Errata

J. H. Waddell, "Design of rotating prisms for high-speed cameras, *Jour. SMPE*, vol. 53, pp. 496–501, Nov. 1949.

Page 497: *For*

$$\frac{d(ss')}{dt} = kT\left[\frac{\cos i - 4(n^2 - \sin^2 i)\cos 2i - \sin^2 2i}{4(n^2 - \sin^2 i)}\right] \quad (5)$$

read

$$\frac{d(ss')}{dt} = kT\left[\cos i - \frac{4(n^2 - \sin^2 i)\cos 2i - \sin^2 2i}{4(n^2 - \sin^2 i)}\right]. \quad (5)$$

Page 498: *For* Fig. 2, *substitute* the figure shown on p. 83.

Reply to the Letter Above

In reviewing the Letter to the Editor by Mr. Kudar, in reference to a study of current misconceptions in the optical theory of rotating prisms for high-speed cameras, there are a number of very interesting observations to be made in reference to this critique by Mr. Kudar.

There was, as has been turned over to the Society, a typographical error in Formula 5 in the paper, *Design of Rotating Prisms for High Speed Cameras* by John H. Waddell, and consequently in the calculations that illustrated Fig. 2 positive values are shown rather than negative values as the relative velocity. However, quoting from a letter from one of my former associates, it is to be pointed out that this does not affect the validity of thinking in the design of rotating prisms in the least.

As one recalls from the oral presentation of this paper in the city of Washington at the first High-Speed Photography Symposium, the data to indicate that the high index glass prisms would prove of advantage was illustrated with a number of curves covering the various types of prismatic aberrations and distortions from the Kudar paper which was published in the *Journal* (vol. 47, pp. 400–403, Nov. 1946). In those figures it can be shown conclusively, as was demonstrated, that the optical quality of the image is improved by going to the higher index glass. Furthermore with the new Kodak high index low dispersion glass many improvements have been made practically in the formation of the optical image transmitted through the prism and on to the film plane both by the use of this glass and reducing the angle of incidence through which the exposure was made.

Practical considerations in the design of high-speed cameras indicate that the engineers are more interested in a very short cycle of exposure than such as would be required for continuous projection.

There is considerable stress placed by Mr. Kudar in the selection of the high index glass versus the low index glass. It must be remembered that radius in centrifugal force is reduced through the use of high index glass and any factor which can be made to reduce centrifugal force in very high speed moving mechanisms is to be considered seriously. It is not felt that the approach has been esoteric as Mr. Kudar has emphasized but primarily from a practical design wherein the practical optics do not necessarily meet with the approval of the theoretical man. There has to be a compromise between theory and practice at all times and when one is able to design a camera which produces a picture which is as steady as one taken with an intermittent camera and with resolving power equal to that of the normally fast films of today the compromise in the practical optics has been well satisfied.

As far as the comment about gear trains et cetera, they do not enter into the picture in the least because the tolerances to which cameras are made now are primarily proprietary information and therefore it is not felt that it is wise to discuss tolerances of manufacture of high-speed motion picture cameras in a paper of this type.

It is felt that if one examines pictures taken with the rotating prism cameras of today that they will be very satisfied with the photographic quality obtained. True, the next problems of design, of course, are to produce sprockets and other parts of the moving mechanism which are more ideally suited for both super speed operation wherein the cameras will operate at