

Diagram of a B&L Protar VIIa made up of two identical Protars VII. Each Protar VII is a complete anastigmat, usable alone or in combination with other Series VII Protars to form convertible doublets.

BAUSCH & LOMB

PROTARS—VII and VIIa

IN the Series VII and VIIa Protars the scientific and technical photographer is provided with lens equipment to cover a wide variety of work.

Series VII Protars are single anastigmats, composed of four thin glass elements cemented together and carefully mounted in a metal cell of standard size which fits either end of the lens barrel or shutter. The single Series VII Protar is so highly corrected for spherical, astigmatic and chromatic aberrations that it can be used alone with entire satisfaction, and is practically rectilinear over plate areas for which it is listed.

Series VIIa Protars are doublets, consisting of a pair of Series VII Protars of like or unlike foci, fitted in a barrel or shutter—one Series VII element being used on each side of the diaphragm. Thus a Series VIIa Protar can be chosen to make available two focal lengths when similar Series VII Protars are used and three focal lengths when Series VII Protars of unequal foci are chosen. The

speed of the doublet is in every case greater than that of the single combination ($f:12.5$) and will be $f:6.3$ when combinations of equal focal length are used, $f:7$ and $f:7.7$ when combinations of unequal focal length are chosen.

The Bausch & Lomb Series VIIa Protar is a truly convertible anastigmat. This means that the owner can add Series VII Protars at any time to increase the number of focal lengths. Any Series VIIa Protar, $f:7$ or $f:7.7$, by the addition of One Series VII Protar of suitable focal length, will provide the working equivalent of six separate photographic objectives, giving the photographer more complete control of perspective. He can operate under conditions requiring medium wide angle to long focus lenses.

Thus, a Series VIIa Protar is a high grade photographic objective which, complete, can be used for all critical work. At the same time the Protar VIIa provides one or two highly corrected longer focus combinations, in effect, telephoto anastigmats. These, with modern sensitive material, have

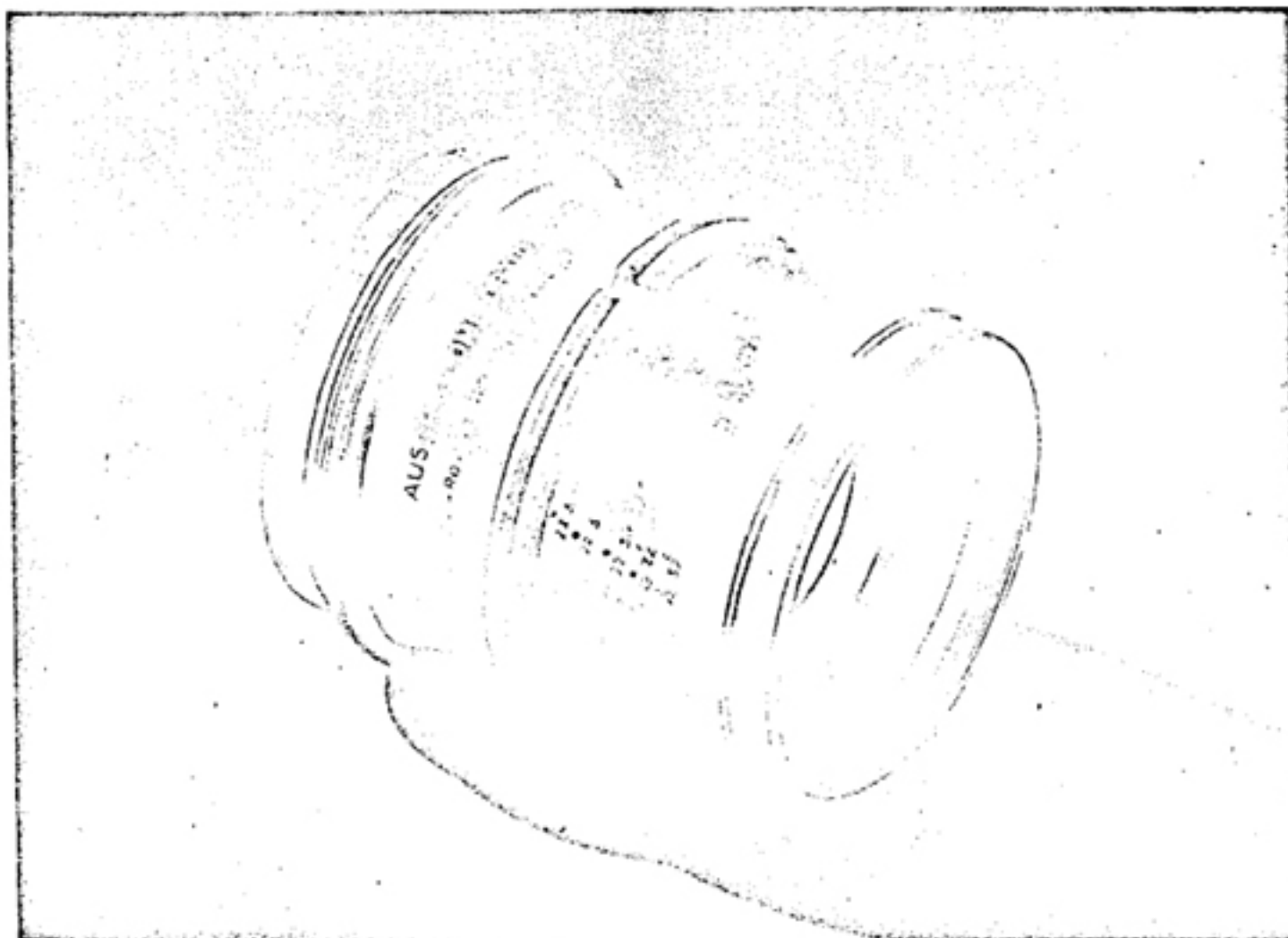
sufficient speed to cover any type of exposure required.

