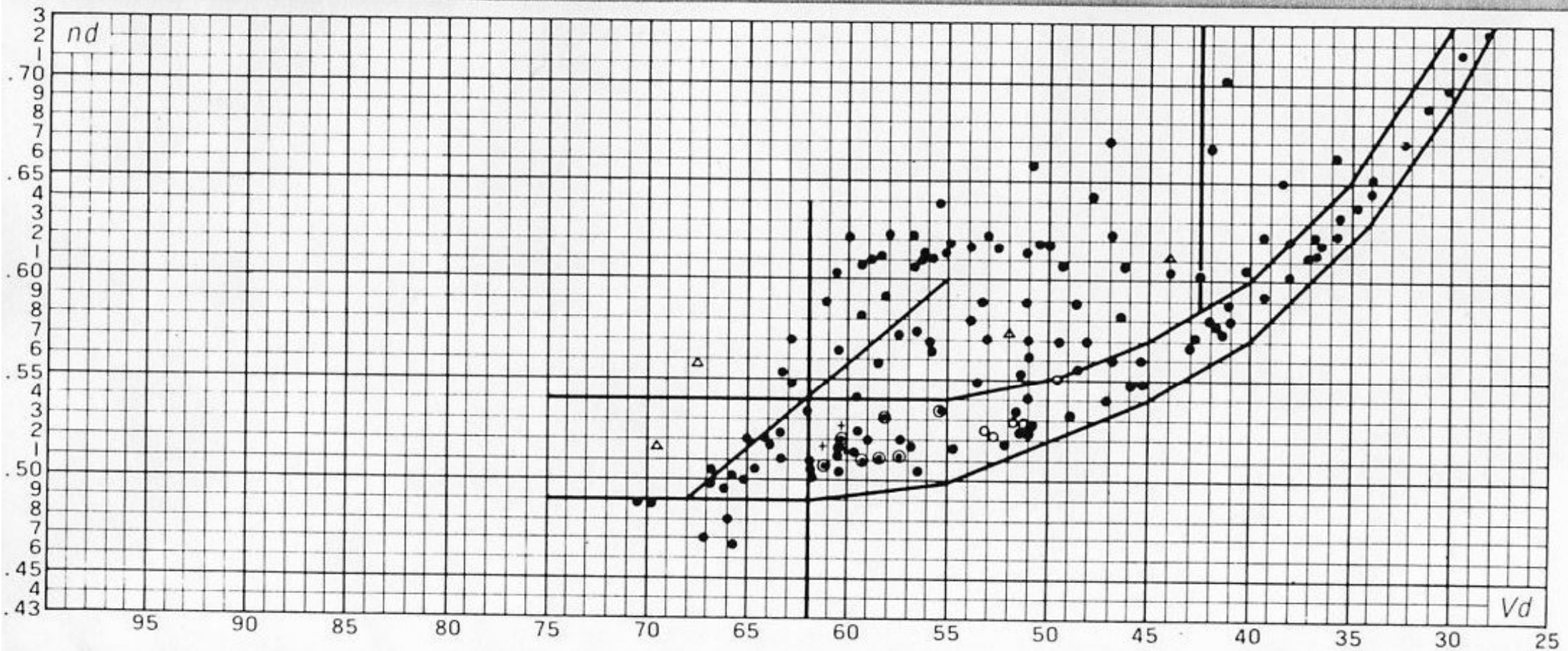


# ASAHI PENTAX

## ULTRA-ACHROMATIC-TAKUMAR 85mm F4.5 • 300mm F5.6

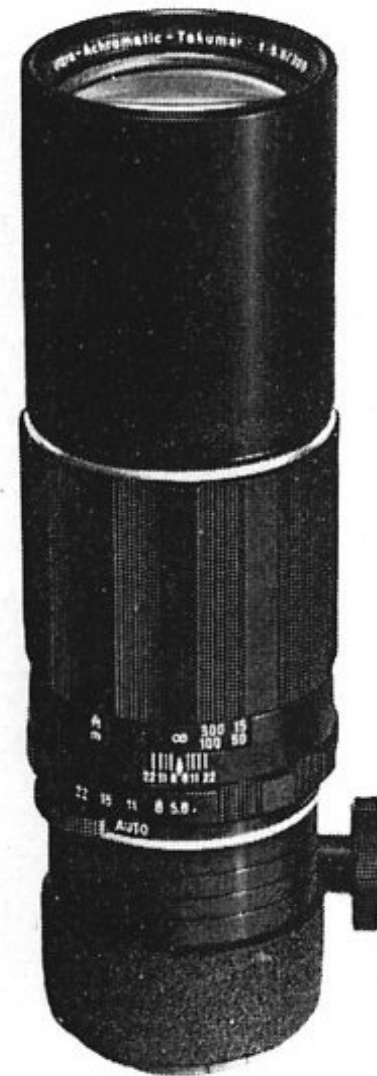
OPERATING MANUAL



# ULTRA-ACHROMATIC-TAKUMAR



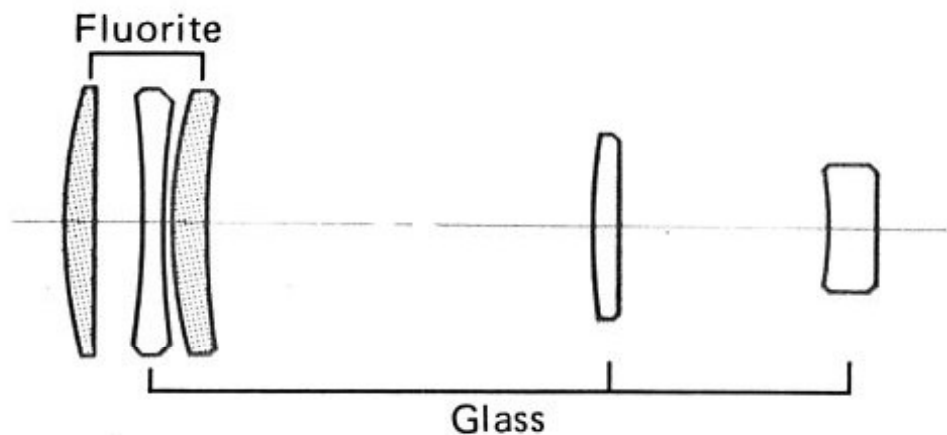
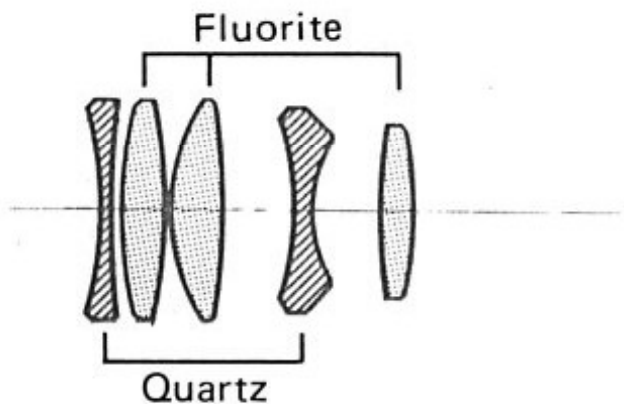
85mm F4.5



300mm F5.6

# SPECIFICATIONS

Focal length	85mm	300mm
Chromatic aberration correction	220 ~ 1000m $\mu$	400 ~ 850m $\mu$
Lens element	5	5
Angle of view	29°	8°
Diaphragm	Fully automatic	Fully automatic
Aperture scale	4.5 · 8 • 11 · 16 · 22 (Mark “•” indicates f/5.6, and “•”, intermediate f/stop.)	5.6 · 8 · 11 · 16 · 22 (intermediate f/stop.)
Minimum distance	0.6m (2 ft.)	4.85m (16 ft.)
Weight	248g (8.7 oz.)	825g (29 oz.)
Filter	49mm screw-in type	58mm screw-in type
Lenshood	49mm screw-in type	Pull-out type (attached to lens)
Accessories	Filters for infrared photography (R62, R68, 862m) Filter for ultraviolet photography (365m)	



Infrared and ultraviolet photography is of interest to photographers, and to scientists and technologists as well, because it enables them to obtain results which are not possible with ordinary films. Optical lenses which are fully corrected against infrared and ultraviolet rays (those invisible rays which occur in the spectrum beyond the visible sector) are also used as collimators, relay lenses, etc. And the demand for them is expected to grow greatly in the future.

Within the past few years, we have added a new dimension to the possibilities of photography with Ultra-Achromatic-Takumar lenses.

These unique lenses are ideal for infrared and ultraviolet photography.

It will come as no surprise to most people that Asahi Optical Company was the one to create such unusual lenses. Asahi Pentax, after all, **pioneered** the development of "crystal optics" for ultraviolet photography.

Ultra-Achromatic-Takumar lenses are available in two models: the 85mm f/4.5, useful for ordinary and infrared shooting, but particularly helpful in close-up ultraviolet photography; and the 300mm f/5.6, designed especially for ordinary and infrared telephotography.

