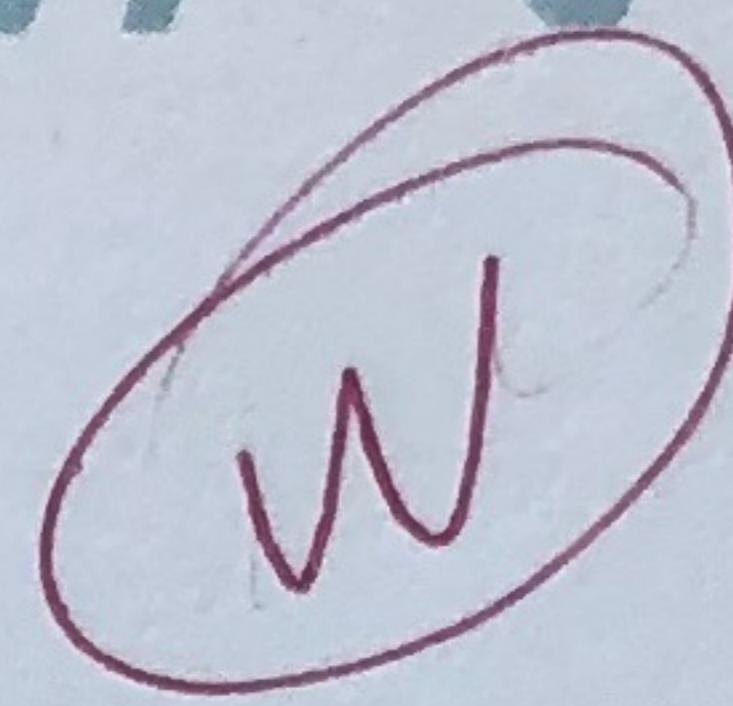
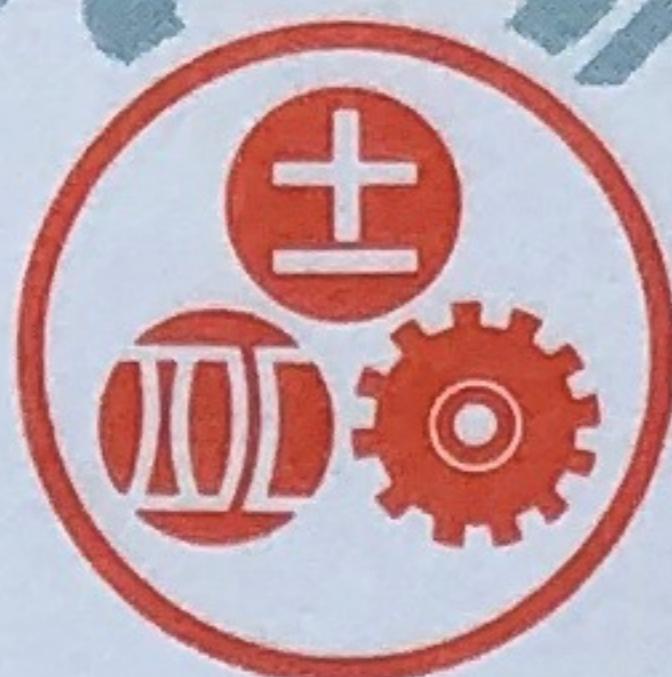


