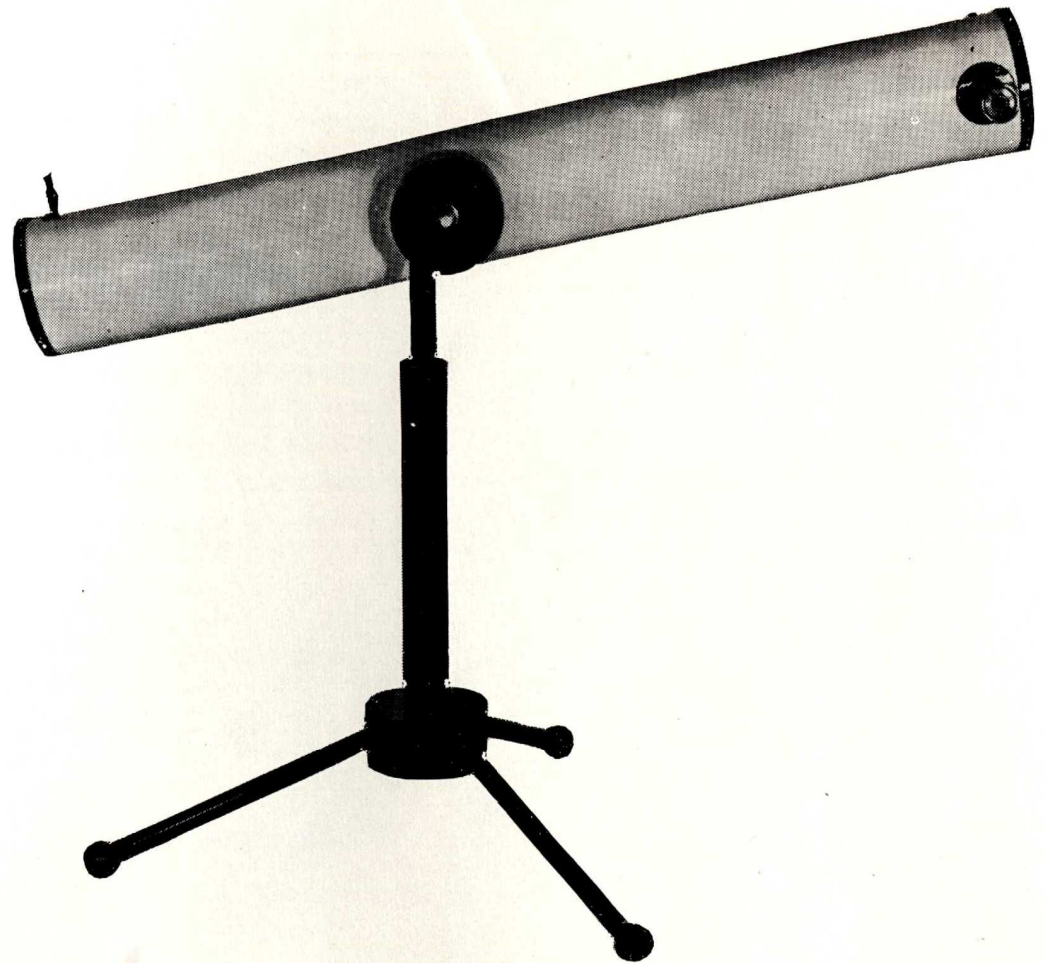
Transit Box: The instrument is packed in a strongly made cardboard transit box 35½" x 10½" x 6½" and gross weight is 8 lbs. Supplied complete with the Charles Frank Saturn instruction book and Frank's Book of the Telescope. £15.75.

Extras:

For pleasurable viewing we recommend moderate powers such as is obtained with the 31× eyepiece supplied with the instrument. If required, however, we can supply an additional eyepiece of 78× at a cost of £3.00. Also available is a mounted Barlow Lens. This lens, which costs £2.00, can be used in conjunction with either the 31× or 78× eyepiece and will give an increased magnification of approximately 100%. The 78× eyepiece with Barlow Lens will in theory give a linear magnification of about 156× (area magnification 24,336). This may sound very attractive but light transmission will be drastically reduced and it will be found that the down-to-earth lower powers are far more useful.

Inverted Image—In common with other astronomical telescopes the image is upside down.

MB



The Charles Frank 3" Refracting Telescope Equatorially Mounted

MB

By combining the finest quality optics from the famous American controlled Swift factories of Japan with our own Charles Frank Equatorial Mount and Stand, we are able to offer an instrument which is generally regarded as being the finest 3 in. Refractor available today.

Abridged Specification:

Object Glass—79 mm. diameter, clear aperture 77 mm. This fully coated object glass is of air spaced design and magnificent quality. Focal length is 1,000 mm. (39.4 in.). The resolving power at infinity (Dawes Limit) 1.51. The equatorial mount used for this instrument is the same as supplied with the Charles Frank de-luxe 6 in. Reflector and full description is given elsewhere in this catalogue.

Model A.3—Consists of 3 in. Swift Telescope with one eyepiece but without Star Finder. It is supplied complete with the Charles Frank Equatorial Mount and heavy duty alloy extending Tripod (3 ft. to 4 ft. 11 in.).

£91.50

Model B.3—This is the same as A.3, but with the addition of a high grade fully achromatic focussing star finder with 40 mm. object glass and magnification of 10×.

£109.00

Model C.3—is a more comprehensive instrument consisting of 3 in. Swift Telescope, Star Finder, 3 Eyepieces, Charles Frank Equatorial Mount and Tripod, fawn Crackle Stove Enamel and Chrome finish, fitted with geared hand slow motion drives to both axis, and setting circles.

£134.50

Model D.3—As for Model C.3, but with Charles Frank Pillar Stand in lieu of Tripod (as illustrated).

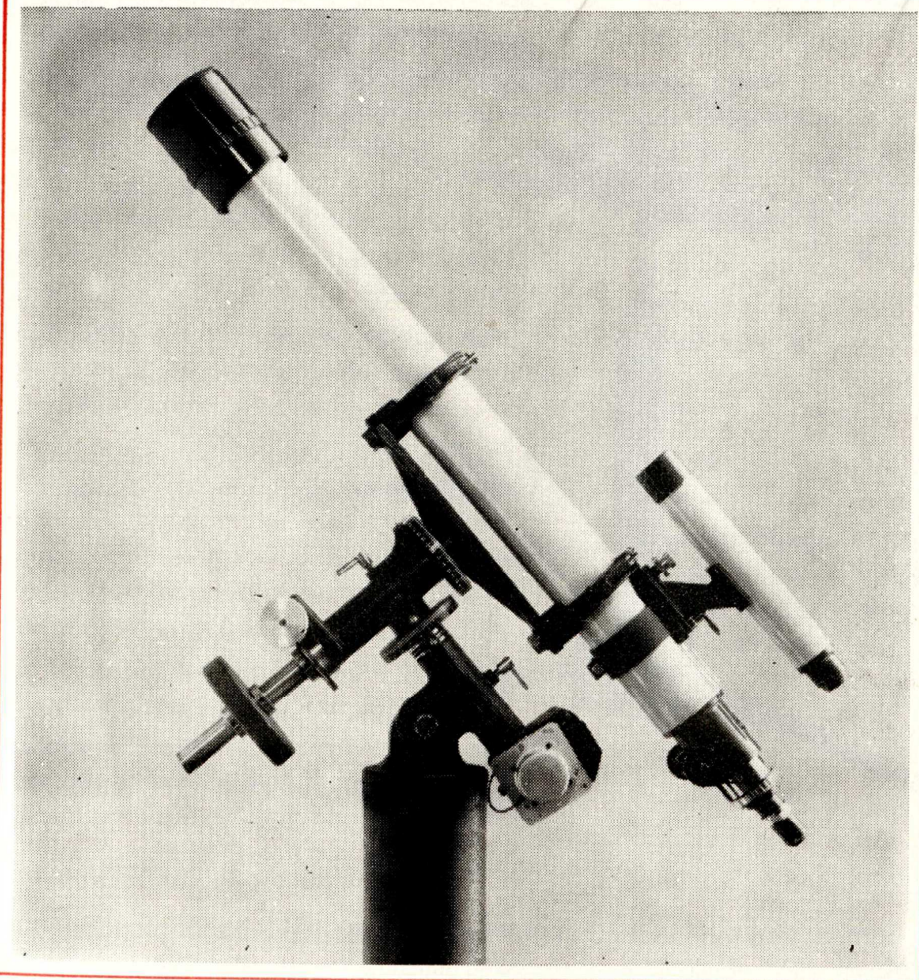
£150.50

Terrestrial Model—Incorporates the same high quality optics as the Astro models, but is fitted with a prism erecting system giving an upright image for all long range land viewing as well as being suitable for Astro observations. Supplied with heavy duty Altazimuth mount and metal tripod. With basic 50× eyepiece and auxiliary 10× sighting Telescope.

£97.50

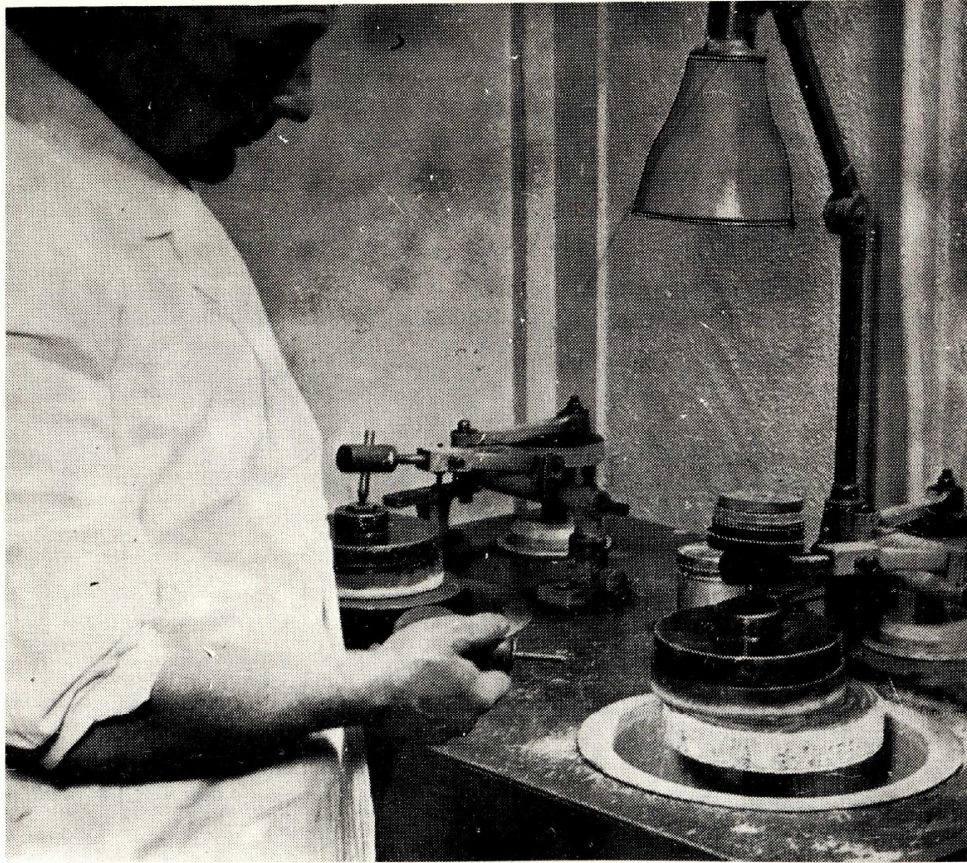
All above prices Ex Works.

