

better by the instructor with the apparatus beside him. The student finally becomes familiar with it by use. Any discussion of the variations, with uses and advantages, would extend the text unprofitably.

The discussion of lenses has to stop short of any real mathematical treatment for which the average undergraduate has no preparation. There are many excellent special treatises now to be had. The careful testing of lenses requires an expensive optical outfit, some advanced mathematics, and considerable practice. In any case the main problems of the young photographer are not with his lens performance, and very few expert photographers are competent to pass upon the optical questions involved; hence it has seemed profitable to limit the discussion of lenses to practically that contained in a good book on college physics.

The number of photographic reproductions in the text has been limited by consideration of the fact that they are reproductions varying necessarily in character from the originals, and by the fact that negatives and positives themselves should be displayed in the laboratory and the instructor should call attention to the points in the student's own work.

My thanks are due to Mr. R. C. Williamson, who so ably assisted me for three years in giving this course, and to whose criticism and suggestion many improvements in both laboratory course and text are due.

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