FOCAL POINTS



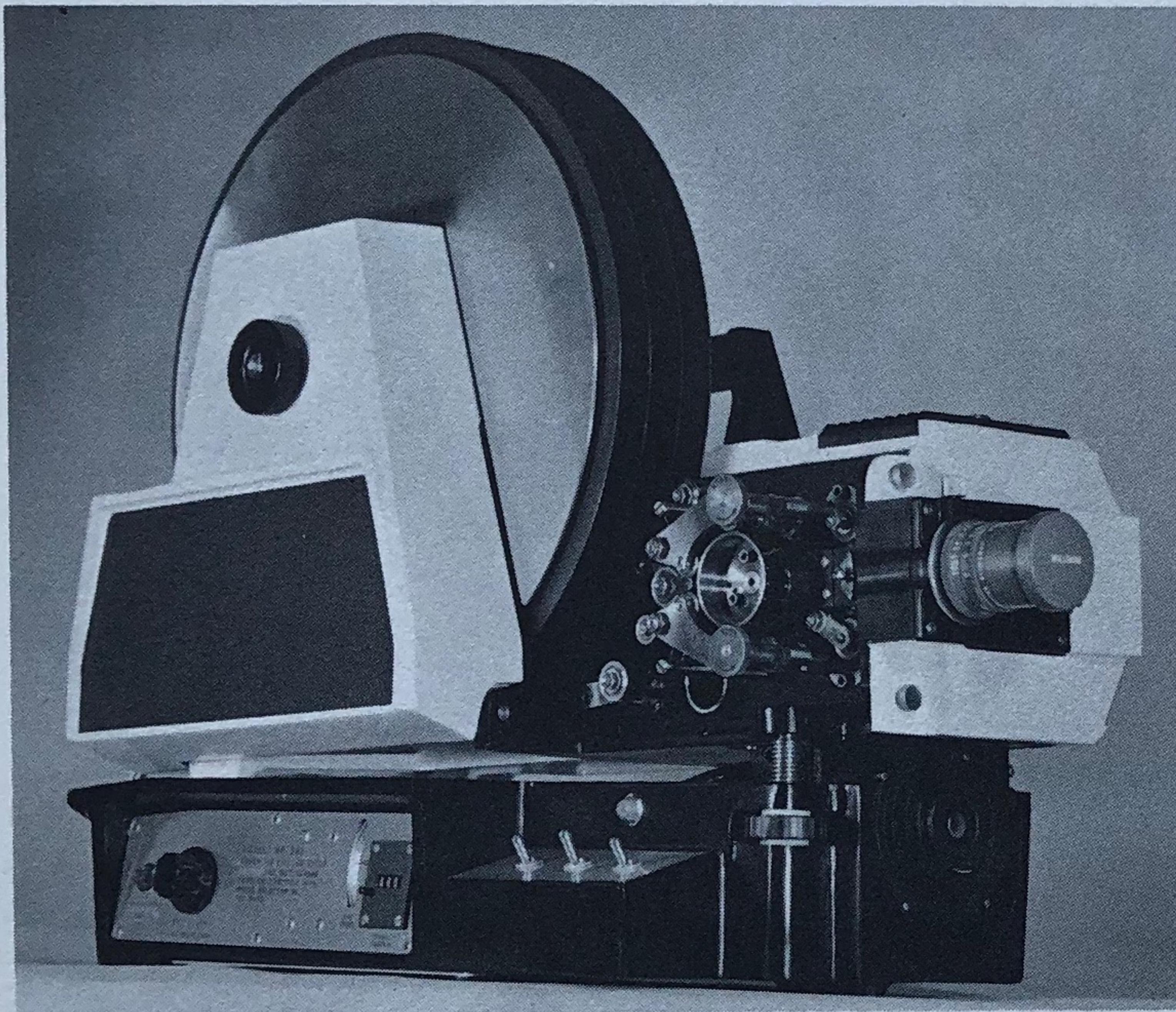
From **WOLLENSAK** *The Latest in Optical, Electro-Mechanical Developments*

VOL. 1

AUGUST 1965

No. 2

NOW IT'S "FASTSCAN" WITH SPEEDS 25 TIMES FASTER THAN THE CONVENTIONAL PROJECTOR



Revolutionary in concept and design is the new "FASTSCAN" Rapid Access 16mm Motion Picture Projector by Wollensak shown for the first time at the S.P.I.E. Symposium and Exhibit-orama, San Francisco, August 16-20.

This high-speed motion analysis projector was designed and built for the requirements of the military and aerospace industry where thousands of feet of motion picture film are taken during a single missile firing or engine test and vital test data is often confined to a few feet or even a few frames.

Projecting pictures at speeds exceeding 500 pictures per second, a 2000-ft. reel of film can be viewed in 2½ minutes. This is a rate more than 25 times as fast as with conventional projectors! Significant footage can thus be quickly searched out for closer study. When desired, the projector can be slowed down, reversed, stopped, or — for frame-by-frame analysis, automatically programmed at rates ranging from one picture every 8 seconds to 3 pictures per second. A four-digit footage counter identifies scene location within the roll. A special aperture mask permits time display information at the film's edge to be read.

The need for such a projector has been heightened by the development of larger and longer burning rocket engines with corollary requirements for high speed motion picture cameras with greater film capacity. The Fastax WF-30 camera, taking 1200-ft. rolls of film, or up to 48,000 pictures per roll, is widely used for this type of test work. It was experience gained in the design of this reliable camera, operating at speeds up to 3000 pictures per second, that led to FASTSCAN. The same geometry of the tensioned film path of the WF-30 was used, as was the rotating prism type of image compensation.

HERE IS A RUGGED SHUTTER FOR YOUR RUGGED EQUIPMENT

Designated by the Greek letter "Pi" for "photo-instrumentation," is a new heavy duty shutter — the first of its type that is accurate in all attitudes and over its entire speed range to ASA Standard PH3.32-1959. Each shutter is individually adjusted and calibrated on electronic test equipment to give an accuracy within 1/5 of a stop.