Full details of Swift Eyepieces and other accessories can be found on page 30.



The Charles Frank 6" Mirror Kit

MB



The illustration shows a stage in the production of one of our 6" mirrors.

Grinding Agents

Complete kit for the making of the mirror in the conventional manner. The kit consists of 5 grades of Carborundum, i.e. Grade Nos. 120, 125, 175, 225 and 240 plus cerirouge for final polishing and pitch for holding the mirror and the tool. **£2.00.** Post and Packing 25p.

Telescope Tubing

$\frac{1}{8}$ " High Impact P.V.C. tubes. Suitable for 4" and 6" telescopes drilled to accept our focussing mount and sprayed gloss white outside and matt black inside.

$6\frac{3}{8}$ " diameter x $45\frac{1}{4}$ " long—**£9.95.** $4\frac{1}{4}$ " diameter x 30" long—**£3.80.**
Carriage extra.

28

This is a fresh approach to mirror making and combines an entirely new concept with a system which has been known to professional makers but virtually unknown to amateurs. It removes the sweat and tears generally associated with mirror making, and not only is there a substantial saving in time and energy but at **£7.00** complete there is also a substantial saving in cost. The Kit consists of a 6" + diameter blank of low expansion glass pre-generated to the correct curvature, a cast metal tool, pitch, smoothing powders, etc., and full, easy-to-follow instructions.

Aluminised Mirrors (Ready for use)

4" diameter. A hand finished mirror of spherical form focal length 32". **£6.75.**

(A thinner second quality 4" mirror can be supplied at £2.90).

We are able to supply 6" and $8\frac{1}{2}$ " aluminised mirrors of low expansion glass and figured to an extremely high degree of accuracy at £20.00 and £40.00 respectively.

Secondary mirrors suitable for 4", 6" and $8\frac{1}{2}$ " reflectors available at £1.65, £3.00 and £6.00 respectively.

Telescope Mirror Blanks

Approximate dimensions :

4" dia. plate glass 18 mm thick. 90p each.

$6\frac{1}{4}$ " dia. low expansion glass 27 mm thick. £2.50 each.

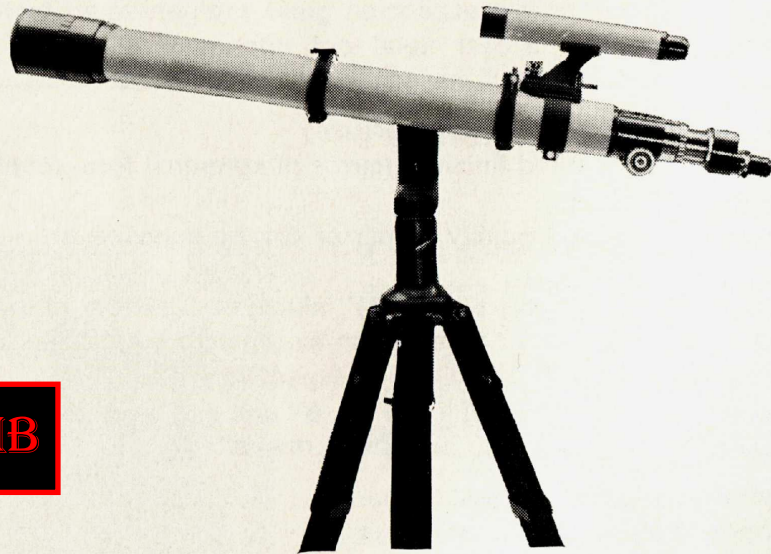
$8\frac{3}{4}$ " dia. low expansion glass 40 mm thick. £3.50 each.

Postage extra 15p per blank.

The Swift 3" Refractor for Terrestrial and Astronomical Use

This erect image telescope is of extremely high quality mounted on the Charles Frank Altazimuth Mount and Tripod. Ideal for all long-range land views and also useful as astronomical telescope. Supplied complete with Star Finder and 80× Eyepiece.

£97.50



MB

Further details of optical system and accessories on pages 29 to 32.

Stereoscopic Binocular Telescope

This remarkable prismatic Binocular Telescope was made by world-famous Ross of London to M.O.S. specification. It is different from ordinary Binoculars and Telescopes in that, due to the object glasses being spaced 27 in. apart, a tremendous stereoscopic or third dimensional effect is achieved. This feature makes this instrument invaluable where the determination of relative positions is important, as in Yacht Racing, etc. The instrument is substantially made of brass and weight—less tripod and mount—is 19 lbs. Length is 29 in. (unlike ordinary telescopes this instrument is used parallel to and not at right angles to line of sight). The binocular eyepieces for the use of both eyes are of the revolving turret type and the available powers are 10× and 20×. Effective aperture of O.G.'s 45 mm. The special mounting bracket which we have adapted for use with this instrument allows for all vertical and horizontal movements and the rigid metal tripod permits comfortable viewing. Original cost probably in excess of **£250.00**. Offered complete at **£45.00**.

Illustration on request.

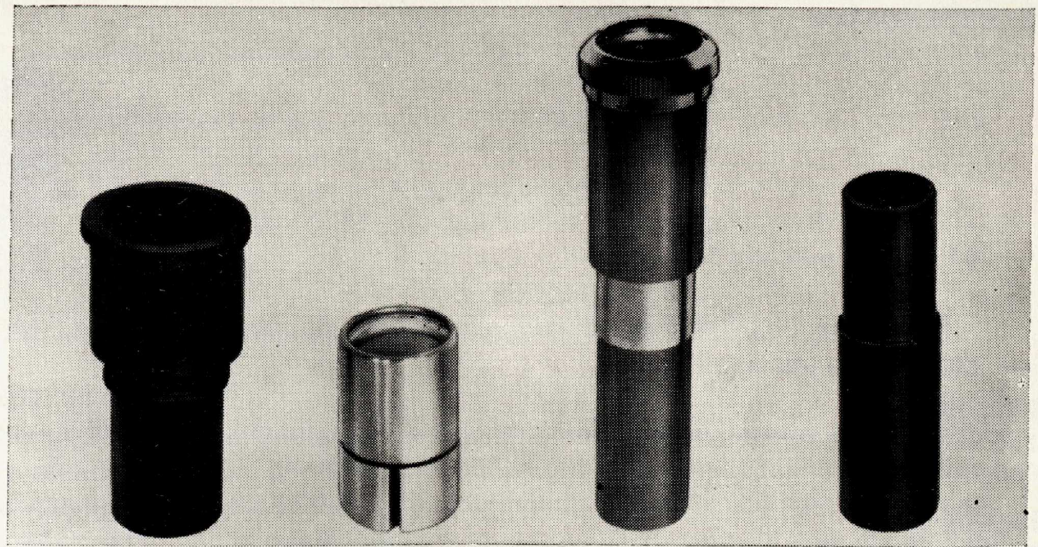
Now Available

The Charles Frank 4½" Refractor with Equatorial Mount and Pillar Stand. **£275.00**

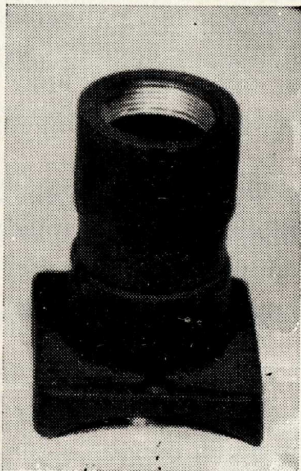
Details on request.

Barlow Lenses

This is a negative or minus lens and is a convenient way of increasing magnification. It is used in conjunction with an eyepiece and gives us an increase of anything from 50% to 125%, depending on the negative focal length of the Barlow and its distance from the eyepiece. It is always fitted between the eyepiece and the objective or mirror. We can offer four models, as follows :—



Focussing Mount



A well-made mount with multi-start helical focussing giving a $2\frac{1}{2}$ in. range of movement and accepting standard R.A.S. threaded eyepieces of Barlows type I & II. These mounts are available with radiused bases to suit 4 in. and 7 in. dia. tubes also with flat bases to suit refractors and square tubed reflectors.

Price £4.75

Type I

Fully achromatic colour corrected Barlow of 2 in. Negative focal length. In anodized alloy mount it screws into any R.A.S. threaded focussing mount and the eyepiece to be used screws into the Barlow mount. Gives 125% increase in power.

£5.00

Type II

This is a non-achromatic Barlow of approx. $3\frac{1}{2}$ in. negative focal length in a push-fit mount. This slides into our helical focussing mount and magnification can be varied by moving the Barlow in relation to the eyepiece. Gives from 50% to 100% increase.

£2.15

Type III

This is a special "Swift" Barlow and is suitable for use with the 3 in. "Swift" refractor. It is fully achromatic and gives 100% power increase.

£5.00

Type IV

Special Barlow for the Charles Frank Saturn 4in. Reflecting Telescope.

