15¢
$5.50 A YEAR

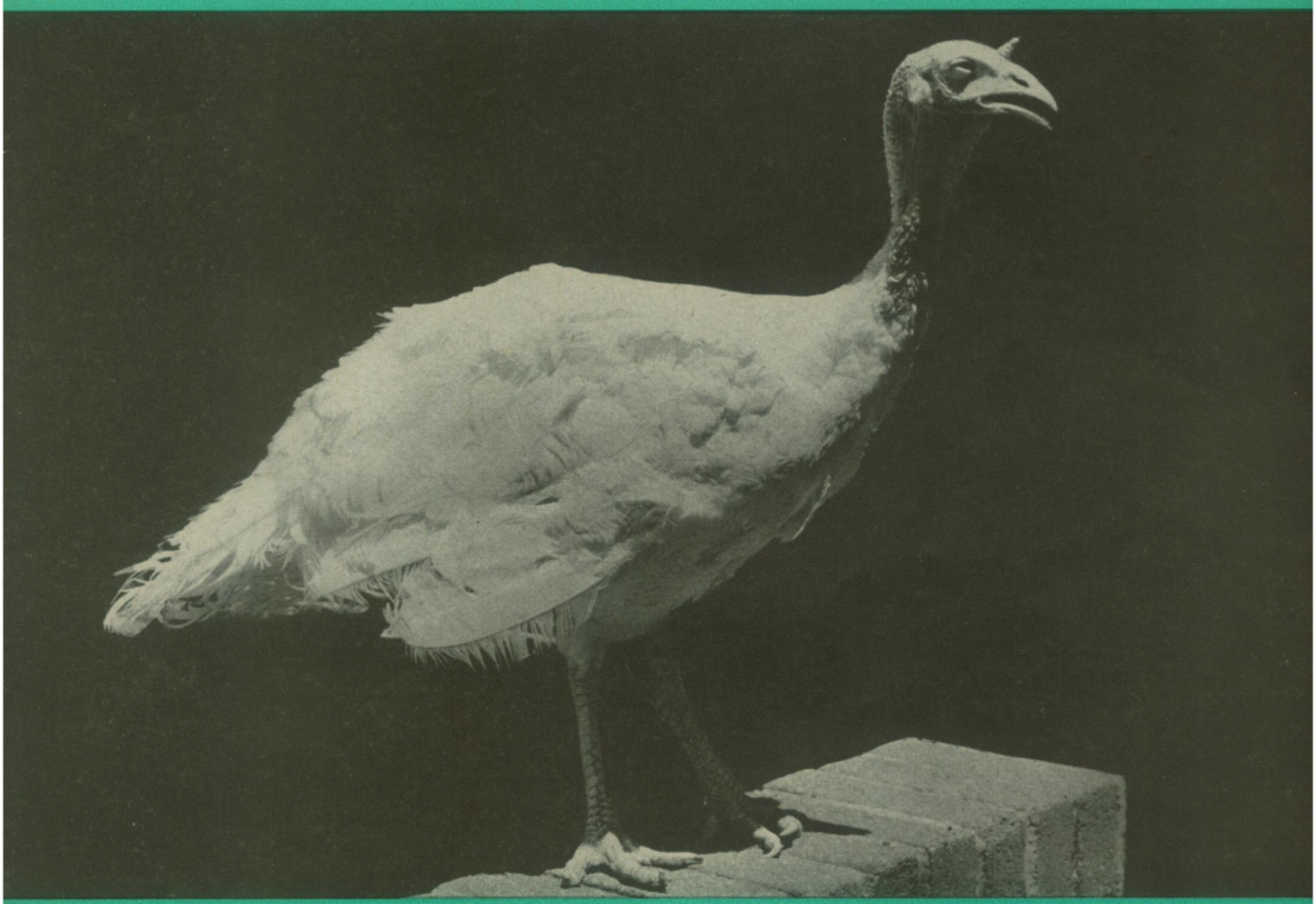
November 9, 1957

VOL. 72, NO. 19 PAGES 289-304

SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Fatherless Gobbler

See Page 291

A SCIENCE SERVICE PUBLICATION

NOW-NEW DELUXE 4" DYNASCOPE Reflector with ADVANCED Precision Features Offers A Truly Professional Telescope COMPLETE

Inquire for details of convenient Time-Payment Plan.