The "Pi-Alphax" Shutter is an automatic, or single stroke type, providing speeds of 1/50, 1/25, 1/10, 1/5, 1/2, and 1 second plus T&B. It is available either with synchronization (X type), or without (N/S). Only one size is offered at this time — No. 3, with an aperture measuring 1 3/8". Standard scales are placed on the side for ease of operation. Front scales are optional. Finish is satin black enamel.

Truly a heavy duty shutter and not a modification of a shutter designed for lighter service, it is engineered to withstand a minimum of 100,000 cycles of operation. A new die-cast back-case gives the shutter exceptional durability to withstand repeated shock. An internal protective bumper pad minimizes shutter damage from hard-driving solenoid-operated release plungers. Contact points have been designed for negligible "bounce" where internal synchronization is furnished.

While made for industrial test instrument use in oscilloscopic cameras and radar scope recorders, it is ideal for other applications where hard service requirements exist. These include identification cameras, tachistoscopes and other visual training devices, and a number of scientific instruments utilizing a precisely timed interval.

3M

A CAMERA TO COVER THE LOW-TO-MEDIUM HIGH SPEED RANGE

A new high-speed camera, the FASTAX WF-30A, is the first 16mm high-speed camera with a 1200 foot magazine and electronically regulated speeds from 85 to 3000 pictures per second. A modification of the proven WF-30 design, which operates in the 500 to 3000 pictures per second range, the WF-30A permits selection of any speed within this extended range without changes in motors or substitution of gears.

One camera can now be used to cover the low-to-medium high speed range. The WF-30A offers extremely long recording times for "several hundred pictures per second" test applications.

The same performance reliability, fast film acceleration to regulated velocity, start-stop operation, excellent resolution, registration accuracy, and rugged construction of the WF-30 have been retained.

Additional modifications in the new model include type NE2J timing marker lamps for easier replacement, a redesign of the viewfinder capping device, a change in the boresight hand wheel and new convenient cable connector fittings. The control unit has a dual range dial and a signal light to indicate that the speed range selector on the camera is in the proper position.

3M
COMPANY

IT WORKED!

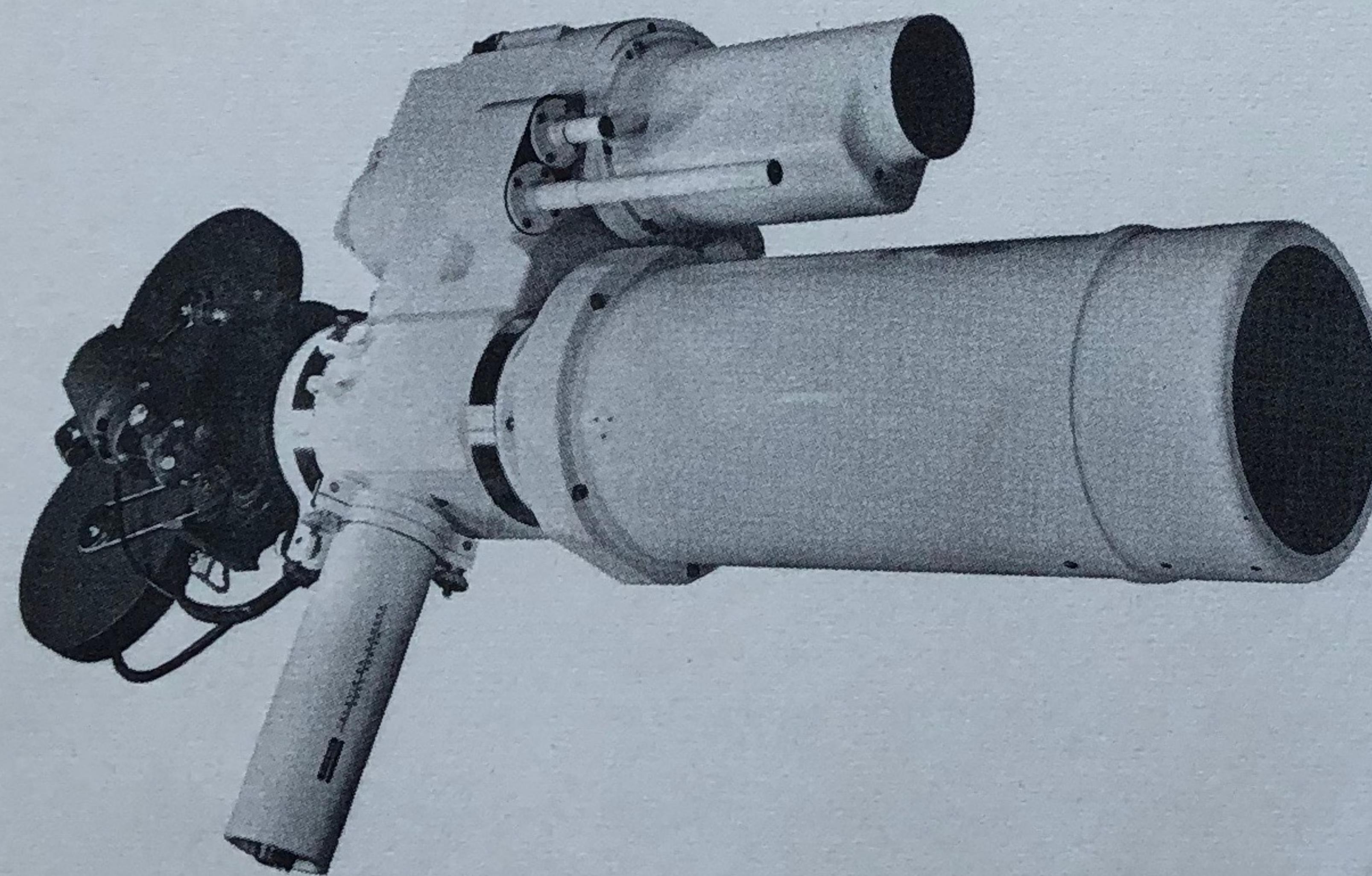
The 63mm f/1.3 CRT recording lens, described in the last issue as a "problem optic" to our designers, is presenting no problems in its performance in space, according to scientists at NASA who are analyzing the data recorded and transmitted. This lens has been in orbit for some time now and we expect its shorter focal length brother (the 44.1mm lens) to behave in the same exemplary manner when it is launched sometime within the next several months as a component part of OGO (Orbiting Geophysical Observatory).