This feature makes the Series VIIa Protar desirable for use on modern hand, clinical, commercial and reflecting cameras with sufficient bellows extension to permit use of the single combinations. The extensive use of the Series VIIa Protar by commercial photographers is evidence of its value in filling widely varied needs with the minimum outlay for apparatus.

The Series VIIa Protar is recommended for the highest class architectural, engineering, nature, biological and anatomical photography; expeditions and geological surveys; progress of work and clinical records in black and white. Its reserve covering power and even illumination make it desirable in any work where the full range of camera movements is required.

The Series VIIa Protar, $f:6.3$, is recommended for three-color separation work.

Recommendations for combinations to fill specific needs are made gladly on request.



Convertible Protar VIIa,
8 x 10, in F Set Barrel Mount

Protar VII, f:12.5

Available in Cell without Barrel or Shutter, in Barrel with Iris Diaphragm, and Factory Fitted Shutters. See Price List for Mountings

Plate Covered with Full Aperture, Inches	Equivalent Focus, Inches	Back Focus, Inches	Equivalent Focus in mm	Back Focus in mm	Speed <i>f</i>
5 x 7	9	9 $\frac{3}{4}$	228	248	12.5
6 $\frac{1}{2}$ x 8 $\frac{1}{2}$	11 $\frac{1}{2}$	12 $\frac{1}{2}$	290	315	12.5
8 x 10	13 $\frac{3}{4}$	15 $\frac{1}{4}$	350	385	12.5
10 x 12	16 $\frac{1}{4}$	17 $\frac{3}{4}$	415	450	12.5
11 x 14	19	20 $\frac{1}{2}$	485	520	12.5
12 x 16	23 $\frac{1}{2}$	25 $\frac{1}{2}$	600	650	12.5
13 x 16	27	30	690	760	12.5

Convertible Protar VIIa, f:6.3, f:7.0 and f:7.7

Available in Barrel with Iris Diaphragm and Factory Fitted Shutters. See Price List for Mountings