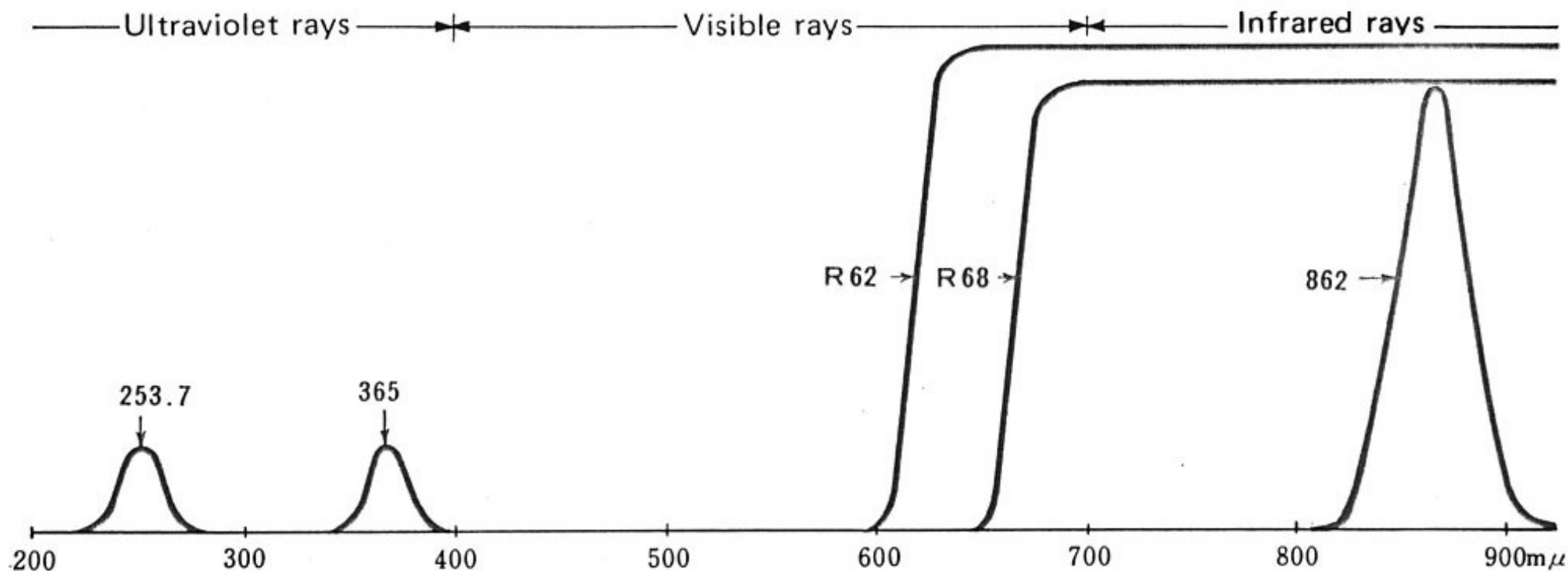
◆ **No Traditional Glass Used**

Unlike ordinary lenses, the Ultra-Achromatic-Takumar lenses do not consist of ordinary glass at all. Instead, they combine fluorite with quartz (an artificial crystal) to improve the transmission of ultraviolet as well as visible rays.

◆ **Fluorite Element — Very Low in Color Dispersion**

The fluorite element provides a special type of dispersion, bringing color dispersion to a minimum. When combined with quartz, it gives the lens designer a powerful tool for improving the chromatic aberration against the infrared and ultraviolet rays.

The Ultra-Achromatic-Takumar 85mm f/4.5 offers remarkably good performance over a wide range of wavelengths from 220 to 1,000 millimicrons and the 300mm f/5.6, from 400 to 800 millimicrons. They are even easier to handle than the usual crystal lenses, which need one special filter for focusing and another one for actual shooting. Ultra-Achromatic-Takumar lenses have to be focused only against the visible spectrum. For actual shooting, it is merely a question of mounting a particular filter on the front of the lens.



◆ **A Choice of Special Filters**

A total of seven filters are available for Ultra-Achromatic-Takumar lenses: two for ultraviolet photography and five for infrared photography. Of the five infrared filters, the R62 and the R68

are of the absorption type. The other three are of a special “interference” type—absorbing all wavelengths in a particular segment of the spectrum.

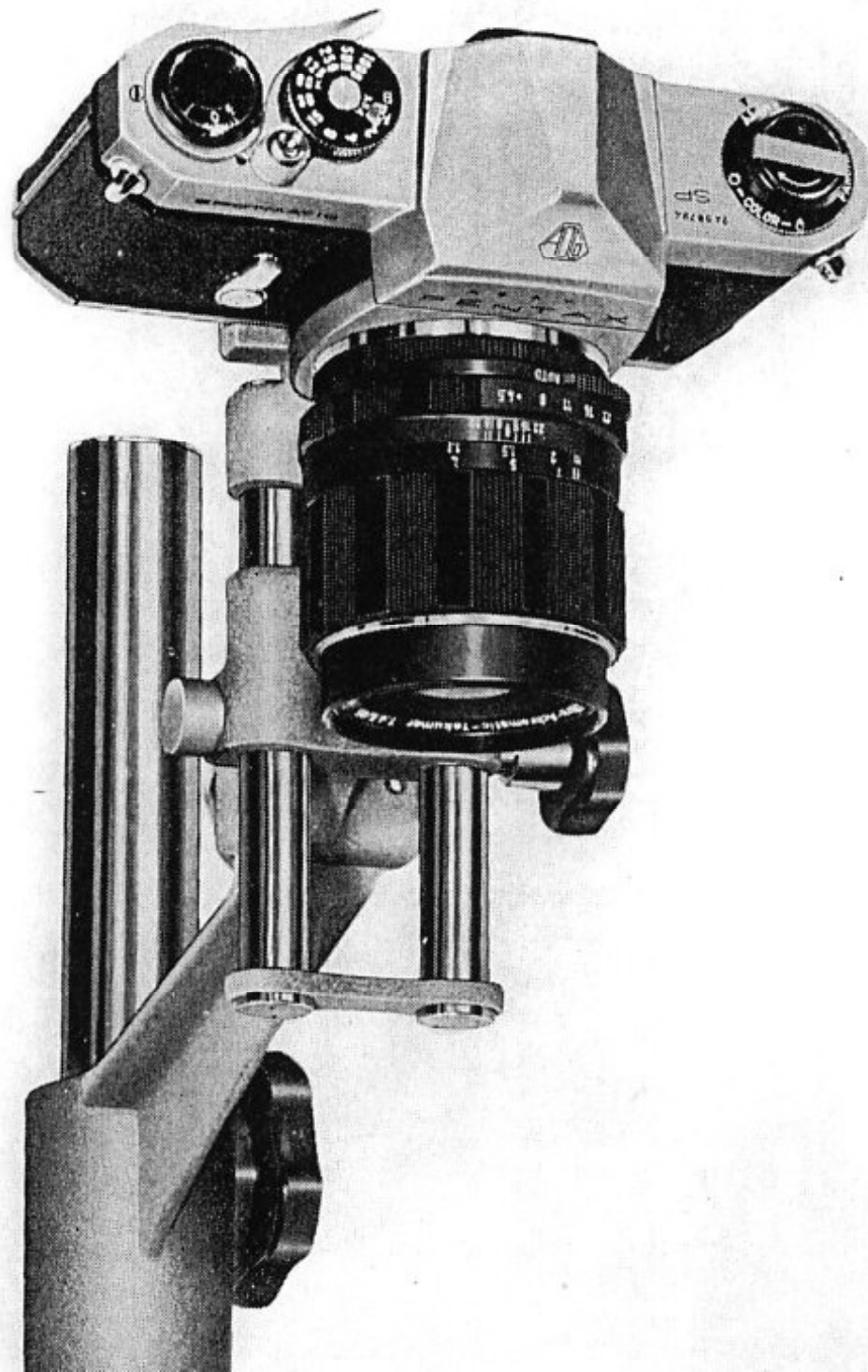
For ultraviolet photography	253.7mμ, 365mμ	Each of R62 and R68 is available in Types A and B, which differ only in frame configuration.
For infrared photography	R62A, R62B (620mμ), R68A, R68B (680mμ), 862mμ	