Do you have a problem requiring an optical design that is out of the ordinary? We may be able to offer you a solution.

3M NEW EQUIPMENT INCREASES PRISM CAPACITY

Wollensak has recently increased its capacity for producing large diameter "flat work", i.e., plano-parallel plates such as mirrors, test plates, and prisms. Modifications made to the majority of grinding and polishing machines in operation now permit handling plates up to 28" in diameter and prisms to a 10" hypotenuse. Large diameter spherical and aspheric optics can also be processed on the new equipment. We invite your inquiries for optics of this type made to your special order.

3M RADAR BORESIGHTS — AS SIMPLE OR AS COMPLEX AS YOU NEED



We recently made an interesting radar boresight that combined a short range TV Zoom lens (60 to 300mm) for target acquisition with a long range 120 inch Catadioptric Mirrotel tracking lens.

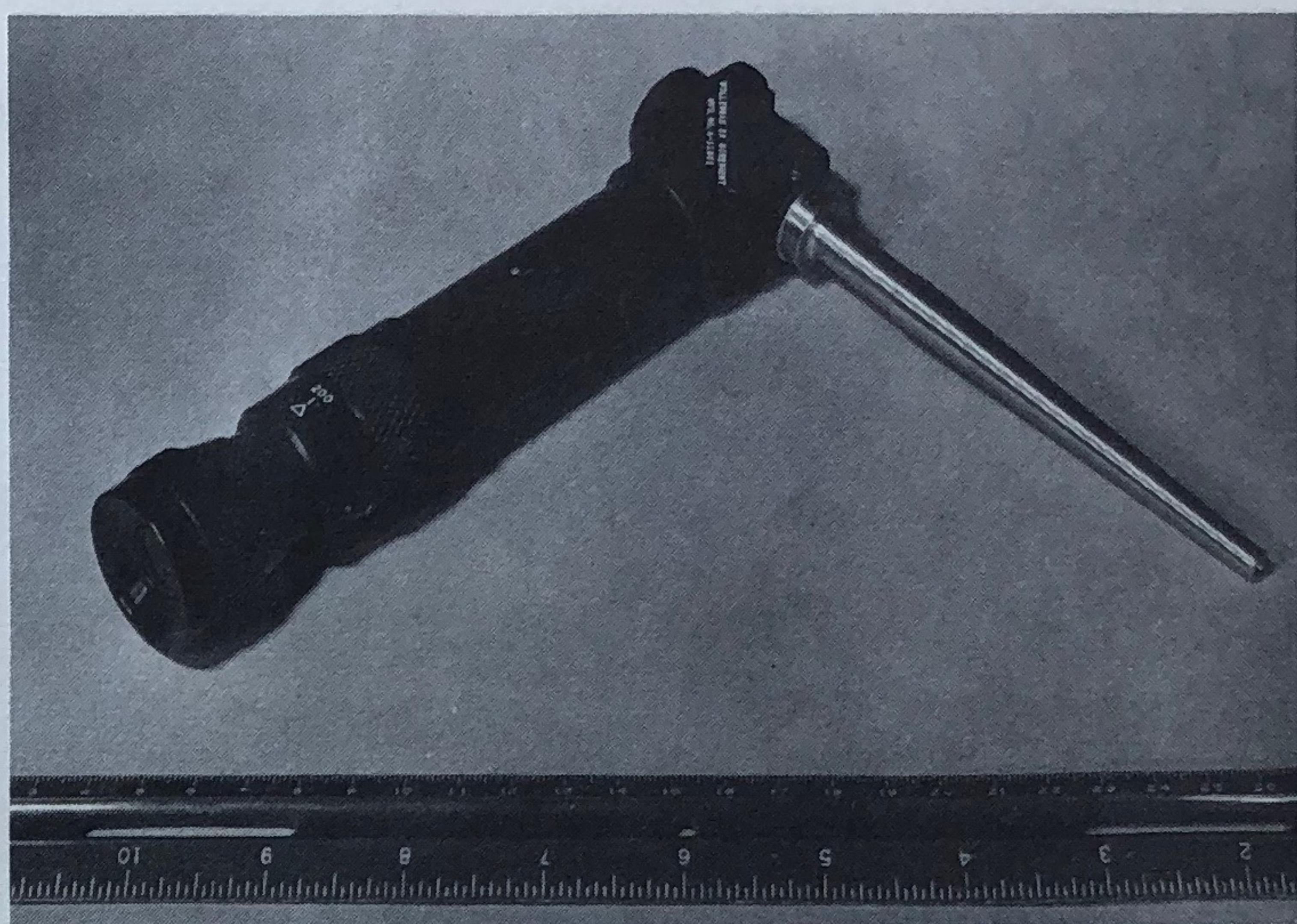
Either lens may be selected to deliver images simultaneously to a vidicon TV camera and a 16mm Cine camera. An eyepiece for direct visual observation may be used instead of the Cine camera.

The lens functions of zoom, focus, iris, and selection may be performed remotely. There is also remote control of reticle illumination and illumination of a precision level. Sun protection is automatic and actuated by a photocell.

Capable of withstanding environmental extremes of vibration and shock, the optical system also has exceptional thermal and mechanical stability; (1) image deviation due to focus movement from 350 ft. to infinity is less than 4 seconds of arc. (2) Sag of the system through 180° elevation axis change is less than 30 seconds. At any elevation deflection is repeatable with ± 2 seconds of arc.