£2.00

MB

Accessories

For use with the Charles Frank Range of 3in., 4in., 6in. and 8½in. Refracting and Reflecting Telescopes

MB

EYEPIECES

The following eyepieces are of finest optical construction and quality. (All fitted with standard R.A.S. thread):—

Huyghenian

Focal lengths 1 in., $\frac{3}{4}$ in., $\frac{5}{8}$ in., $\frac{1}{2}$ in. and $\frac{3}{8}$ in. each **£4.00**
 Focal lengths $\frac{1}{3}$ in. and $\frac{1}{4}$ in. each **£4.25**
 Extra high powers 1/5 in. and 1/6 in. each **£5.25**
 Tinted suncaps for above each **£0.50**
Orthoscopic—1 in. and $\frac{1}{2}$ in. focus each **£9.00**

Ramsden

Focal lengths 1 in., $\frac{3}{4}$ in. and $\frac{1}{2}$ in. each **£3.00**
 Focal lengths $\frac{1}{3}$ in. and $\frac{1}{4}$ in. each **£4.00**

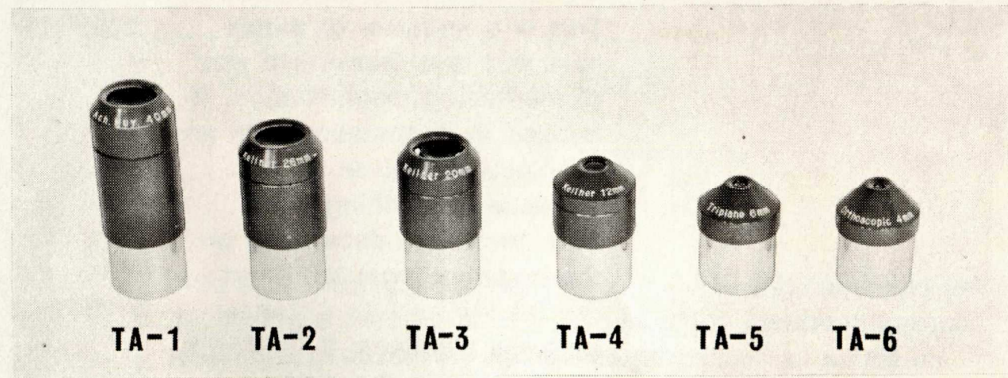
Special Comet (Kellner)

Approx. 1½ in. focal length with achromatic eye lens and large field lens of 1⅛ in. dia. These lenses have high light transmission and are ideal for Clusters, Comets, Nebulae and other faint objects each **£5.50**

THE CHARLES FRANK WIDE ANGLE RICHEST-FIELD EYEPIECE

We are producing a limited number of wide-angle eyepieces with standard R.A.S. thread fitting and having a focal length of approximately 1¾ in. 4-element fully achromatic construction, length 1½ in., dia. 1¾ in. Apparent Field of View approx. 57° The lens mount is of light alloy and black anodised finish.

Price £6.25



“Swift” Range of Eyepieces: These high grade eyepieces are supplied for use with the “Swift” 3 Refractor Telescope, and have a push fit diameter of 24.5 mm. Due to their optical construction, they are ideally suited for use with reflecting telescopes. To enable them to be used with the standard R.A.S. thread fitting we have made a special adaptor. This screws into the R.A.S. thread on the focussing mount and converts it to 24.5 mm. push fit. The full range of 6 “Swift” lenses may be used with the one adaptor, price of which is **£1.05**.

(Note: No adaptor is necessary to use these eyepieces with the “Swift” 3 in. Refractor which has a 24.5 mm. push fit mount).

TA-1	40 mm. Achromatic Huyghenian...	£5.00	TA-4	12 mm. Kellner...	£4.75
TA-2	26 mm. Kellner...	£4.75	TA-5	6 mm. Triplane	£5.50
TA-3	20 mm. Kellner...	£4.75	TA-6	4 mm. Orthoscopic	£7.50

TA-10 & 11—Moon and Sun Filters to fit the above eyepieces each **95p**

(NOTE: For direct viewing of the Sun, a Sun Filter must be used in conjunction with a special Sun diagonal. Direct viewing of the Sun without the protection of these two items used together could cause permanent blindness due to the intensity of the focussed rays of the Sun).

The Charles Frank Setting Circles

Type I—Developed by Charles Frank Limited for use on their equatorial mount, these precision circles are in alloy and are $3\frac{3}{4}$ in. dia. x $\frac{1}{2}$ in. thick x 1 in. dia. bore.

The circles are photographically divided on an anodised aluminium cap. Divided hour or Right ascension circle 0-24 hours, subdivided into 20 minutes and 4 minute divisions. Declination circle in degrees 0-90-0-90-0. Supplied complete with locking screws and pointers.

Price per pair £4.75

Type II—These are larger circles as used in our $8\frac{1}{2}$ in. Reflecting Telescopes, size 8 in. diameter x 1 in. thick with $2\frac{7}{8}$ in. diameter centre hole. Engraved direct on edge.

Price per pair £11.25

Geared Slow Motion Hand Drives. These precision drives are designed specifically for use on the Charles Frank Equatorial Mount. They consist of a steel worm in an alloy mount with phosphor bronze bearings and a special anti-backlash device which positively removes any end play of the worm. This worm meshes with a phosphor bronze worm wheel of $3\frac{1}{4}$ in. diameter and 1 in. bore and having 96 teeth giving an overall ratio of 96 to 1. The drive is transmitted to the shaft of the telescope through nylon pads. The pressure applied by these pads can be varied to give a 'slipping clutch' so that the telescope can be quickly aligned by hand before recourse to the slow motion drive.

Price, each £6.50

Special Heavy Duty pattern Geared Slow Motion Drive (as fitted to the Charles Frank $8\frac{1}{2}$ in. Reflector Telescope). These drives are designed specifically for the above Telescope, but home constructors could no doubt adapt them to their particular requirements. The steel worm is in an alloy mount with adjustable anti-backlash device, and meshes with a worm wheel of 7 in. diameter having 214 teeth with an overall ratio of 214 to 1. This worm wheel is mounted on a steel boss 3 in. long x 3 in. dia. turned down to $2\frac{1}{6}$ in. diameter for $1\frac{3}{4}$ in. of its length, and having a $1\frac{1}{2}$ in. diameter hole through the centre for mounting on the $1\frac{1}{2}$ in. diameter steel axes of polar and declination axes. Four adjustable clutch pads are incorporated in each drive.

Price, each £17.25

Flexible Drive for remote operation of the Geared Hand Drives. This consists of special flexible shafting with Plastic Hand Wheel at one end and a coupling at the other for attaching to the shaft of the slow motion hand drive. (The original hand wheel on this drive must first be removed, enabling them to be operated whilst viewing). Two types are available:—

Type I for use with our standard slow motion drives fitted to the Charles Frank Equatorial Mount. 18 in. long

Price, each £2.00

Type II for use with the heavy duty geared drive as fitted to the $8\frac{1}{2}$ in. Telescope. Length 26 in.

Price, each £2.25

Both types are finished Bright Chrome Plate.

Dual Drive (Motor or Hand).

£29.00



Accessories

for use with the 3 in. "Swift" Refractor Telescope

TA-8 Star Diagonal Prism. This enables overhead objects to be viewed from a comfortable and more natural position. £5.25

TA-18 Sun Diagonal Prism. Similar in external appearance to the Star Diagonal, it employs a special wedge-shaped prism known as a "Herschell Wedge" to divert a very large percentage of the Sun's light and heat rays away from the eyepiece. To be used with a Sun Filter on the eyepiece. Filters can sometimes be omitted when Sun is low. £5.25

TA-9 Prismatic Terrestrial Erector Prism. This corrects the normally inverted image of a purely astronomical refractor and gives a right-way-up, right-way-round image for general terrestrial viewing. Full range of eyepieces can still be used with this. £7.50

TA-14 Quadruple Eyepiece Revolving Turret. Enables rapid interchanging of any four selected eyepieces when viewing. £9.50

TA-16 Camera Adaptor. For attaching Reflex cameras with Pentax, Practika, Edixa thread to the "Swift" Telescope. For focal plane photography. £4.25

For eyepiece projection photography it is necessary to have a TA-16 adaptor modified to accept eyepieces as well as the camera. The price of this modification is £1.50

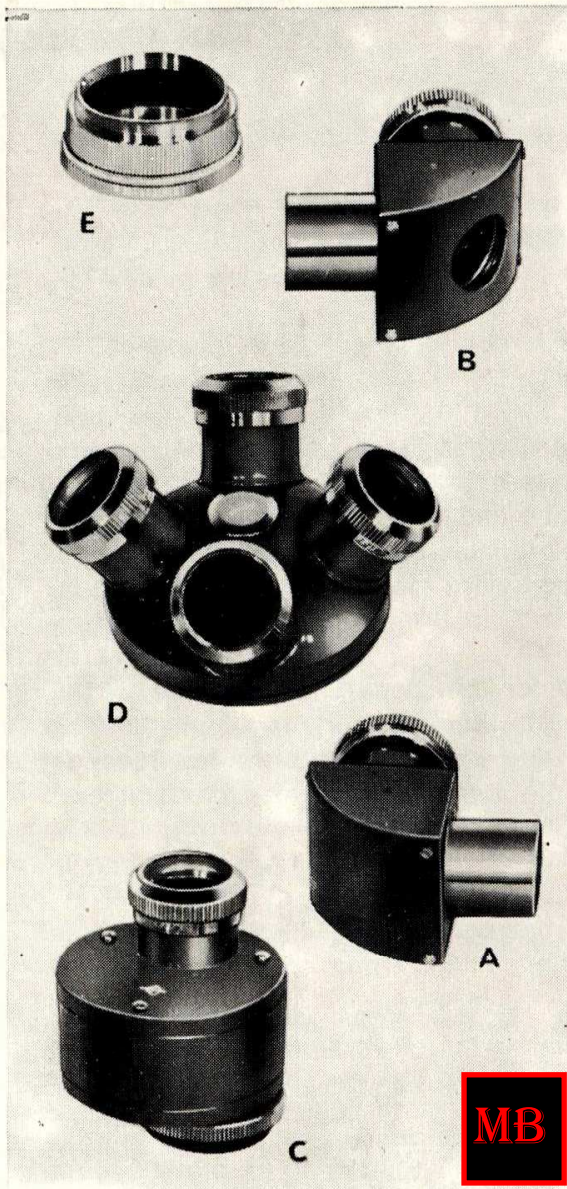
To enable various degrees of magnification to be obtained, a set of Pentax, Edixa, Practika thread camera extension tubes is desirable. They can be supplied per set of three at £2.00

Sun Projection Screen. Projects an image of the Sun on to a white metal screen attached to telescope. Must be used in conjunction with a star diagonal Prism. £7.50

Camera Adaptors for use with the Charles Frank 4 in., 6 in. and 8½ in. Telescopes

Almost any 35 mm. or 2¼ in. square single lens reflex camera can be fitted to these telescopes by means of an adaptor. It is assumed that the eyepiece projection method will be used with the 4 in. and 6 in. telescope because focal plane photography is not possible with these two instruments without moving the mirror further up the tube to bring the focal plane outside the eyepiece focussing mount. With the 8½ in. Telescope it is possible to slide the focussing mount and the elliptical flat as one unit nearer to the mirror. This has the effect of bringing the focal plane outside the eyepiece mount. It can then be returned to its original position for general viewing without upsetting the optical alignment.

All our adaptors are made to accept the "Swift" push-fit eyepiece, so that those persons who purchase a camera adaptor and who do not already have a "Swift" pattern eyepiece will need to purchase one with the adaptor (unless they only intend to do focal plane photography with the 8½ in.). Any such eyepiece purchased can be removed from the camera adaptor and used in conjunction with an R.A.S. thread adaptor for general viewing. The best eyepiece for eyepiece projection photography is either the 26 mm. or 20 mm. focal length. Price of adaptors depends upon the type of camera. For Pentax, Edixa, Practika cameras, price is £3.25, plus cost of eyepiece and any extension tubes, if required. For bayonet fitting cameras the price is higher.