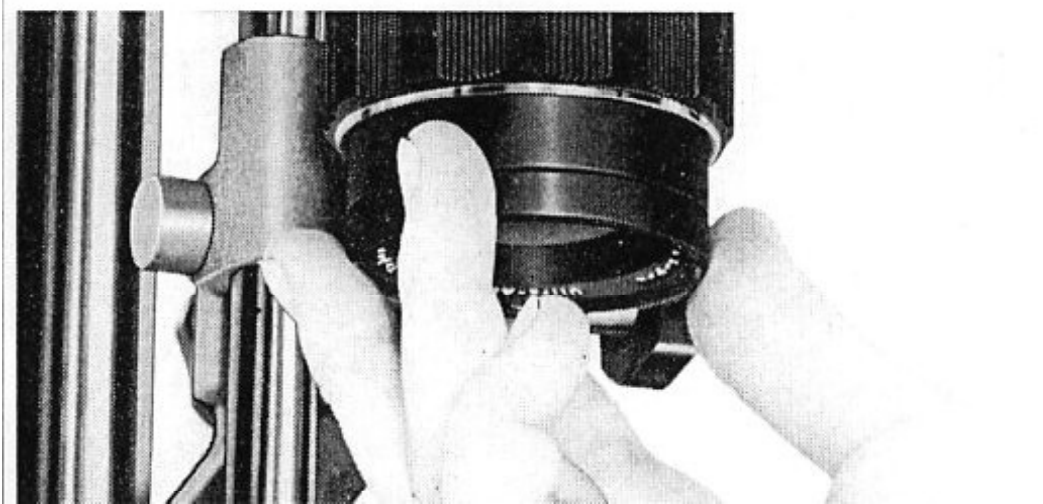
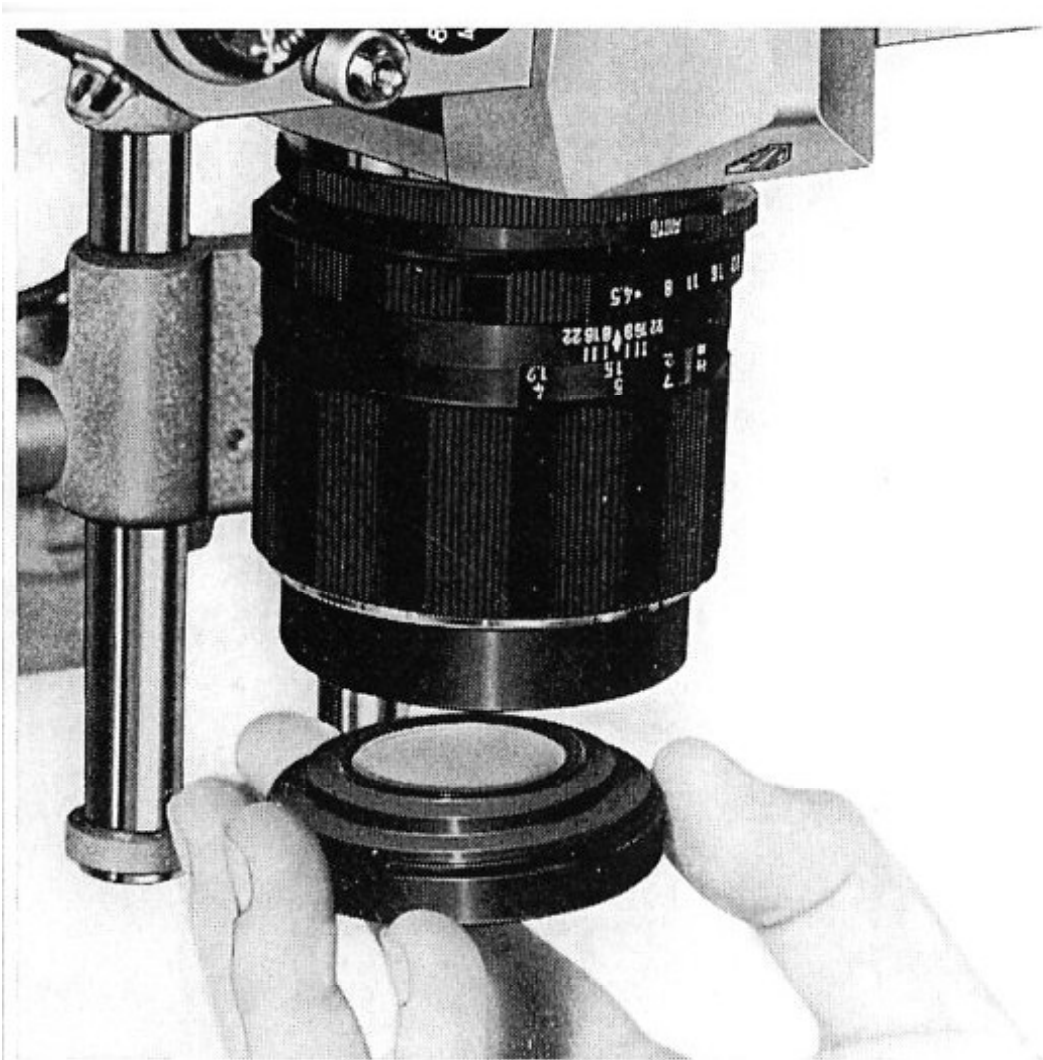
## 85mm F4.5