This is but one of many multi-focal length • multi-camera systems available and at work around the world.

NEW USES FOR A WARTIME PRODUCT — AN OPTICAL ALIGNMENT TELESCOPE



Two elbow-type telescopes — one 5X and the other 7X — are items which Wollensak manufactured during the war for bore-sighting 50-calibre machine guns and 20mm cannon. With extremely close alignment accuracy of the optical axis to the axis of the tapered stainless steel shaft (within 0.25 angular mil), these instruments are being used on many industrial fixture and tool alignment applications where the precise positioning of optical tooling is required. Applicable specifications are as follows:

1. Magnification		
W560	.....	5X
W561	.....	7X
2. Field of View		
W560	.....	4.5° (80 angular mils)
W561	.....	3° (54 angular mils)
3. Focusing Range*		
W560	.....	200" to infinity
W561	.....	350" to infinity
4. Reticle Pattern**		
W560	.....	2 & 10 mil circle
W561	.....	Crosshair
5. Alignment accuracy of optical axis to shaft axis		
W560	.....	Within 0.25 angular mil. Maintained over focus range of 200" to 2000" and when rotated
W561	.....	Same
6. Tapered Shaft***		
W560	.....	Stainless steel
W561	.....	Same
7. Collets Available		
W560	.....	.5003" ± 0.005 O.D., .2788" ± 0.005 O.D.
W561	.....	Same
8. Price****		
W560	.....	\$215.00 ea. net
W561	.....	\$495.00 ea. net

*Other ranges available on special order.

**Other reticle patterns available on special order.

***Other sizes available on special order.

****Reduction for quantity.

Photographic Equipment And Optical Division

850 Hudson Avenue, Rochester, N.Y. 14621

3M
COMPANY

DSI