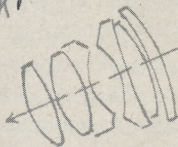
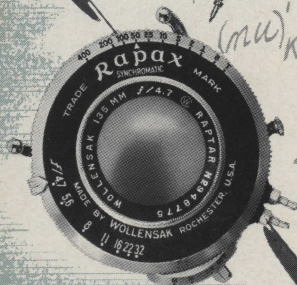
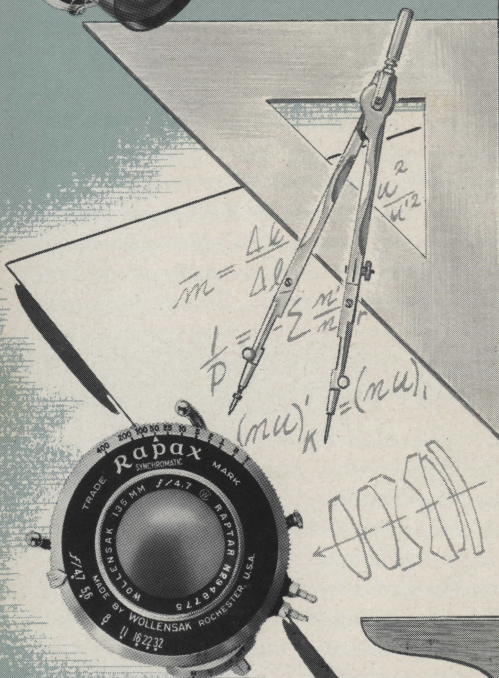
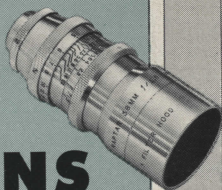
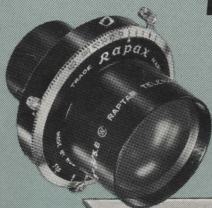


SELECTING MY LENS



$$\phi = \sum \bar{y}_i$$

Sum I

$$i = \frac{n}{v}$$

$$(n') = \frac{1}{v}$$

$$\frac{y}{r}$$

THE LENS IS THE HEART OF YOUR CAMERA

Selecting a really fine lens is the most important photographic equipment decision you have to make, regardless of the type of camera you buy or have. Without a lens that delivers sharp, clear pictures to the very edge of the film, that delivers high resolution without the sacrifice of contrast, that is color corrected, the most expensive camera box is a poor investment. The lens is the heart of any camera.

In selecting a lens you should look for two things: suitability and quality. The suitability of a lens is determined by the covering power (the area of the scene covered) and the focal length (size of the image). In general, a normal lens will cover a film when the focal length is equal to the diagonal dimension of the film. A telephoto lens, which has a longer focal length than the diagonal, will also cover the film, but the relative image sizes are increased while the area covered is decreased. To cut down the image size and increase the area covered, wide angle lenses are

used. In the case of these lenses, the film will be covered even though focal lengths are less than diagonal dimension.

Now what about *quality*? No matter what the focal length or the optical characteristics, the definition, sharpness or speed of the lens, the image carried is dependent upon the lens design, the materials used, the skill in manufacture and the integrity of the maker. That is how Wollensak can offer the following guarantee: "The excellent performance of Wollensak Raptars is unconditionally guaranteed."

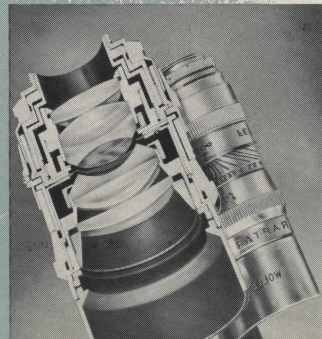
As a photographer you want the finest results obtainable. You rely on your camera and lens to enhance your skill. That is why you can't afford to use anything but the highest quality lens.

Some people think the engraving around the lens tells a sufficient story. It doesn't. The hidden elements you never see—the workmanship inside the lens barrel—determine the lens quality.

Cutaway of Raptar lens in Rapax shutter shows some of the more than 150 parts (almost twice as many as in the finest watch), and the lens elements mounted securely yet strain-free on their axis. Thus they are able to deliver pictures that sparkle . . . that have the tonal values one's eye sees.



Cutaway of Cine Raptar lens showing the lens elements . . . the skill in mounting . . . the carefully machined lens barrel which not only houses and protects the elements, but holds them strain-free and in optical alignment.



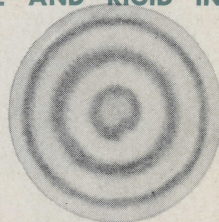
WHAT MAKES A WOLLENSAK RAPSTAR A SUPERIOR LENS?

There are many factors that go to make up Raptar quality. Every one is important. None can be slighted if the uniformity and quality are to remain. Here are some of the important ones:

1 EXPERIENCE—Over fifty years in producing lenses for photographic purposes. Expert lens making is a trade that must be learned by years of apprenticeship.

2 CARE IN DEVELOPMENT AND DESIGN—All lenses bearing the Wollensak name are designed by Wollensak lens designers, developed and manufactured in Wollensak plants. This means that the designer knows the equipment, tools and skilled labor he has to work with in producing the fine lens that he has designed. Some manufacturers have not this control over design, development and manufacture. As a result, design features are sacrificed.