1. Focus the Ultra-Achromatic-Takumar lens for the visible spectrum, manipulating it in the same manner as the standard lens.

### *Notes:*

1. *The Pentax Copy Stand II is helpful for copy work.*
  2. *A closeup ring, Bellows unit or Auto-Bellows should be used for closeup photography.*
  3. *Use of a cable release minimizes camera movement.*
2. Select the light source and sensitive material according to your photographic needs.





3. Screw the proper filter into the front frame of the lens, making sure of its wavelength. Example: The ultraviolet filter  $365\text{m}\mu$  is used only when the light source has a wavelength of  $365\text{m}\mu$ . When using the R62 or R68 filter, choose either Type A or B. Type A is used for such films as Sakura Sekigai, and Type B, for Kodak Infrared.



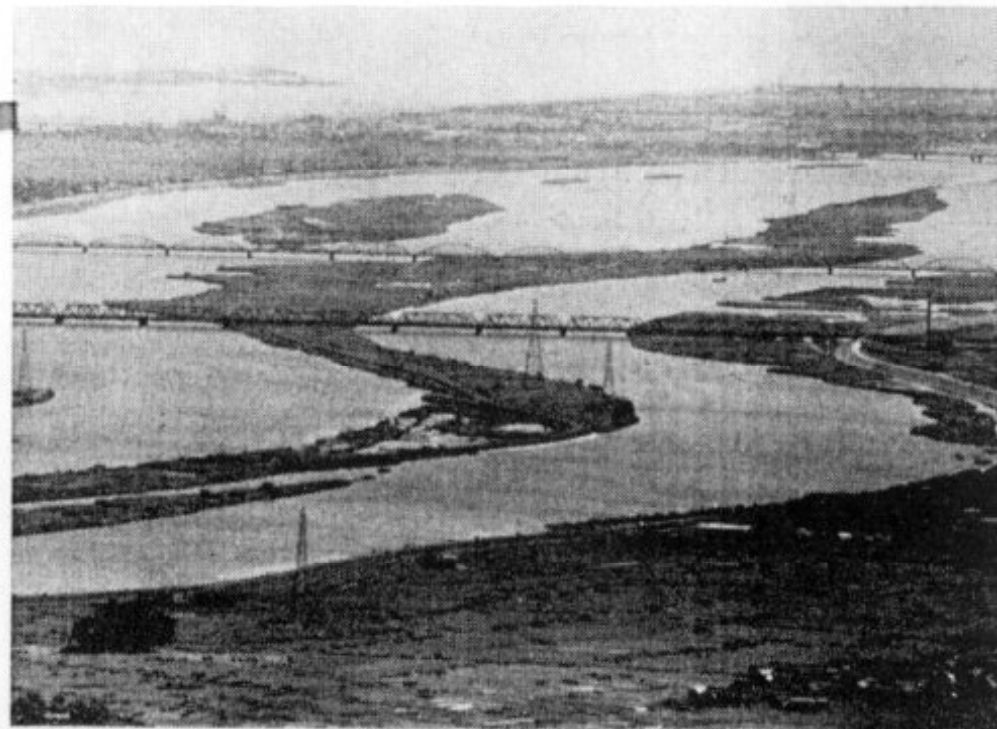
4. Ultra-Achromatic-Takumar lenses provide great clarity with the aperture fully open. Even better results are obtained, however, with settings between  $f/8$  and  $f/16$ .
5. Remember that proper exposure times differ according to the intensity of the light source, object distance, sensitive material, etc. An exact exposure time must be determined by a few tests.