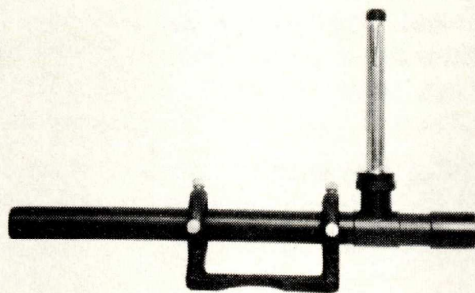
Star Finders (without mounting bracket)

Model 344 (illuminated)

The Star Finder is supplied complete with a small pen torch which fits into a protrusion at the side of the finder body and brilliantly illuminates the graticule so that it contrasts vividly with the star background, enabling precise alignment to be made. The Illuminator is detachable and can be used as an ordinary pocket torch. Dimensions of finder 13½" long x 1" diameter. Unit magnification. Price, complete with torch

£5.75

Mounting bracket extra—see below.



Elbow Star Finder

For fitting direct on to our Helical Focussing Mount. Magnification 6× object glass diameter 26 mm., length 5¼", weight 13 ozs.

Price £8.75

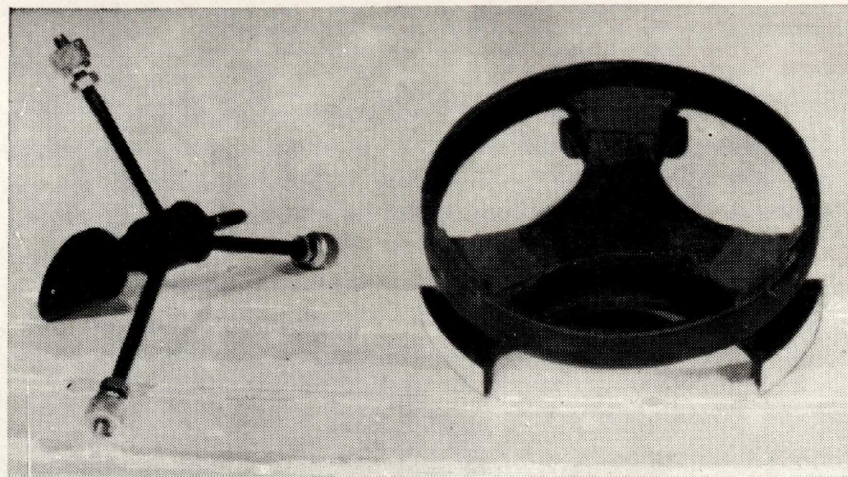


Star Finder Bracket

Two types of mounting brackets are available :

Type I—Suitable for fitting direct on to any telescope tube and secured with two 2BA nuts and bolts. 3-point suspension.

Type II—Similar to type one but with special base for mounting direct on to our Helical Focussing Mount. Price of either £2.90



Spider for 6 in. Reflector

This Charles Frank Mount for the elliptical flat has been specially designed to give full range of adjustment to the flat. Adjustment is precise and straight-forward. Finished in matt black. £4.00

As the arms in this spider are interchangeable it can be supplied with longer arms to suit telescope tubes of 10 in. or 12 in. diameter for an extra 50p

The Charles Frank Mirror Cell and Adjustable Mount for 6 in. Mirror

This improved mount and cell has fully floating adjustable 3-point suspension, and the design is such that air is allowed to circulate freely around the mirror, thereby avoiding uneven expansion or contraction. Finished in matt black. £6.00

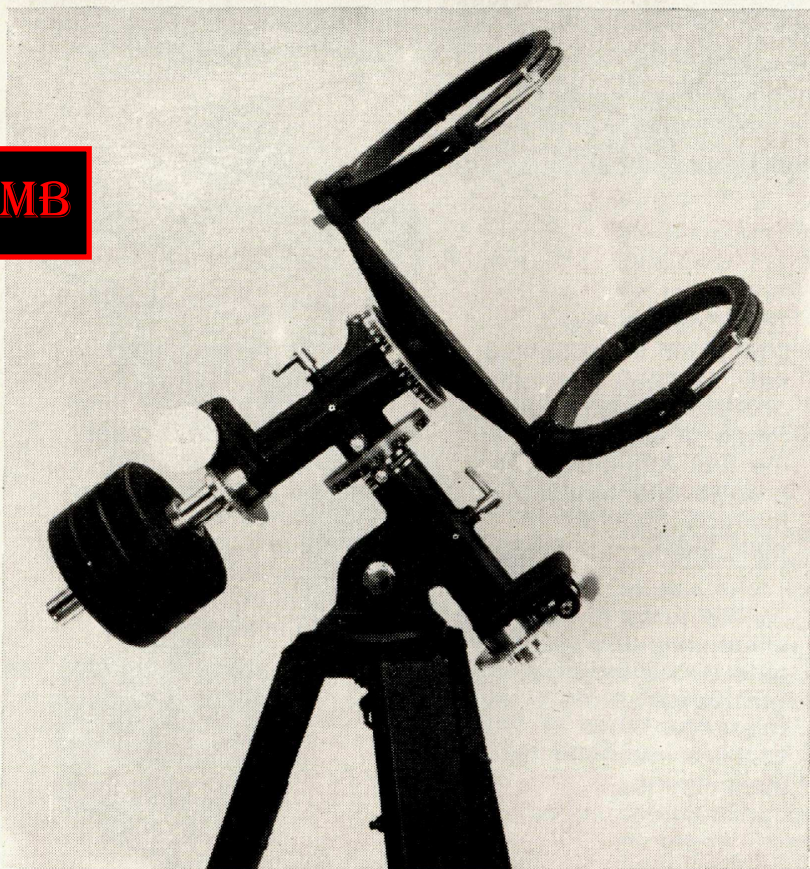
Spider for the 4 in. Reflector

MB

£3.65

The Charles Frank Equatorial Mount

MB



By providing a range of interchangeable tube clamps, our special heavy-duty mounts can be used not only for our 4-inch and 6-inch Reflectors, but with our Frank-Swift Refracting telescopes as well. Slow-motion drives and setting circles are available and can be fitted to these mounts at any time.

Price of Mount complete with one pair of tube clamps (for $6\frac{5}{8}$ in., $4\frac{1}{4}$ in., $3\frac{1}{2}$ in., 3 in. and $2\frac{1}{2}$ in. tubes) (state size required) and one balance weight, finished in Black Crackle and Chrome. **£27.00**
 Ditto but unpainted and unchromed **£23.00**
 Extra balance weights—Black Crackle finish **£2.00**
 Unpainted **£1.40**

Those who wish to construct their own telescope mount and have access to a drilling machine and a $3\frac{1}{2}$ in. lathe, may purchase a set of unmachined casting and all parts for the above mount for

Per Set £16.00

For those not having access to a lathe, we can drill and ream both axes for £1.50 extra.

All screws and clamping bolts are provided and the two steel axis bars are threaded $\frac{3}{4}$ in. Whitworth.

A Heavy-Duty Rigid Alloy Tripod for the above Mount can be supplied in green finish. **£8.75**

In Black Crackle stove enamel **£9.75**

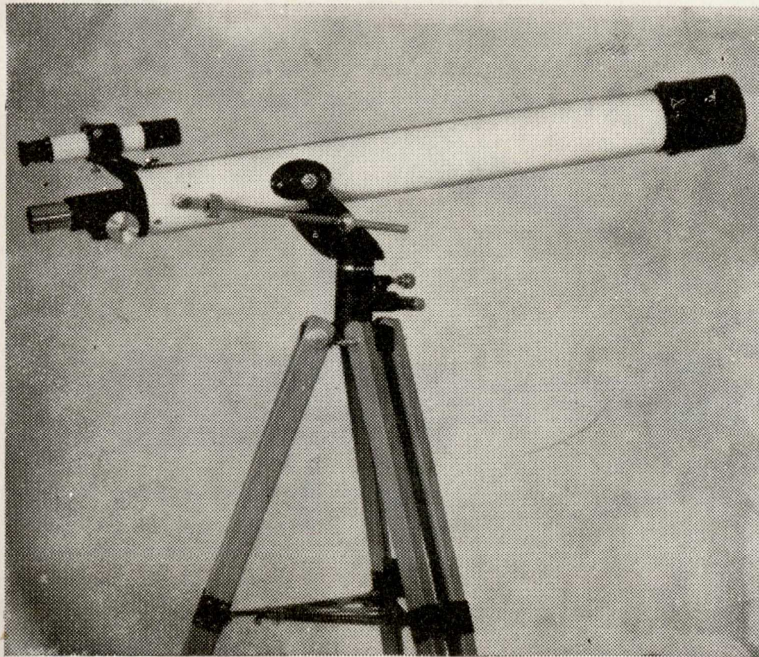
This Tripod extends from 3 ft. to 4 ft. 11 in. and can be locked in any position between these sizes.

Pillar Stand as supplied with De Luxe 6 in. Telescope **£25.00**
 (Mount extra)

Geared Drives, Motors and Setting Circles for this mount are listed separately under accessories.

Where the above mount is to be used for 6 in. Telescopes, or fitted with synchronous motor drive, we recommend the fitting of a ball bearing thrust race on the Polar axis shaft before sliding the shaft into the Polar axis casting. This removes any friction between the two opposing faces.

Price each £1.05



In the lower priced Japanese Astronomical refractors we would be inclined to think that this can be included amongst the 'best buys'.

Magnification	56x, 112x, 117x, 234x
Object Glass diameter	60 mm.
Faintest discernable star	10.9 magnitude
Tube length	680 mm.
Tube finish	smooth white
Mount	Altazimuth Mount with vertical and horizontal fine adjustment

H.6 mm. ocular; 12.5 mm. ocular; 5 x 24 viewfinder 2x Barlow Lens, star diagonal prism, erecting eyepiece; with full-length telescopic tripod.

£30.45

Are Japanese Astronomical Telescopes Worth Buying ?