FOR ONLY $79.95

F.O.B. Hartford, Conn.
Shipping Wt. 21 lbs.
Express charges collect

Compare these advanced features with any telescope at double the price!

1. 4-inch Parabolic Pyrex Mirror—finished to exacting specifications and guaranteed to perform to the Dawes' limit for this size of instrument. Aluminized and zircon-quartz overlaid to insure maximum protection and lasting use. The 4-inch mirror gathers ⅓ more light than a 3½ inch mirror.
2. **NEW** improved cast-iron true equatorial mounting with free-moving polar and declination axes complete with friction clamp on declination axis and large knurled brass adjustment on polar axis. Wing clamp provides quick change of latitude adjustment. Both axes are of ⅝ inch steel supported on four bearing surfaces. Rugged, weighs approximately 12 pounds. Mounting is guaranteed for vibration-free action and necessary smoothness.
3. **NEW** 1¼ inch eyepiece mount with exclusive *double-draw focus* and rack and pinion. Adjustable for three inches of travel to accommodate any eyepiece, negative or positive. Built-in diagonal mirror accurate to ⅛-wave tolerance.
4. Three eyepieces: 18-mm. Huygens, 9-mm. achromatic Ramsden, 7-mm. achromatic Ramsden, giving powers of 65X, 130X, and 167X.
5. 4-power achromatic finder scope with crosshairs. Extra large field of view.
6. **NEW** covers for eyepiece tube and open end of the telescope itself!
7. **NEW** bakelite tube beautifully finished in grey wrinkle enamel!
8. **NEW** improved hardwood folding tripod legs in natural finish. Chain ties provided (not shown in illustration). Sturdy, balanced, perfect portability.

THE SUPERIOR 4-INCH TELESCOPE *Prove it yourself at NO RISK!*

Here at last is the scientific instrument that serious amateurs have been waiting for—with a full warranty of high accuracy at lowest cost!

Now you needn't spend $150 and up to be sure of high-precision observation. Nor do you need go to the time and trouble of building your own telescope to get the most value for your money. For the dollar-and-cents facts about the *new* DeLuxe 4-inch Dynascope are these: The advanced precision features are those *you would want to select for yourself*. But buying them singly, as an individual, you could never beat our low price. Nor could you hope to surpass the technical co-ordination and stability that have been engineered into this superb instrument to meet the most exacting standards of optical and mechanical superiority!

Fully achromatic, tested and proven by scientists in leading planetaria, the *new* DeLuxe Dynascope comes to you complete with every part and feature exactly as described and illustrated here. Each instrument is carefully triple-tested before shipment and is accompanied by the Inspector's performance report. Specially packed, it is ready to be set up for observation within a few seconds. Shipment is F.O.B. Hartford, Conn., express charges collect (weight 21 pounds). There is nothing else to buy, no added charges, no extras of any kind.

YOU WILL BE DELIGHTED—OR MONEY BACK!

Prove to yourself—without risk—how good the *new* DeLuxe Dynascope really is. Order it now. Try it at your own pleasure. Compare its performance with that of any other telescope at double the cost or more. It will delight you and exceed your every expectation—or simply return it within 30 days for a full refund. But don't delay. As you know, quality engineering of precision instruments does not permit mass production. Consequently the supply is limited. To assure yourself of prompt delivery, send your check or money order today!

THE CRITERION MANUFACTURING COMPANY

Manufacturers of Quality Optical Instruments

DEPT. SND-37, 331 CHURCH ST., HARTFORD 1, CONN. TEL.: CHAPEL 7-1696 — CABLE ADDRESS: CRICO

Kodak reports on:

a high level of aberration correction at popular prices . . . how to stick fast, rapidly

The boon of lanthanum

Our former research vice president, Dr. C. E. Kenneth Mees, one of a few men who shortly before World War I conceived the novel idea that science had a place in industry, has suggested to us from his retirement in Honolulu that the public ought to be told more about rare element glass. He is right.

Before photography itself was invented, a way was found to overcome the fact that a lens is stronger for blue light than for red. Combine a positive lens with a weaker negative lens and make the latter out of a glass which has more dispersion, i.e. rate of change of index with wavelength. The net result will still be positive power, but the negative element will lengthen the focus more for the wavelengths where the positive element is cutting it too short. This is called color correction and works fine.