## CAUTION

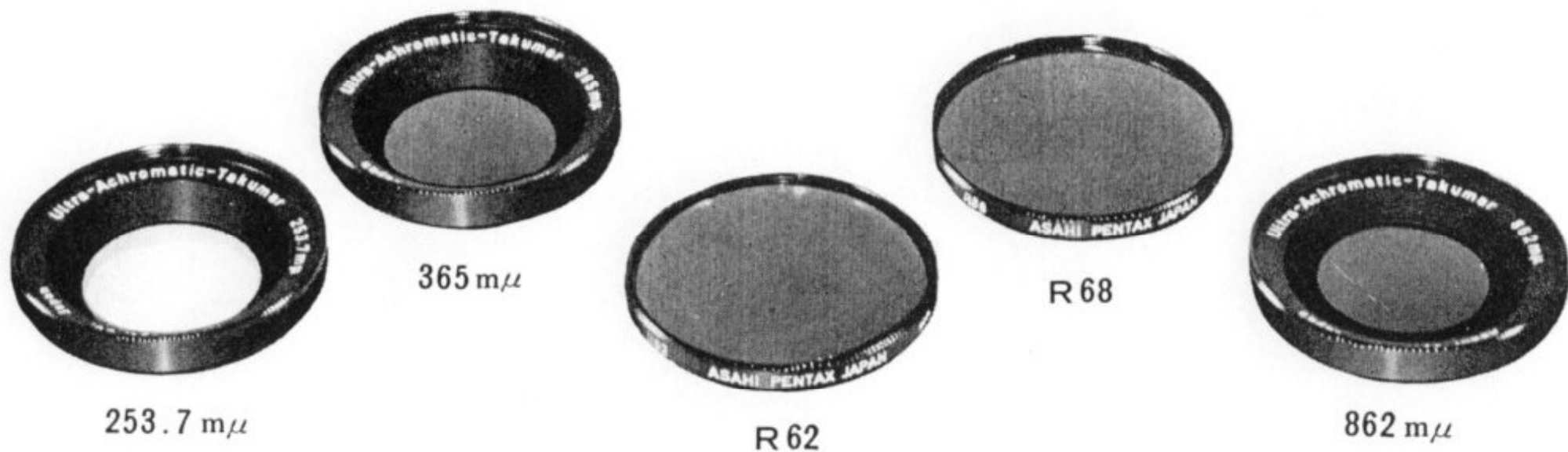
Take care not to look directly into an ultraviolet light source. The rays can do serious damage to your eyes. Sunglasses, however, afford considerable protection. Also, be sure to protect your skin from direct contact with an infrared source. As these rays are a kind of thermal ray, you can be burned by them.

## 300mm F5.6

1. As already described, focus the lens for the visible spectrum. Focus does not have to be reset for actual shooting. The 300mm f/5.6, when used for ordinary photography, provides even greater sharpness than the standard lens.
2. Select the light source and sensitive material according to your photographic needs.
3. Mount a suitable filter on the lens, making sure of its wavelength.  
The R62 and R68 filters, designed exclusively for the 85mm f/4.5, are available in two types. Such distinctions, however, do not exist in the filters for the 300mm f/5.6.



FILTERS FOR 85mm



Ordinary Photograph

2 012673 特別分割小切手

有効期限 35.4.1日より 35.6.30日まで

6ヶ月払券

(1,500円以上 10,000円以内)