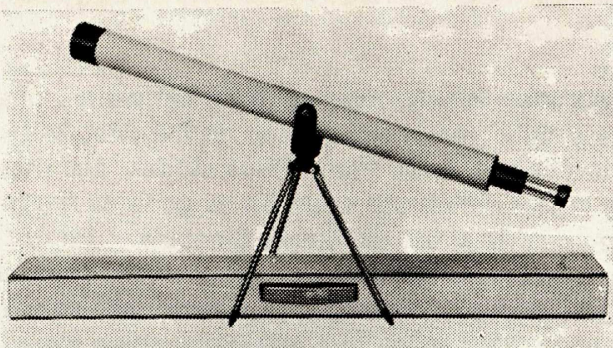
MB

This is a question which crops up daily, but we are always apprehensive of giving a simple 'yes or no' answer. In the past few years, the Japanese optical industry has made tremendous strides, and they are now capable of making lenses which are every bit as good as the best of the German lenses. The quality of top Japanese Binoculars, for instance, is superb, and these Binoculars represent amazing value. Their small Telescopes, too, are unbeatable, and a Japanese telescope costing today £2 is equal in quality and performance to a telescope which would have cost about £6 a few years ago. Nevertheless, the buyer of Japanese Telescopes should not be lulled into thinking that all instruments from Japan are good, for we have found that the larger Japanese equatorially mounted reflectors and refractors are far from satisfactory. Whilst their optics are usually excellent, the mount and tripod is generally of flimsy construction and those we have seen are quite incapable of supporting the telescope with a sufficient degree of steadiness. The importance of rigid mounting cannot be over-emphasised, and we make no apology for saying that the Equatorial and Altazimuth Mounts which we manufacture in Glasgow are rock steady; and we are vain enough to say that a better mount is not made. The design of these mounts is such that they can be fitted to any make of telescope, and those of our customers who already have a Japanese Telescope with flimsy mount and tripod may wish to avail themselves of our Mount and Tripod, which can be supplied as separate items.

We have shown elsewhere in this catalogue the Japanese SWIFT Telescope fitted to our own Mount and Tripod. This combines the best of both worlds and the resultant instrument stands comparison with the world's best.

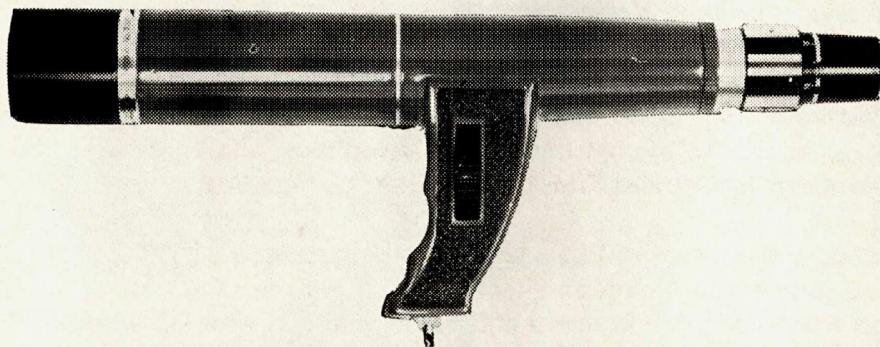
The Japanese Refractors shown on the following pages are of simple design and reasonably stable. They have been carefully selected and represent excellent value. We are not offering for sale any Japanese Reflecting Telescopes for those we have seen are of poor design and quality and do not in our opinion represent good value.

Astronomical and Terrestrial Telescope (Mod. 5/01)



A moderately priced telescope suitable for Astronomy and land viewing. Power is 30 \times and Object Glass diameter is 40 mm. Supplied complete with detachable table tripod in gift box. **£4.65**

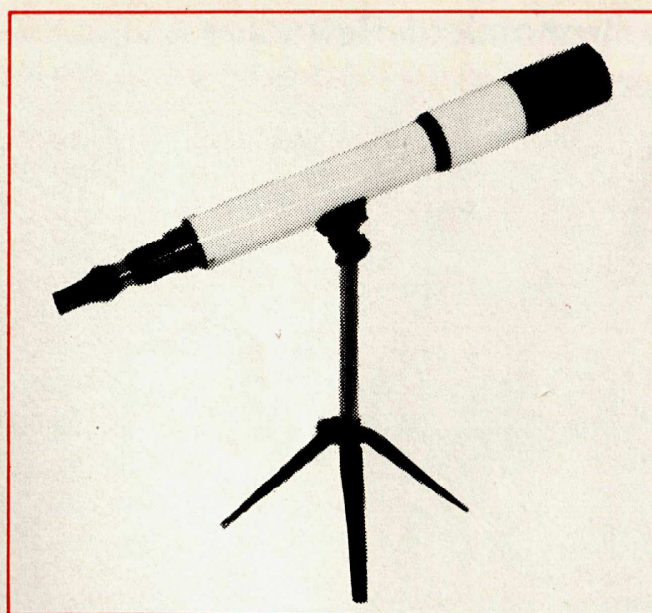
The New Swift Zoom Telescope



This precision pistol zoom-scope is a wonderful new addition to the Swift range. With the "one finger" focussing wheel power can be zoomed smoothly and swiftly from 6 \times to 18 \times . Lightweight at 16 ozs. Length 14 in. First rate value at only **£8.40**

Mk. II Zoom Telescope with Table Tripod

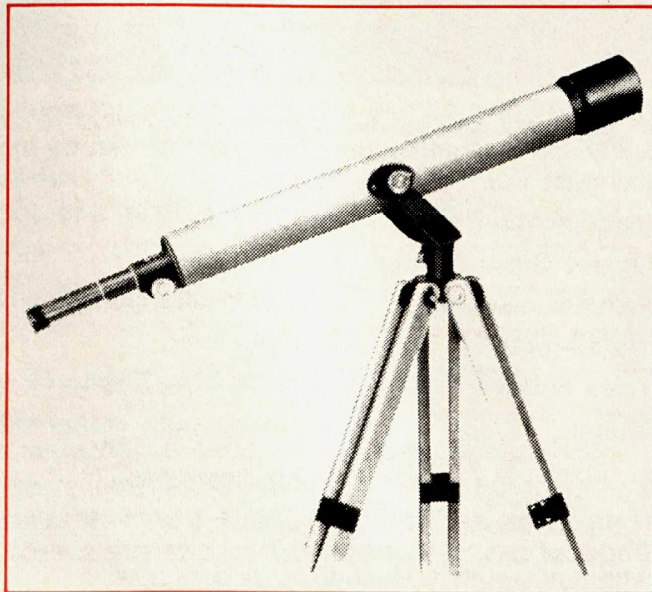
A superior quality instrument which can be zoomed from 20 \times to 60 \times . High light transmission is obtained with the 60 mm. diameter Object Glass. Length 20 in. An excellent telescope for either astronomical or terrestrial observation. **£23.00**



Variable Power Telescope

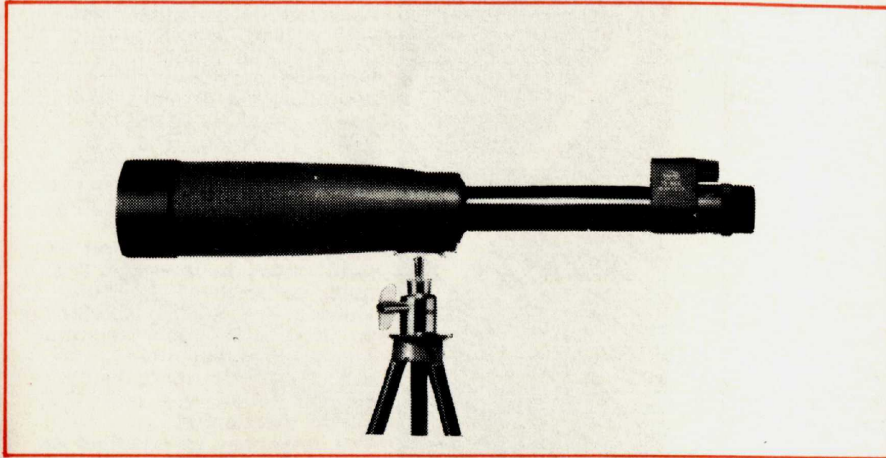
Astronomical and terrestrial panoramic eyepiece with powers of from 15 \times to 60 \times . Object Glass dia. 60 mm. Length of tube 28 in. with full-length tripod.

£14.00



Portable Telescopes

The New Hertel and Reuss and Nickel Telescopes

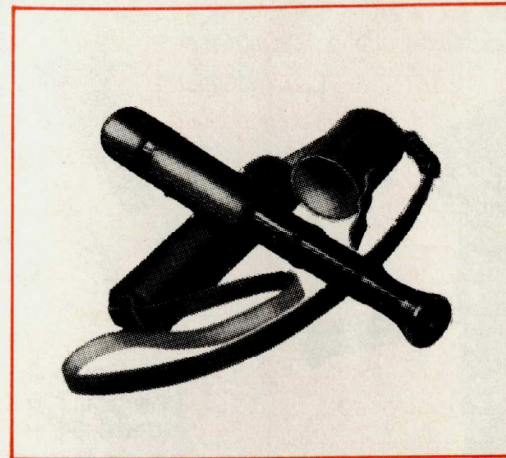


A tremendous advance in portable telescope design has been achieved by two German telescope makers—namely Hertel & Reuss of Kassel and B. Nickel of Marburg. Both instruments have variable powers which in the Hertel & Reuss can be zoomed from 25 to 60 and in the Nickel from 15 to 60. The 60 mm. Object Glass ensures high light transmission and the bodies are bushed to enable them to be used on standard camera tripods.

There is little to choose between either instrument for quality or performance, and it is generally accepted that these two instruments are the world's best.

	Nett Weight	Length Closed	Length Open	PRICE
Nickel	28 ozs.	12 in.	22 in.	£54.95
Hertel & Reuss	32 ozs.	15 in.	27 in.	£53.95

Ex-Army Three Draw Signalling Telescopes



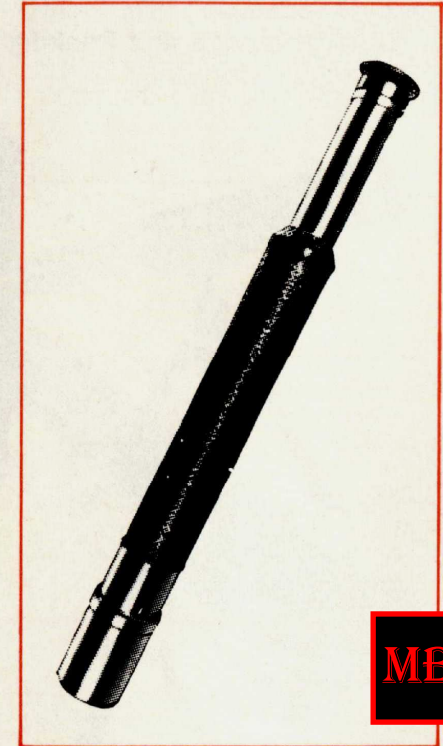
Made to stringent military specification, this signalling telescope closes down to 11 in. and is 30 in. long when fully extended. Magnification is 20× and Object Glass is 50 mm. in dia. Leather covered or tropicalised body (please state preference). Although remaining instruments are good optically the external condition is fairly poor.