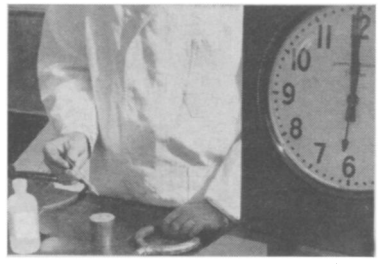
Besides chromatism, nature and the laws of mathematics impose other impediments on man's strivings for perfect optical imagery. Each surface in a system contributes its own load of these aberrations, both plus and minus. The art of lens design consists of playing them off against each other. The more surfaces, the better the attainable correction. Another truism in the business has it that the deeper the curve, the bigger its load of aberrations.

Very well. Along about 1934, as a result of some rather deep studies in glass chemistry, we found that by replacing certain traditional glass ingredients with such oddities as lanthanum oxide, one could make a glass of very high index but with a dispersion low enough for use in positive elements. The higher the index, the shallower the curves can be and therefore the lighter the load of aberrations to be balanced out. Before long, Kodak lenses demanding the best possible performance were being put out with elements of such glass, regardless of the cost of lanthanum and of 10-pound batch production in pure platinum crucibles.

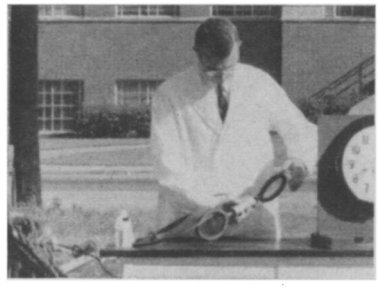
As the years rolled by, a new philosophy on using our rare element glass took shape among our lens designers. It goes like this: Shallow curves not only introduce less aberration, but geometry permits more of them on a single block for grinding and polishing. This economy can pay for a pretty high glass cost. At the same time, the customer gets a level of aberration correction superior to what the same number of components could have bought him before lanthanum.

Doctor Mees and we hope that when next you shop for a personal camera, you give particular consideration to the Kodak Pony 135, *the* Kodak Pony IV, *the* Kodak Signet 30, 40, *and* 50 Cameras, *and the fixed f/1.9 lens of the* Kodak Medallion 8 Movie Camera. *They've got it. Lanthanum, that is.*

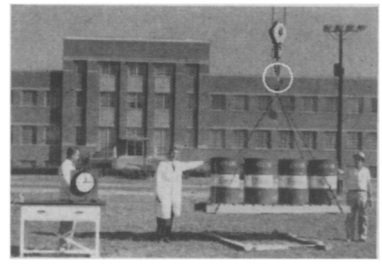
It polymerizes



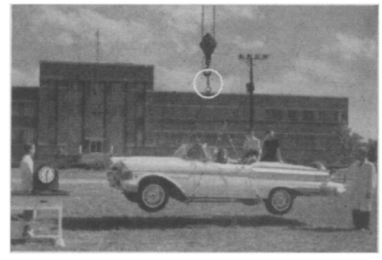
1. At high noon we put one drop of something on the end of a clean 2″ steel rod.



2. We butt it against another such clean rod, pressing firmly with the fingers.

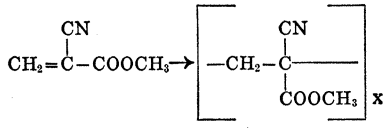


3. By 12:15, our single drop has formed a bond of considerable tensile strength.



4. And by 12:30 it is even stronger. (Tests show it to be over 5,000 psi.)

The liquid in the dropper is a chemical invention we call *Eastman 910 Adhesive.* Its major ingredient is a thin, watery liquid which polymerizes as follows:



With very few exceptions, polyethylene and silicone grease among them, it sticks all materials together —like and unlike, organic and inorganic, metallic and non-metallic. Temperatures above 100 C or continuous high humidity above 80 C eventually spoil the bond.

For a one-ounce sample of Eastman 910 Adhesive *send $5 to Eastman Chemical Products, Inc., Kingsport, Tennessee (Subsidiary of Eastman Kodak Company). Part of the reason for the price is the high attrition rate of the production equipment. The manufacture of this product can suddenly turn into the most awful mess you ever saw in your whole life. Nevertheless, the cost should decline some when the production volume rises.*

Price quoted is subject to change without notice.

This is another advertisement where Eastman Kodak Company probes at random for mutual interests and occasionally a little revenue from those whose work has something to do with science

Kodak
TRADEMARK