Plate Covered with Full Aperture, Inches	Equivalent Focus, Inches	Equivalent Focus in mm	Speed <i>f</i>	E. F., Inches—Component Series VII Protars	
				Front Lens	Back Lens
4 x 5	5 $\frac{1}{8}$	131	6.3	9	9
4 $\frac{1}{4}$ x 6 $\frac{1}{2}$	5 $\frac{3}{4}$	146	7.0	11 $\frac{1}{2}$	9
4 $\frac{1}{4}$ x 6 $\frac{1}{2}$	6 $\frac{1}{4}$	158	7.7	13 $\frac{3}{4}$	9
4 $\frac{1}{2}$ x 7 $\frac{1}{4}$	6 $\frac{1}{2}$	165	6.3	11 $\frac{1}{2}$	11 $\frac{1}{2}$
5 x 7	7 $\frac{1}{8}$	182	7.0	13 $\frac{3}{4}$	11 $\frac{1}{2}$
5 x 8	7 $\frac{5}{8}$	195	7.7	16 $\frac{1}{4}$	11 $\frac{1}{2}$
5 x 8	7 $\frac{7}{8}$	202	6.3	13 $\frac{3}{4}$	13 $\frac{3}{4}$
6 $\frac{1}{2}$ x 8 $\frac{1}{2}$	8 $\frac{5}{8}$	218	7.0	16 $\frac{1}{4}$	13 $\frac{3}{4}$
6 $\frac{1}{2}$ x 8 $\frac{1}{2}$	9 $\frac{1}{8}$	233	7.7	19	13 $\frac{3}{4}$
6 $\frac{1}{2}$ x 8 $\frac{1}{2}$	9 $\frac{3}{8}$	237	6.3	16 $\frac{1}{4}$	16 $\frac{1}{4}$
7 x 9	10	255	7.0	19	16 $\frac{1}{4}$
7 x 9	11	280	7.7	23 $\frac{1}{2}$	16 $\frac{1}{4}$
7 x 9	10 $\frac{3}{4}$	275	6.3	19	19
8 x 10	12	305	7.0	23 $\frac{1}{2}$	19
8 x 10	12 $\frac{3}{4}$	325	7.7	27	19
8 x 10	13 $\frac{1}{2}$	340	6.3	23 $\frac{1}{2}$	23 $\frac{1}{2}$
10 x 12	14 $\frac{1}{2}$	370	7.0	27	23 $\frac{1}{2}$
10 x 12	15 $\frac{3}{4}$	400	6.3	27	27

Lens in barrel is furnished in a case; cap, flange and screen ring are included. When lens is ordered in shutter, case is not furnished; cap, flange and screen ring included. The diaphragm scale is graduated for each focal length of Protar VIIa.

C Set—for 4 x 5

Complete C Set consists of barrel or shutter with three Series VII Protars (9", 11 1/4", 13 3/4" E. F.) which singly and in combination provide 6 focal lengths and coverage shown in table below.

E. F., Inches			Speed f	Size of Plate Covered, Inches
Front	Rear	Comb.		
	9		12.5	5 x 7
	11 1/4		12.5	6 1/2 x 8 1/2
	13 3/4		12.5	8 x 10
11 1/4	9	5 3/4	7.0	4 1/4 x 6 1/2
13 3/4	9	6 1/4	7.7	4 1/4 x 6 1/2
13 3/4	11 1/4	7 1/8	7.0	5 x 7

D Set—for 5 x 7

Four Series VII Protars (11 1/4", 13 3/4", 16 1/4" and 19" E. F.) in barrel or shutter make up the complete D Set, which provides 9 focal lengths and coverage as shown in table below.

E. F., Inches			Speed f	Size of Plate Covered, Inches
Front	Rear	Comb.		
	11 1/4		12.5	6 1/2 x 8 1/2
	13 3/4		12.5	8 x 10
	16 1/4		12.5	10 x 12
	19		12.5	11 x 14
13 3/4	11 1/4	7 1/8	7.0	5 x 7
16 1/4	11 1/4	7 5/8	7.7	5 x 8
16 1/4	13 3/4	8 5/8	7.0	6 1/2 x 8 1/2
19	13 3/4	9 1/8	7.7	6 1/2 x 8 1/2
19	16 1/4	10	7.0	7 x 9

BAUSCH & LOMB CONVERTIBLE PROTAR VIIa

SETS C, D and F

As a convenience to technical photographers Protar VIIa Sets for 4 x 5, 5 x 7 and 8 x 10 negative size are listed. For owners of cameras with sufficient bellows draw to utilize the components separately these