£8.75

Optional extras—25× Eyepiece £1.25

Leather Carrying Case (as illus.) £2.00

Ex-Admiralty Single Draw Telescopes



MB

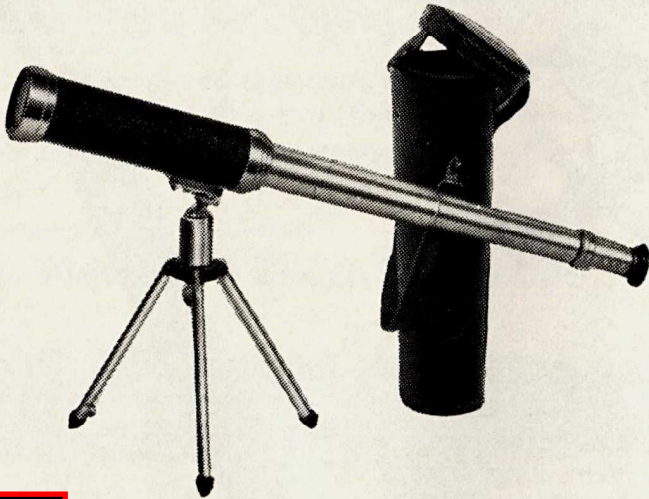
Micrometer focussing. Makes ROSS or OTTWAY. Magnification approx. 16×. Object Glass dia. 40 mm. Length closed 11 in., extended 17 in. An instrument of extremely high quality. Used condition but optically sound.

£8.50

2 Draw Pocket Telescope

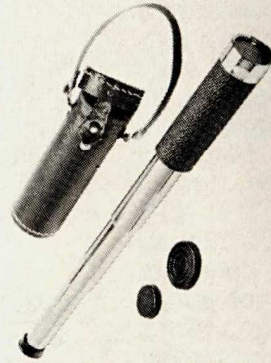
Length closed 7 in. and weight 12½ ozs., power 30×. Supplied complete with detachable table tripod. All complete with carrying case.

£3.70. Postage and Packing 20p.



MB

3 Draw Pocket Telescope (Mod 5/30)



Light and compact (weight 7 ozs., length closed 5½ in.), this 25 power telescope has a colour corrected achromatic Object Glass of 30 mm. dia. Remarkable value at £2.25.

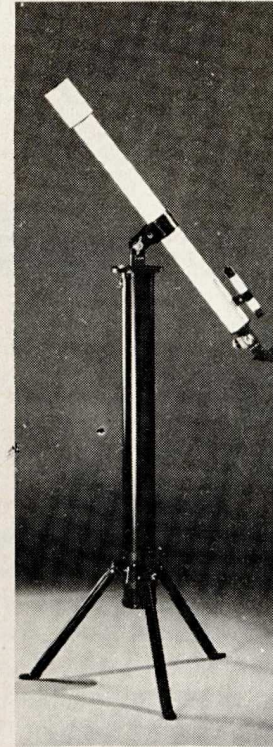
A carrying case is an optional extra at 30p. Postage and Packing 20p.

The Charles Frank Astronomical Refracting Telescope

A new Telescope made in our Glasgow factory which should prove of especial interest to educational authorities and to the young enthusiast. The Telescope is well made and is 42 in. in length, with an Object Glass of 47 mm. external diameter. Linear power is 30×, and image is inverted. A tripod is not provided with this telescope, but the instrument can be rested on the window sill or suitable ledge.

Price complete—£1.30.

A New Pillar Mounted Refracting Telescope for the Amateur Astronomer



This exceptionally well made telescope has a 60 mm. diameter object glass with a focal length of 800 mm. The 18 mm eyepiece provides magnification of 44×, a power which is ideal for general viewing. The star diagonal supplied provides easy viewing of objects near the zenith and although the erect image given when using the diagonal is left to right, many people find this quite suitable for terrestrial viewing. A 5 × 20 starfinder is fitted to facilitate accurate lining up of the main telescope. Focussing is by smooth action rack and pinion mechanism. The telescope is mounted on a 4 ft. high pillar stand which, to some extent, reduces the shake evident in many telescopes with flimsier tripods. For storing, the pillar stand legs fold and the telescope itself packs inside the pillar stand tube. Assembly of the instrument takes only a few minutes.

This is a telescope we can thoroughly recommend for the young astronomer. It is not a toy but a substantially made instrument weighing, complete with its pillar stand, 9 lbs. The instrument comes complete with 18 mm eyepiece, sun filter, star diagonal, starfinder, pillar stand, etc., at the exceptionally low price of **£12.50**

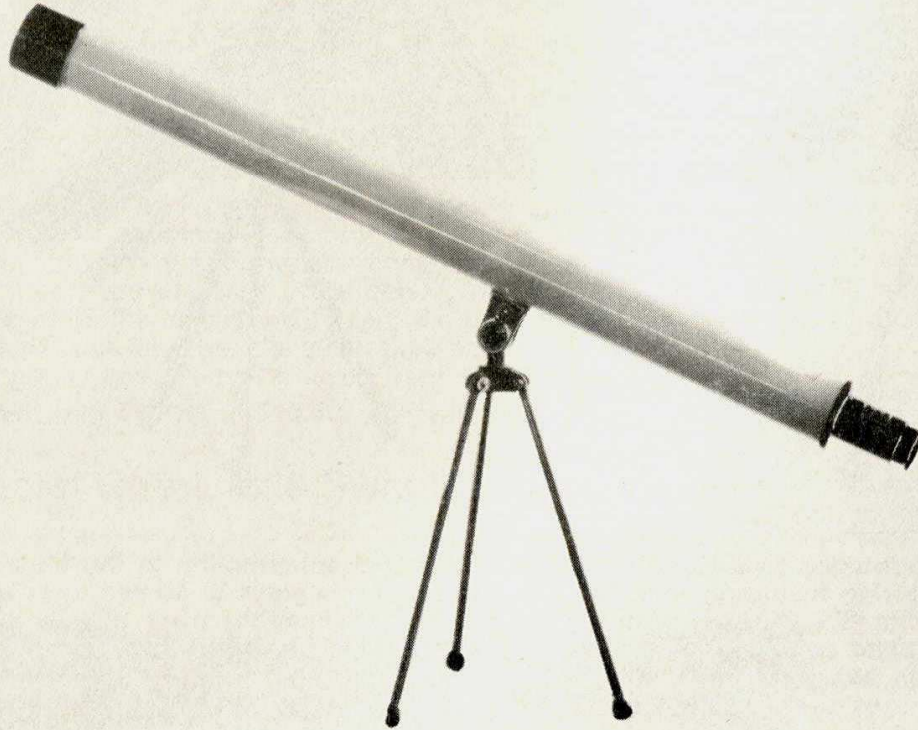
Optional Extra

A 6 mm eyepiece providing a magnification of 133× can be supplied as an optional extra at a cost of **£3.25**. It should be noted, however, that the image seen when using this power will be very much duller and for general work the lower power will give much better results.

Model 102

Although by no means a high quality instrument this tripod mounted telescope represents excellent value and is suitable for the youngster who wishes a telescope for land viewing or astronomical use. Magnification $40\times$. External diameter of object glass 40 mm. but as this has been stopped down to a considerable extent the effective diameter is much less.

£3.15



Model 103

Also available Model 103. Of similar design and magnification but with O.G. of external diameter 50 mm. also considerably stopped down.

£4.20



MB

Model 104

An excellent pocket Zoomscope with a range magnifications from $10\times$ to $25\times$. Object glass diameter 30 mm. Length $11\frac{3}{4}$ in., weight 10 ozs.

£4.75

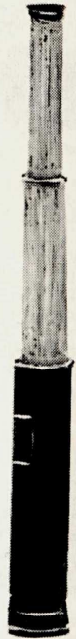
Model 108

This telescope of revolutionary design is similar in construction to the Model 105 with ring focussing, but is electric powered and the magnification can be zoomed from $12\times$ to $40\times$ by merely pressing a button. The object glass diameter is 40 mm. The telescope is supplied completed with a table tripod. Length 16 in., weight (with tripod) 36 ozs.

£19.50



Model 101



A good quality Two-Draw Pocket Telescope with a magnification of 30× and a 30 mm. object glass. Length closed 7 in., weight 7 ozs.

£2.25



Model 105



This beautifully constructed telescope is fitted with easy-to-operate ring focussing and can be zoomed from 8× to 25×. The object glass dia. is 30 mm. Supplied complete with table tripod. Length 12½ in. Weight (with tripod) 30 ozs.

£9.00

Model 106

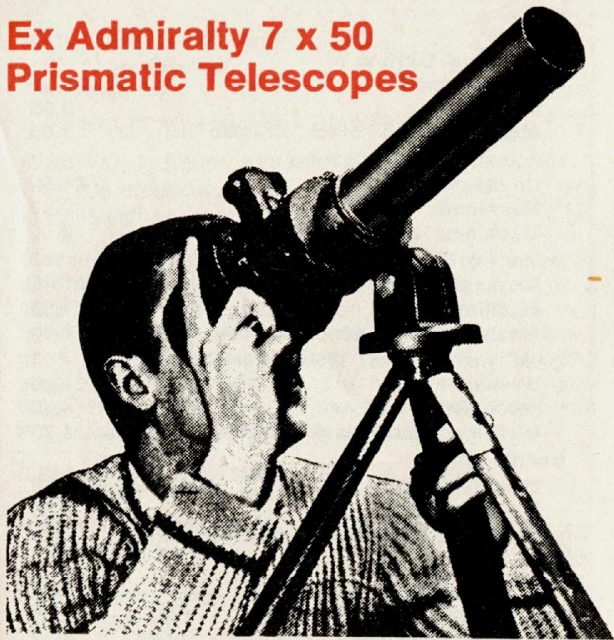


Of identical construction to the Model 105 with an object glass of 40 mm. dia., and giving magnifications from 13× to 40×. Length 16 in., weight 21 ozs.

£11.00 (excluding Tripod).

In short supply. Enquire first whether still available.

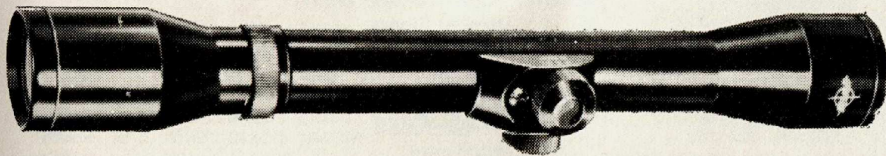
Ex Admiralty 7 x 50 Prismatic Telescopes



These superb Telescope Sights are ideally suited for setting up on a veranda, etc., for long and short range viewing, planetary and satellite observations, etc. The instruments are of heavy construction, weighing in the region of 15 lbs. excluding Tripod. Various models are available, but all have similar optical specification. Present-day cost would be in the region of £200.