3 QUALITY CONTROL AND RIGID INSPECTIONS at intermediate steps, ending with final resolution and contrast tests. A lens with spherical surface correct to more than three fringes is acceptable to most manufacturers (Figure 1). But



(Figure 1)

Raptar lenses are spherically correct to *three* fringes or less.

4 MATERIALS—Choice of highest quality materials is extremely important. For example, Wollensak's large stock pile of high optical quality glass (e.g. rare earth) permits a wide selection and choice of this glass to meet the specific requirement as called for in the original design. Only by controlling the selection of glass and by producing the complete product from start to finish within our own plant can the critical qualities required in the original lens design be maintained. Thus, there is never any compromise with quality at Wollensak because of inadequate selection of materials.

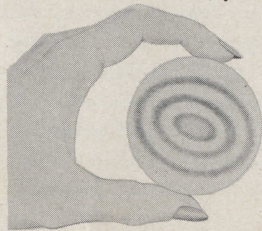
5 CRAFTSMANSHIP—Quality workmanship is accomplished by highly skilled craftsmen working to a fine lens design. Making a good lens takes teamwork: a fine design, and the ability to make the lens exactly to that design. The high quality and standards of Raptar lenses are a direct result of this teamwork.

6 TOOLING—Because Raptars are made to the most rigid tolerances, unsurpassed in the optical field, many special tools had to be designed and built at Wollensak. Thus the highest standards are always assured.

THERE IS ONLY ONE RAPSTAR...THE FINEST LENS

7 MOUNTING—Precise, careful mounting of the lens elements in the lens barrels or shutters is as important as the fine qualities of the lens itself. If the mountings are not exact, lens performance will be impaired or destroyed.

The elliptical shape of Newton rings (Figure 2) is caused only by the pressure of two fingers. Similar pressure from poor mounting will distort the lens and destroy image quality. Raptar lens



(Figure 2)

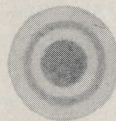
elements are mounted strain-free, to exacting requirements and are controlled by very rigid standards and inspections. They do not lose true spherical shape. This assures you of the finest results.

8 HIGHEST RESOLUTION WITHOUT SACRIFICING CONTRAST—This is one of the most important points in fine lens performance. Two lenses of the same speed and focal length made by two different companies could have the same resolution, yet one will produce sharper pictures. The reason for this is that one lens has high resolution without sacrificing contrast and in the manufacture of the other lens, contrast has been sacrificed to obtain high resolution. All Wollensak Raptar lenses have high resolution without the sacrifice of contrast.

9 WOCOTING—This anti-reflection, hard coating effectively reduces internal light reflections and flare, greatly increases brilliance and detail. A basic process, but one that has been improved by Wollensak to insure exceptionally

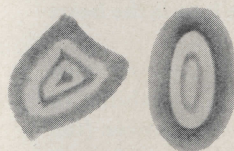
long-lasting coating. In addition Wollensak coats all air-to-air surfaces, not just the external lens surface.

10 TESTING—Before any product leaves our plant it undergoes a series of tests. A



(Figure 3)

lens, for example, must meet the design specifications without compromise. Wollensak has designed many test instruments to check the quality of fabrication, step by step to the final accurate test on the precision optical bench and precision camera.



(Figure 4)

Perfect star image indicates a well corrected lens with truly spherical surfaces. (Figure 3). All Raptar lenses must

show this form of star image in optical bench tests to be acceptable.

Inferior lenses with non-spherical surfaces, or poorly mounted lenses show a pattern (Figure 4) when tested, and are totally unacceptable.

CONSISTENCY IN UNIFORMITY

A miracle of modern manufacturing methods is Wollensak's ability to produce thousands of lenses exactly as specified in the original lens design . . . lenses made to meet the critical requirements of present day photography.

For over 50 years it has been Wollensak's aim and accomplishment to produce a top quality lens at the lowest possible price for the amateur's or professional's still or cine camera.

WOLLENSAK MEANS QUALITY

Question: Does a costly lens mean higher quality?

Answer: Not always. Wollensak policy dictates lens production of highest possible quality at lowest possible price.

Question: Why is the engraving *Raptar* your assurance of quality?

Answer: No Wollensak lens is engraved *Raptar* until it has been tried, tested and proved to meet the highest standards of lens performance.

Question: How does the Wollensak name protect you when buying a lens?

Answer: Wollensak has built its reputation on quality. Wollensak cannot afford to hurt this reputation by manufacturing anything but the finest. The performance of every *Raptar* lens is unconditionally guaranteed.

Question: How can Wollensak unconditionally guarantee its products?

Answer: Tools designed and built by Wollensak craftsmen especially for the production of *Raptar* lenses hold these lenses to rigid tolerances unsurpassed in the optical field.

Every Wollensak Raptar undergoes a number of critical tests and inspections while in the various stages of production, and again before leaving the factory for your dealer's showcase.

The complete line of Wollensak quality products includes cine lenses and accessories for 8mm and 16mm movie cameras, still lenses, enlarging lenses, TV lenses, mirror optics, Fastax high-speed motion picture cameras, binoculars, telescopes and related optical accessories.

Wollensak

MEANS FINE LENSES

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