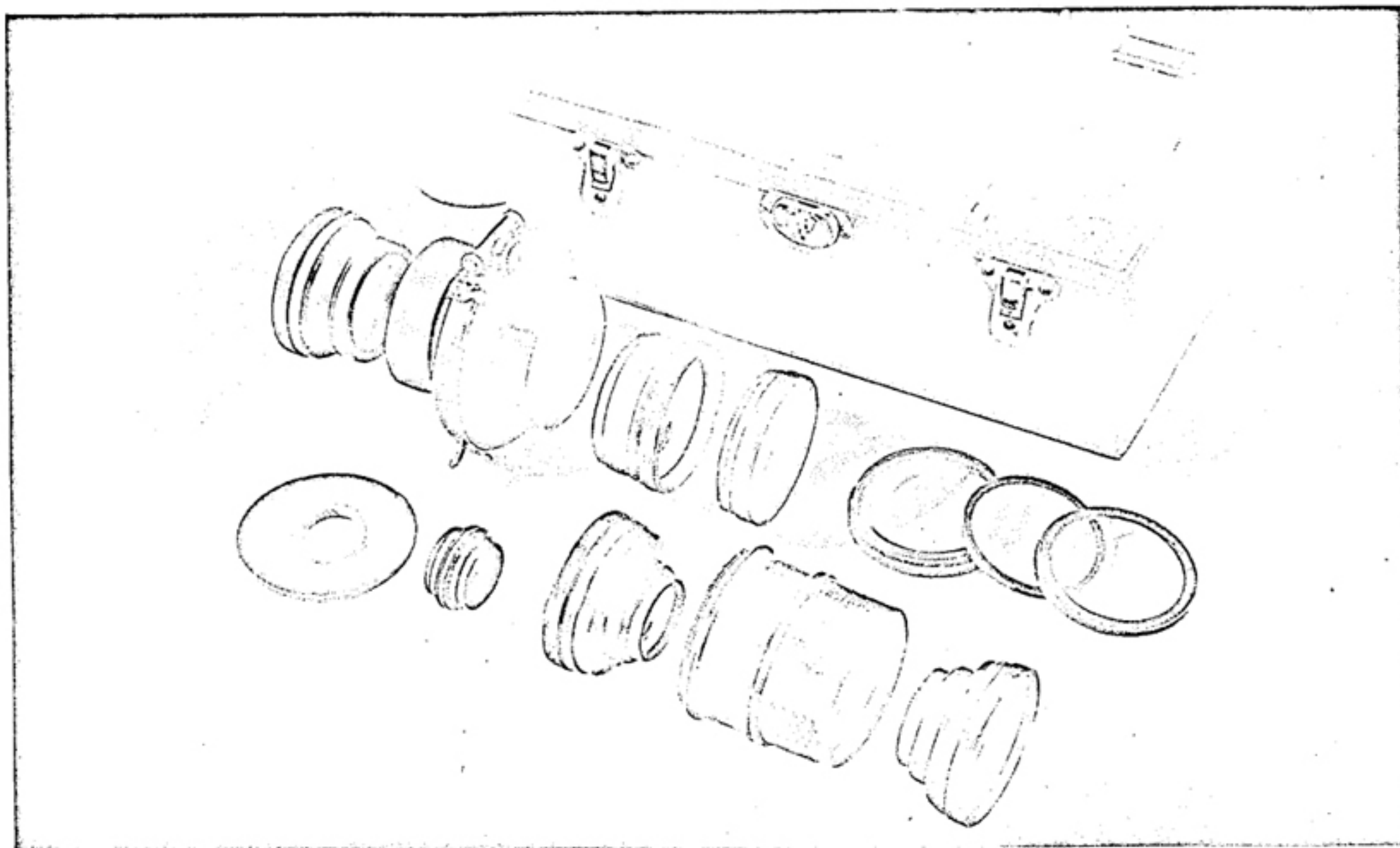
sets are very desirable. For the commercial photographer working with 8 x 10, the F Set is available. It provides in one outfit all the lens equipment needed to cover practically every assignment.

F Set—for 8 x 10

9 focal lengths and coverage as shown below are provided by four Series VII Protars (16 1/4", 19", 23 1/2", 27 1/4" E. F.). Supplied in suitably marked barrel or shutter.

E. F., Inches			Speed f	Size of Plate Covered, Inches
Front	Rear	Comb.		
	16 1/4		12.5	10 x 12
	19		12.5	11 x 14
	23 1/2		12.5	12 x 16
	27		12.5	13 x 16
19	16 1/4	10	7.0	7 x 9
23 1/2	16 1/4	11	7.7	7 x 9
23 1/2	19	12	7.0	8 x 10
27	19	12 3/4	7.7	8 x 10
27	23 1/2	14 1/2	7.0	10 x 12

Convertible Protar VIIa Complete F Set for 8 x 10 Negative Size, including F Set Protar VIIa and Series V Wide Angle, filters, barrel, shutter and case



BAUSCH & LOMB OPTICAL CO.

ROCHESTER 2, NEW YORK



February 9, 1960

[REDACTED]

Reference: Your Letter February 2

Dear Sir:

Thank you very much for your letter inquiring of the uses of our Protar VII Lenses.

We are enclosing copies describing these lenses from one of our older catalogs. From your description, we believe you have the D-set as described on page 14. The chart gives information on the combinations these can make.

We trust this information will prove satisfactory.

Very truly yours,

M. Malowitz

Photographic & Special
Products Section

MMalowitz:JMC