Offered, with Tripod, at **£19.50**. Carriage extra £1.00.

Special Offer! 830 Swift Riflescope 4 x 31



The New Ross 20X Prismatic Spottingscope

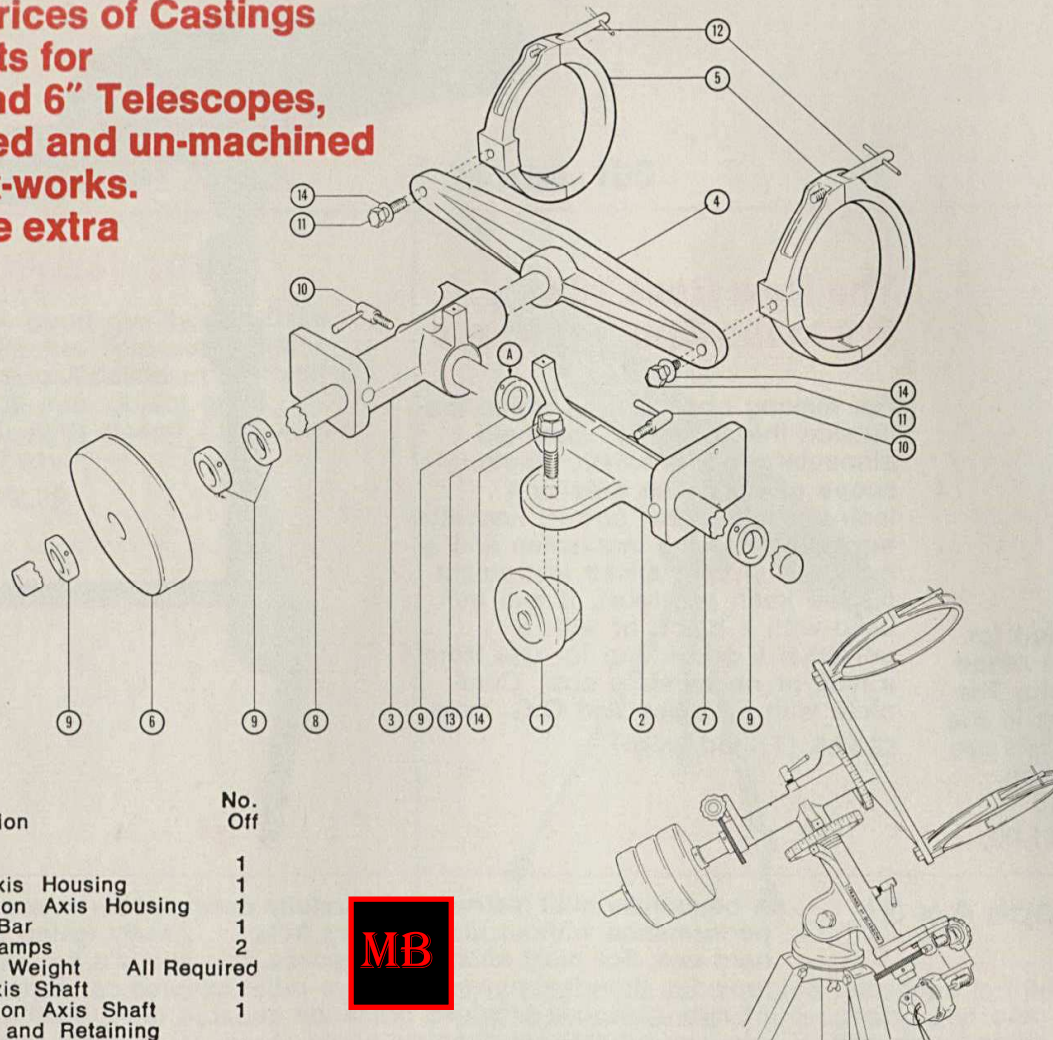
For making observations which are outside the scope of hand-held binoculars this Prismatic Spottingscope offers a fine precision instrument of great power. Essential equipment for the marksman and a most useful specialised instrument for the keen naturalist. It can be used with a bipod or with a universal tripod fitting for use from a hide or observation post. Complete with eyepiece and O.G. caps. **£33.06** (Tripod extra).



MB

A beautifully built instrument, carefully designed for maximum performance without unnecessary frills . . . Fully tested to withstand hard use. For most shooting purposes, this scope's 4x magnification provides the ideal power. 3 in. eye relief ensures comfortable aiming. 31 mm. objective provides brilliance equal to night binoculars. Fine windage adjustment changes angle of aim 15 seconds of arc per click (equal to 1/4 in. at 10 yds.) and total range of adjustment is 18 minutes of arc (equal to 18 in. at 100 yds.) each side of dead centre. Duralumin tube is strong, rigid and light (total scope weight 10.5 oz.). Overall length 12 in. Complete with leather lens caps. Gift boxed. Remarkable value at **£10.00**

Retail Prices of Castings and Parts for 3", 4" and 6" Telescopes, machined and un-machined Price ex-works. Carriage extra



Part No.	Description	No. Off
1	Base	1
2	Polar Axis Housing	1
3	Declination Axis Housing	1
4	Saddle Bar	1
5	Tube Clamps	2
6	Balance Weight	All Required
7	Polar Axis Shaft	1
8	Declination Axis Shaft	1
9	Spacing and Retaining Collars	5
10	Axis Clamping L Bolts	2
11	Tube Clamp Securing Bolts	2
12	Tube Clamp T Bolts	2
13	Polar Axis Securing Bolt	1
14	1/4" Washers	3

Before screwing in clamping bolts (10) insert small fibre or nylon pad.
A roller thrust race is available to replace spacing collar A. (Desirable if motor drive is used).

Part

Polar Axis Casting :		
Un-machined	... ..	£1.30
Machined	... ..	2.60
Machined and black crackle (ill. 2)		3.00
Declination Axis Casting :		
Un-machined	... ..	£1.30
Machined	... ..	2.60
Machined and black crackle (ill. 3)		3.00
Base (for Tripod) :		
Un-machined	... ..	£1.10
Machined	... ..	1.95
Machined and black crackle (ill. 1)		2.30
Base (for 5" Dia. Pillar Stand) :		
Un-machined	... ..	£1.95
Machined	... ..	4.50
Machined and black crackle	... ..	4.70
Saddle Bar :		
Un-machined	... ..	£1.30
Machined	... ..	2.35
Machined and black crackle (ill. 4)		2.75
Tube Clamps :		
3" (Un-machined) (for 3" Tube)	... ..	£1.50
4" (Un-machined) (for 4 1/4" Tube)	... ..	1.80
6" (Un-machined) (for 6 3/8" Tube)	... ..	2.15
3" (Machined complete with clamp screws)	... ..	£2.80
4" " " " " "	... ..	2.95
6" " " " " "	... ..	3.00
3" (Machined and black crackle) (ill. 5)	... ..	£2.95
4" " " " " "	... ..	3.20
6" " " " " "	... ..	3.75
The above prices for tube clamps are for single clamps. Two are required for each telescope.		
Balance Weights (steel discs weighing 5 lbs.) :		
Un-machined	... ..	£1.50
Machined	... ..	2.15
Machined and black crackle (ill. 6)		2.50
Mirror Cell (outer shell) :		
4" Un-machined	... ..	£1.30
4" Machined	... ..	3.15
4" Machined and black crackle	... ..	3.30
Mirror Cell (inner disc) :		
4" Un-machined	... ..	35p
4" Machined	... ..	50p

Books to the value of £3 and over post free

Amateur Telescope Making in Three Volumes Albert Ingalls

Amateur Telescope Making—Book 1 provides an immense amount of information for the home builder. Illustrated **£2.25**

Amateur Telescope Making—Advanced covers somewhat similar ground to the preceding work but deals with amateur made instruments of somewhat greater refinement. Illus. **£3.00**

Amateur Telescope Making—Book III. The articles in this work go into deeper theoretical territory than either of the two previous works of the series, considerable information is provided concerning objectives and camera lens computation, diffraction theory, binocular collimation, Schmidt telescope construction, and the quartz-polaroid monochromator. Not a work for the beginner. Illus. **£3.00**

The Sun G. Abetti
Translated from the Italian by J. B. Sidgwick, it is recognised as a standard work of reference. Fully illus. **£3.15**

Map of the Moon Elger
Originally drawn by Elger. Notes on notable features by Dr Wilkins. **25p**

Lunar Geology Gilbert Fielder **£2.25**

Norton Star Atlas and Reference
This, quite understandably, has become recognised as the astronomer's bible. Packed with useful information, it also contains lists of 500 interesting objects and no fewer than 9000 stars clusters and nebulae. **£1.25**

An Easy Guide to the Constellations Gall Inglis
With a Star Atlas. **20p**

The Constellations and How to Find Them Peck
A popular guide to a knowledge of the stars illustrated. **25p**

101 Questions Answered about Astronomy (Third Revised Edition) James & Pickering **£1.75**

Bibliographe Generale de L'Astronomie Houseau & Lancaster
In 3 volume. **£35.00 per volume**

Astronomy With Binoculars James Muirden
No specialised knowledge is assumed on the part of the reader and the author shows how versatile an ordinary pair of binoculars can be in viewing comets and meteors and the slow drifting of the planets; to say nothing of the inexhaustible reaches of the stellar heavens into which binoculars can make surprising inroads. Illus. **42p**

Dictionary of Astronomy Terry Maloney
An invaluable guide for both the beginner and the more experienced astronomer. **£1.50**

Radio Astronomy for Amateurs Frank W. Hyde
Absorbingly interesting and informative for those who wish to venture into this exciting field of amateur activity. Illus. **£1.25**

Chart of the Stars Tancock
Showing stars in white and lettering in black on blue background 46 in. x 37 in. Paper folded (pocket size) fly ends. **52p**

The Amateur Astronomer Patrick Moore
The complete and indispensable guide for both the beginner and experienced observer. Illus. **£1.75**

Discovery of the Universe Gerald de Vancouleurs
An important technical work on the subject. Illus. **£1.50**

Space Patrick Moore
The full, exciting story of Man's exploration of space from the earliest theories to the recent lunar landings and interplanetary probes. An up-to-date, comprehensive and magnificently illustrated book with over 300 photographs and drawings including 70 photographs in full colour. **£3.50**

Astronomical Photography Gerald de Vancouleurs
From the Daguerreotype to the electron camera. Illus. **£1.25**

The Amateur Astronomer's Photographic Lunar Atlas Henry Hatfield

A new Atlas prepared to meet the demands of the keen amateur observer of the Moon. £3.00

Practical Amateur Astronomy Edited by Patrick Moore £1.50

The Sun and the Amateur Astronomer W. M. Baxter £1.25

The Craters of the Moon Patrick Moore and Peter Cattermole £1.75

The Planet Jupiter B. M. Meek £2.10
The first comprehensive treatise on the planet Jupiter. Fully illus.

