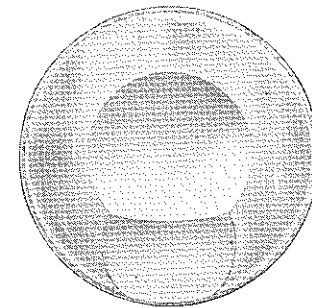


Modern Ophthalmic Lenses and Optical Glass

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MODERN OPHTHALMIC LENSES

The most important additions are the oxides of barium, magnesium, aluminum and zinc. In some of them boric anhydride B_2O_3 replaces the silica of the older glasses to a varying extent.

The further the new glasses depart from the ratio of refraction to dispersion found in the older glasses, the greater is the difficulty in obtaining them either sufficiently pure or stable to be of practical use.

It has been only recently that the dense barium crown glasses have been produced comparatively free from color and numerous small bubbles. Tarnishing of the surfaces of barium crown lenses has been overcome to a great extent within the past few years.

The optical industry as a whole owes the advanced state of optical lenses and instruments to the excellent research work done at the Jena glass plant.

New optical horizons may be disclosed if peacetime developments employ a non-silicate glass developed early in World War II by Eastman Kodak Company. This is a glass made without silica, but having a very high index of refraction and at the same time a high v value: N_d 1.7445, v 45.8 (during the war only used in military optics).

CHAPTER II

Manufacture of Glass

THE HIGH quality of modern ophthalmic lenses would be impossible if it were not for the excellent optical glass which is produced today. Brilliance, quality and definition of optical images are dependent upon the refractive media, from which the lenses are produced, as much as upon the excellence of the workmanship in their fabrication.

The production of optical glass in large quantities in the United States dates from World War I, when the foreign markets became inaccessible to American manufacturers. Under the encouragement and with the assistance of the Government, which badly needed good optical glass for fire-directing apparatus, the Bausch & Lomb Company, the Pittsburgh Plate Glass Company, the Spencer Lens Company and Keuffel & Esser, in a remarkably short time, produced optical glass of good quality to the extent of over 500,000 lbs. in 1918. Of this amount, Bausch & Lomb produced over 65%, the Pittsburgh Plate Glass Company 20%, the Spencer Lens Company 10%. Today the Bausch & Lomb Company and the Pittsburgh Plate Glass Company produce the bulk of the optical glass used in the United States, with Corning Glass Company just entering this field. Since World War I America's glass-making art ad-