36  
万 千 百 十  
8 0 0 0 円

35年 5月 3日

御利用者番号

日専連仙台会 107×11

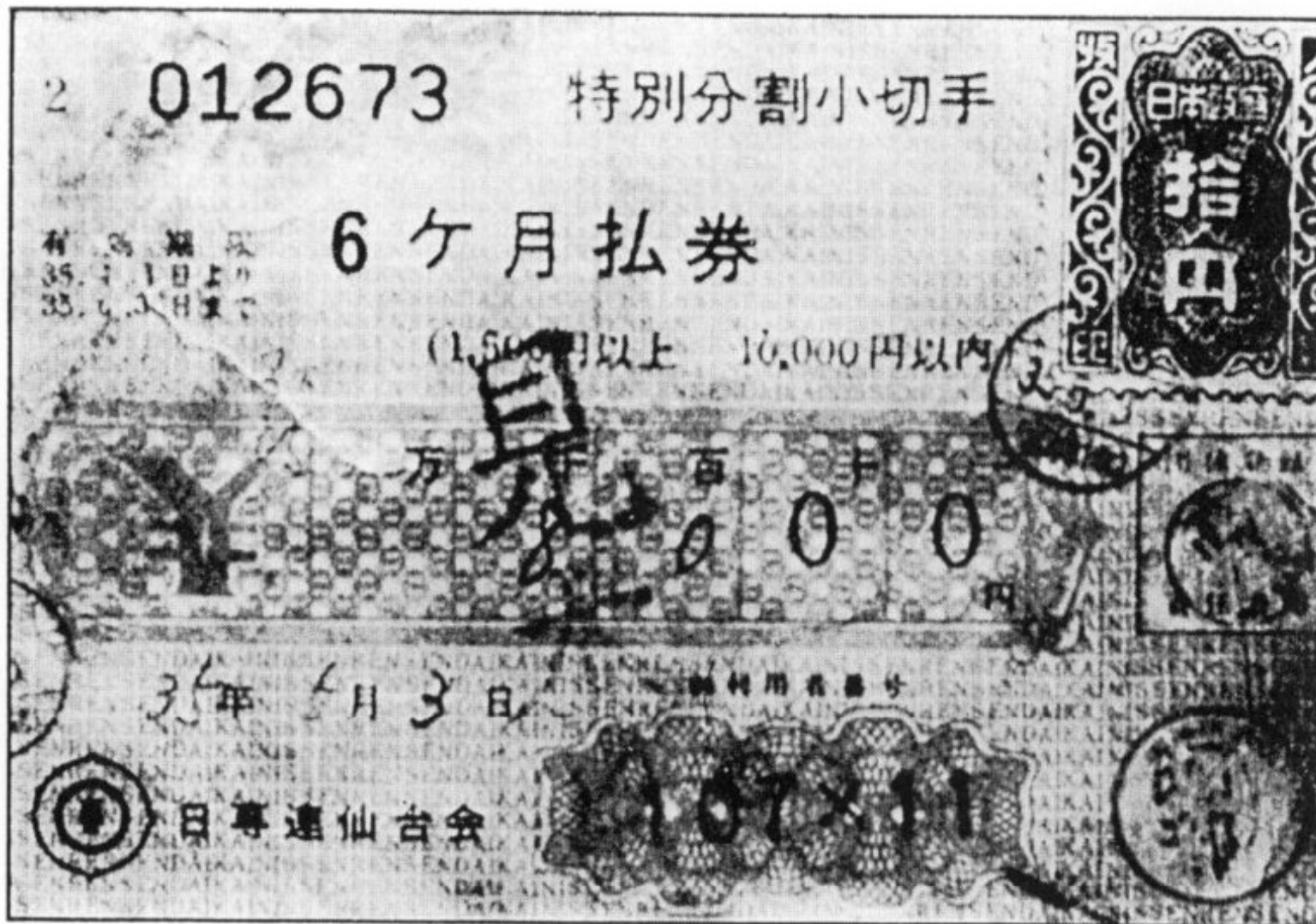
日本国政府 拾四

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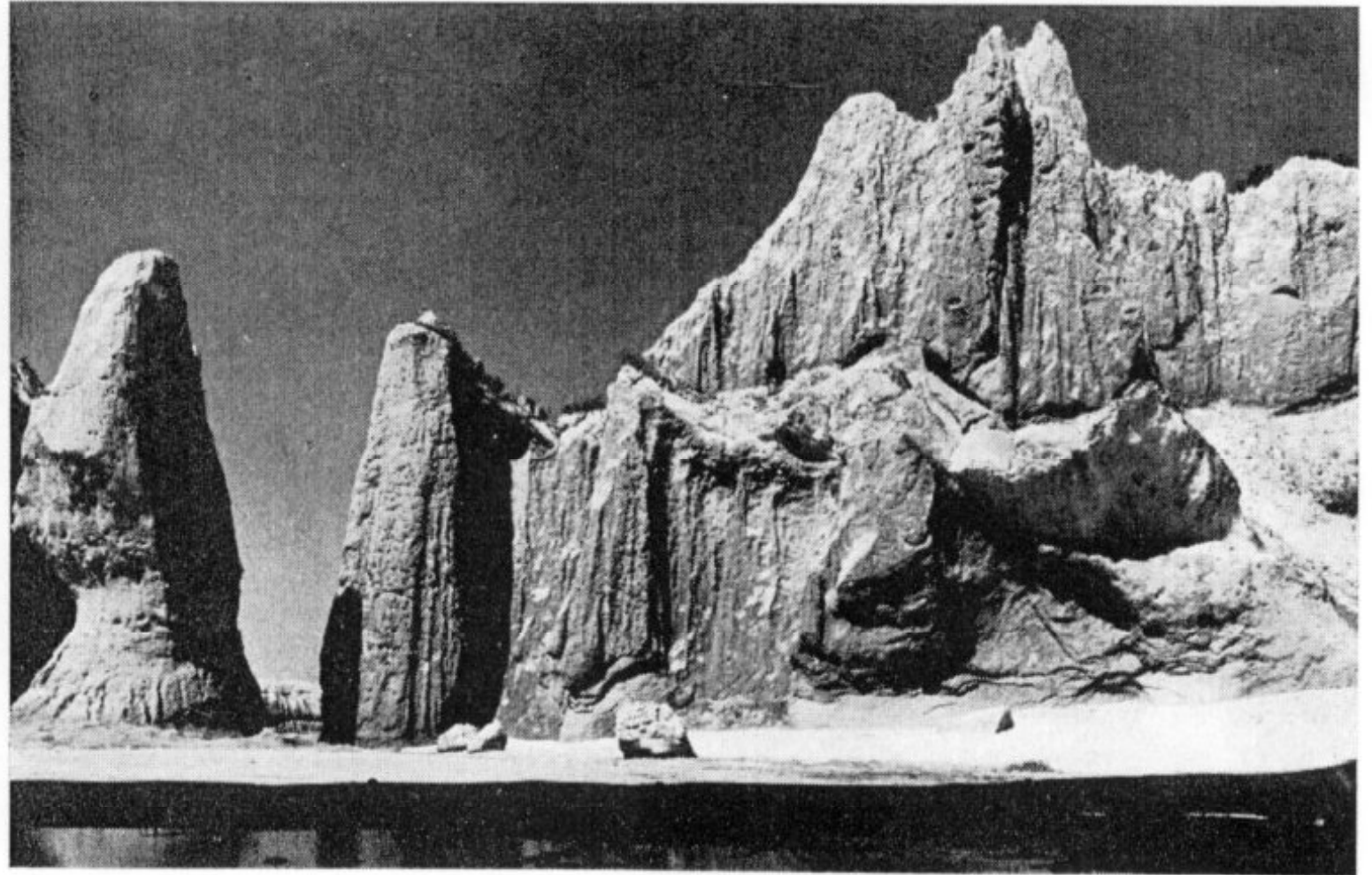
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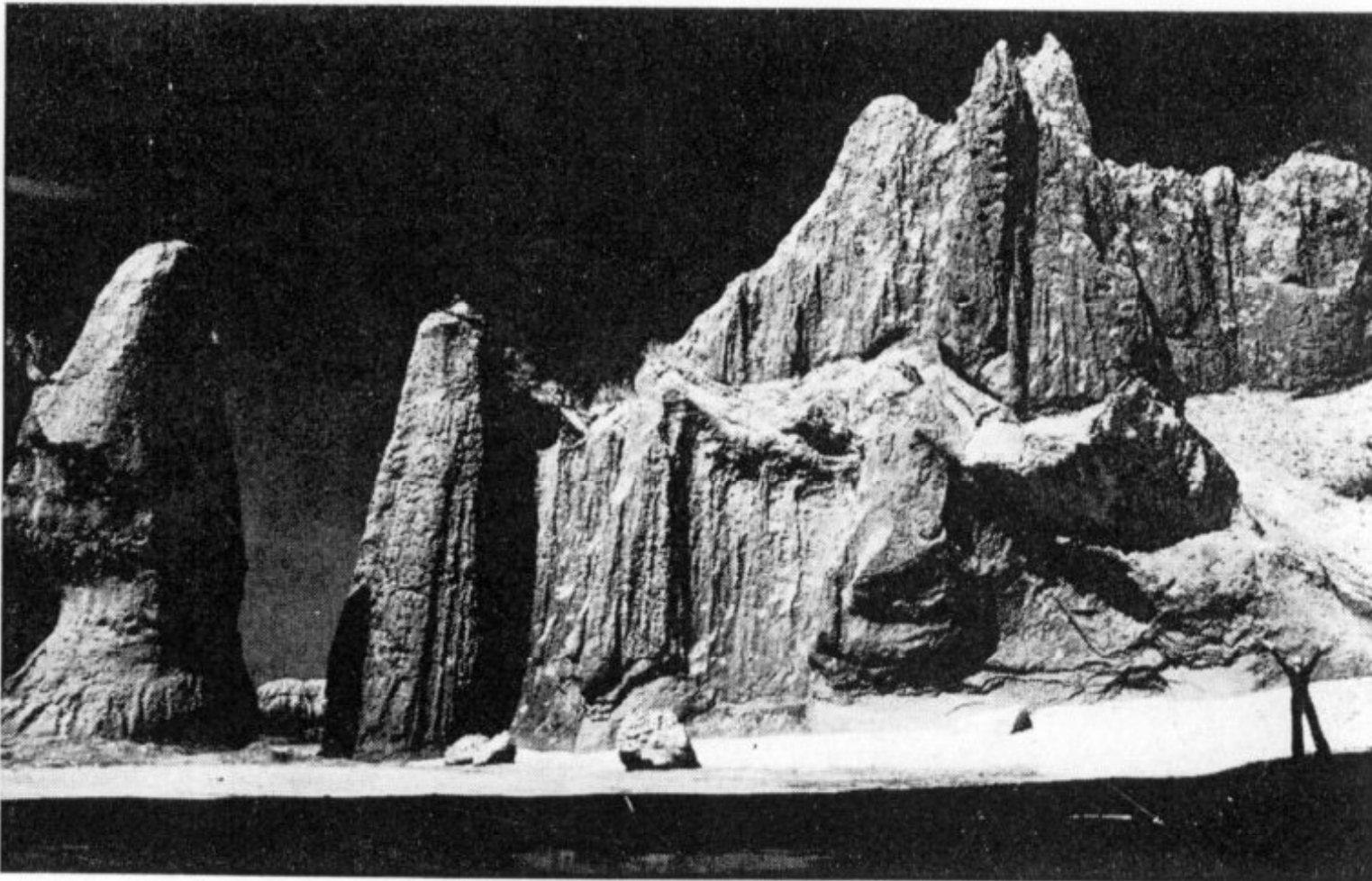




Ordinary Photograph



## Infrared Photograph





**ASAHI OPTICAL CO., LTD.** C.P.O. 895, Tokyo 100-91, JAPAN

**ASAHI OPTICAL EUROPE S.A.** Freight Bldg., Brussels National Airport, 1930 Zaventem, BELGIUM

**ASAHI OPTICAL EUROPE S.A. (Hamburg Office)** 2000 Hamburg 54 (Lokstedt), Grandweg 64, WEST GERMANY

**ASAHI OPTICAL (AMERICA) INC.** 15 East 26th Street, Suite 1710, New York, New York 10010, U.S.A.

**ASAHI OPTICAL BRASILEIRA IND. E COM. LTDA.** Rua Estados Unidos, 1053, São Paulo, BRASIL