Larousse Encyclopaedia of Astronomy Beautifully illustrated, this giant-sized book has over 500 pages with 800 photographs, etc. £1.50

Fun With Astronomy Mae & Irma Freeman £80p
A well illustrated book for the beginner.

Modern Astronomy Hans Kienle £2.25
This book, based on a series of radio broadcasts, describes how improvements in instruments and techniques not only extended the scope of work initiated in the previous century, but in addition caused a considerable change of emphasis.

Amateur Astronomy for the Beginner £30p
About the science of the stars and other heavenly bodies. Stars and nebulae. Planets and satellites. Meteors and comets. Constellations. Telescopes.

Messler's Nebulae and Star Clusters Kenneth Glyn Jones

A magnificent publication with 104 telescopic drawings and 104 half-tone illustrations, 7 maps, 19 figures and tables and numerous reproductions from contemporary sources. £7.50

The Observer's Book of Astronomy Patrick Moore

This major addition to the series gives a clear and complete picture of the stars visible at each season of the year. The sun, moon and planets are dealt with in separate chapters. The book covers both hemispheres. Illustrated with 14 full colour plates and 50 colour text drawings. 35p

Secrets of the Sky £1.25
A book filled with accurate, up-to-date information which will be useful and fascinating to young students of astronomy, amateur sky-watchers and all those readers interested in the phenomena of the sky. 176 pages. 96 pages of colour illustrations—58 pages of black and white illustrations, maps and diagrams.

A New Way to See the Stars H. A. Rey £52p
Entertainingly written, this book is a concise guide to the stars, providing beginner and enthusiast alike with a means of practical star recognition. More than 15 maps, charts and diagrams in two colours.

The Amateur Astronomer's Glossary Patrick Moore £1.25

Naked-Eye Astronomy Patrick Moore £1.50

The Moon and the Planets £1.75
Dramatic, large-scale illustrations, many of them in full colour, are an outstanding feature of this up-to-date study of the moon and all the planets of the solar system. 184 pages, 40 double-page illustrations, many in full colour.

Wonders of Space Rose Wyler and Gerald Ames £52p
A really comprehensive book for every child who wants to know about the universe. It covers the solar system, the atmosphere, the tides, the calendar, magnetism, gravity, the telescope and many other subjects. A special section is devoted to man's exploration of space. 100 pages. 95 full colour illus.

Men and Space Flight John Taylor £62p
Every major event to date in the story of space travel and exploration is included in this fascinating book.

7 in. Celestial Globe £6.30
A transparent globe intended for astro observations such as movement of the Sun, celestial bodies, planets, Moon, etc.



Three Charles Frank Publications

Frank's Book of Optical Instruments
Many of the questions we are often asked on the theoretical or practical applications of optical instruments are answered in this book. It contains chapters on mirrors, lenses and prisms; optical aberrations; microscopes; telescopes; binoculars and sextants; rangefinders, etc. **42p**

Frank's Book of the Telescope
We can recommend this book to all those interested in astronomy. It contains chapters on reflectors, refractors, catadioptric systems, etc. To quote from 'Sky and Telescope': "The amount of information is truly amazing". Well illustrated.
De Luxe Edition **60p.**
Economy Edition **42p**

The Stars Above Us
This book by the former Astronomer Royal, Sir Harold Spencer-Jones, deals in a most interesting manner with the wonders of the universe. Explanations are given in simple everyday language on the influences which fix the stars in their courses. **42p**

Patrick Moore's "Atlas of the Universe"
The first ever atlas of the entire universe containing over 1,300 maps, diagrams, charts and photographs in full colour, two colour and black and white. This work incorporates the results of new knowledge made available by recent strides in space travel and research. **£10.75**

46

MB

Popular Star Atlas Inglis
Contains 16 astronomical charts, etc. **40p**

Fun With Scientific Experiments Freeman
describes more than 40 fascinating experiments—profusely illustrated. **80p**

"Gemini" Celestial Globe
12 in. in dia. revolving to the touch in a graduated full meridian. **£10.50**

Guide to Mars Patrick Moore
An exciting introduction to Mars—the Red Planet—one of the most fascinating heavenly bodies known to mankind. **80p**

Satellites of the Solar System Sandner
A well-written illustrated book containing chapters on Jupiter, Saturn, Neptune, etc. **£1.80**

ASTRONOMY Baker
A beautifully written and comprehensive text book of astronomy, ideally suited for the serious amateur and for School and College. 557 pages, profusely illus. **£4.20**

The First Book of Light Harrison
Illustrated with photographs and diagrams. This introduction to light explores its many various aspects and gives simple and clearly written answers to dozens of different questions. 85 large pages. **62p**

The Moon Wilkins & Moore
A sumptuous volume of 388 large pages with magnificent photographs, maps and drawings. A most complete and detailed guide to the Lunar surface. **£3.15**

Handbook for Telescope Making N. E. Howard
Step by step instruction is given on the simple hand grinding, polishing and testing of a mirror. Profusely illustrated. **£2.50**

Signpost to the Stars Butler
An attractive introduction to star study on novel and simple lines. **12p**

The Night Sky The Times
A spirally bound booklet containing charts of the night sky for every month of the year arranged in a manner convenient for direct observation. **25p**

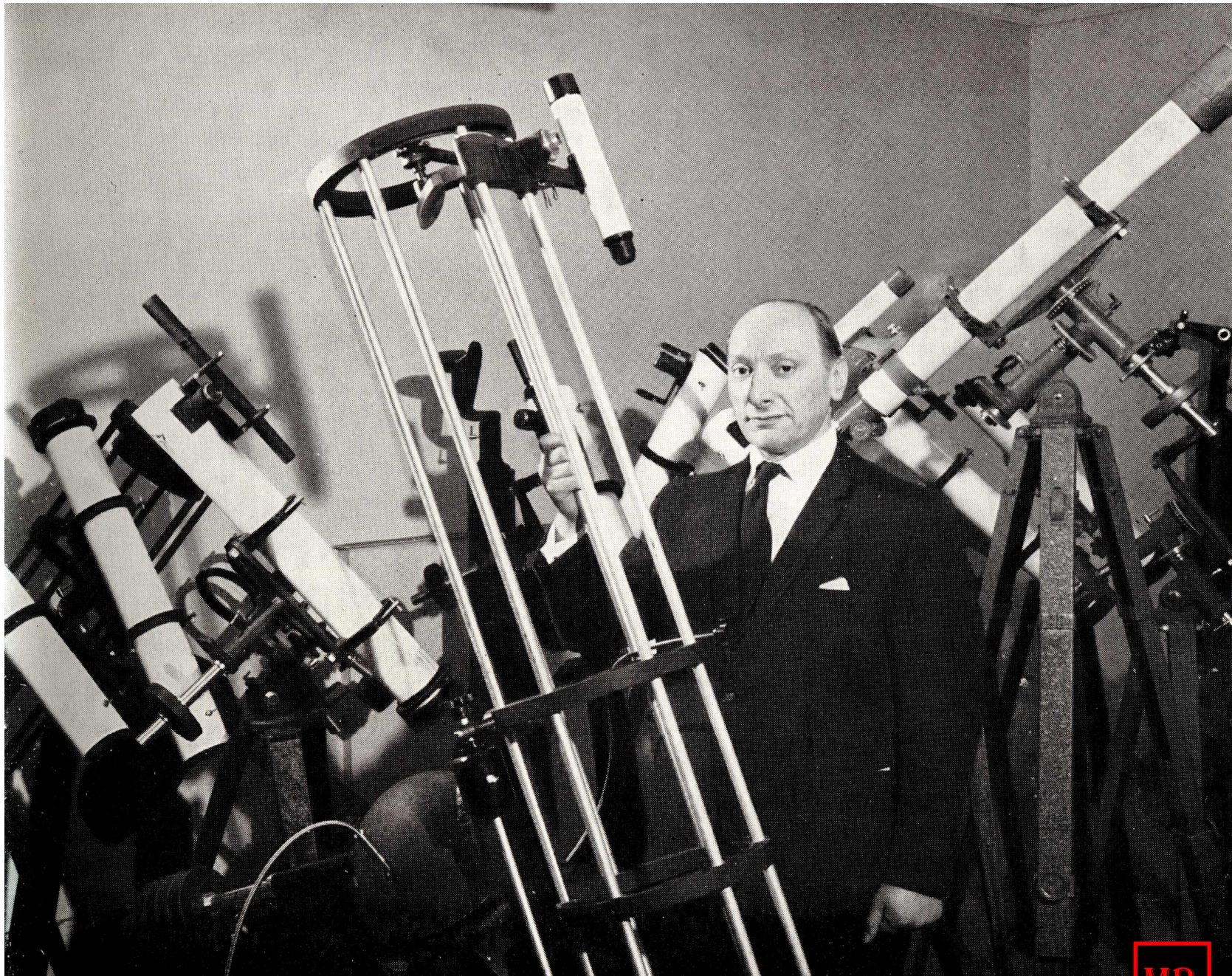
Your Book of Astronomy Patrick Moore
Covers a surprisingly wide range of information for the amateur astronomer. Well illustrated. **70p**

Revolving Planisphere Philips
Showing the principle stars visible for every hour in the year and at any particular hour on any date. Only the stars visible at the time are shown. 10 in. dia. **69p**

Observation Astronomy for Amateurs J. B. Sidgwick
An invaluable guide and reference book. Illustrated. **£2.62**

Teach Yourself Astronomy
Well written and extremely readable. **42p**

Introducing Astronomy J. B. Sidgwick
An excellent and most interesting introduction to astronomy. Ideal for those with no previous knowledge of the subject. Illustrated. **42p**



CHARLES FRANK LIMITED
has remained a family
business since the turn of
the century.

Arthur Frank, F.B.O.A.
Managing Director



Head Office

Mail Order and Wholesale Departments
145 QUEEN STREET, GLASGOW, C.1
Telephone 041-221 6666

Retail Shops and Showrooms
2-4 ROYAL EXCHANGE SQUARE
GLASGOW, C.1
Telephone 041-221 6666

67-75 SALTMARKET, GLASGOW, C.1
Telephone 041-552 2000
041-552 2106

18-20 FORREST ROAD, EDINBURGH
Telephone 031-225 5579

39 HIGH STREET, AYR
Telephone 0292 68868

Factory and Workshops
19 COCHRANE STREET, GLASGOW

Printed by Jackson & Lowe Ltd, Glasgow

***Photographic
Optical and Scientific
Instrument Makers and
Dealers since 1907***

CHARLES FRANK LTD

145 QUEEN STREET, GLASGOW, C1, SCOTLAND
Telephone 041-221 6666

MB

