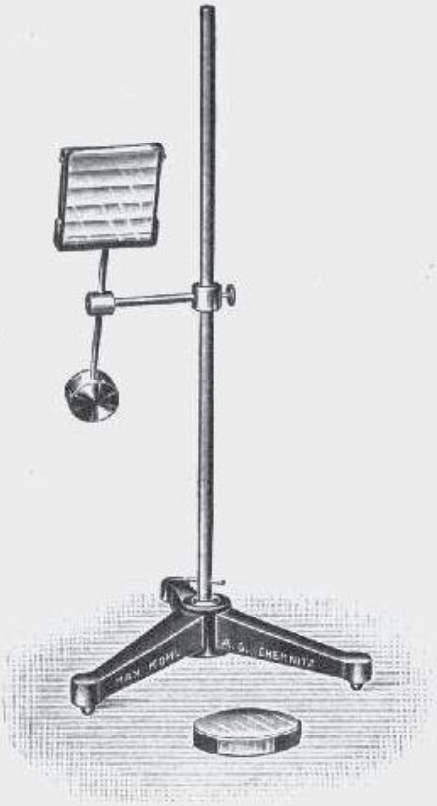
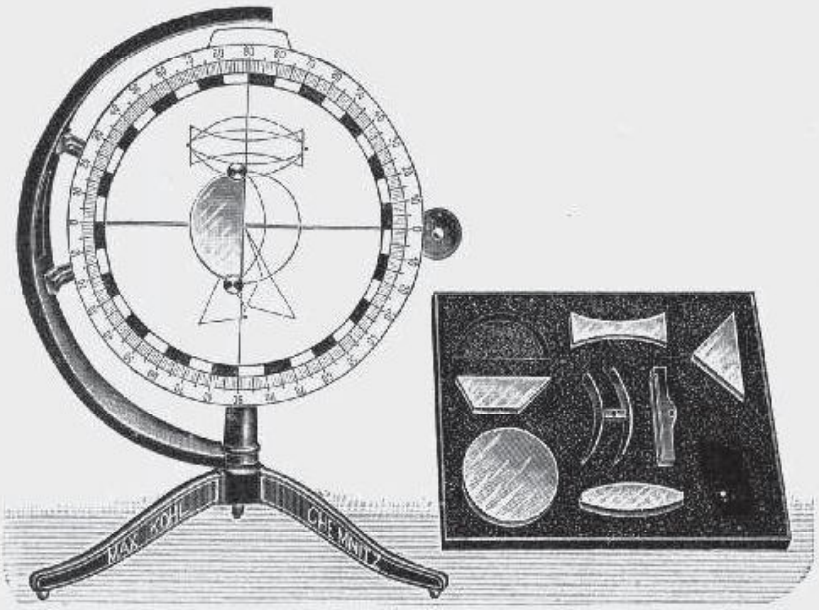


53 860. 1 : 6.



53 859 A. 1 : 6.

53,859. **Optical Disc** after Hartl, Figs. A and B (Nos. 1—17), for demonstrating the laws of elementary optics (Ztschr. f. d. phys. u. chem. U. **9**, 1896, p. 113; M. T. Fig. 134), for experiments with single rays and parallel rays . . . . . £ 3. 18. 0

The apparatus is used in an undarkened room with direct sunlight; the entire arrangement is very comprehensive. The following can be demonstrated: the Law of Reflection for Plane Mirrors; the effects and laws relative to the concave and convex mirror; Refraction by a plane parallel plate; prismatic refraction and chromatic aberration; the action of condensing and dispersion lenses; explanation of the rainbow.

The following pertain to the apparatus: 2 Slotted Sheets with three and seven gaps; Coloured Glass Plates and small Brass Plates; 1 Glass Plane Mirror; 1 Concave and 1 Convex Mirror, of glass; 1 each semi-circular, circular, and trapezoidal Crystal Plate; 1 Bi-convex and Bi-concave Cylindrical Lens of crystal glass, also a rectangular prism with members of equal length.

Fig. 53,589 B shows the path of the rays in the following experiments: (1) Reflection on plane surfaces; (2) Parallel Rays parallely reflected; (3) Reflection on the Concave Mirror; (4) incident parallel Rays are reflected to the focus; after removing the slot diaphragm, demonstration of Catacautery; (5) corresponding Phenomena on the Convex Mirror; (6) Refraction and Reflection of Light between Air and Glass, determination of the refractive indices; (7) the same, between Glass and Air; (8) total Reflection in Glass; (9) Refraction in a plane Plate; (10) Refraction on the 45° prism; chromatic aberration; (11) minimum deflection with symmetrical Ray; (12) Refraction at condensing lens, focus; (13) collecting parallel Rays at the focus; (14) Diacautery; (15) aberration of parallel Rays; (16) combination of Lenses; (17) explanation of the Rainbow; (18) Reflection of a central pencil of rays on a plane surface; (19) idem, on the concave Mirror; (20) central pencil of rays, rendered parallel.

53,860. **Addition to the Optical Disc,** Figure, for experiments with central pencils of rays (Ztschr. f. d. phys. u. chem. U. **10**, 1897, p. 236), see also Figure 53,859 B, Nos. 18—20 1. 6. 0

Eight cones of rays, proceeding divergently from a point, are produced with this apparatus. The following can be demonstrated: the Rule of the Image for the Plane Mirror; the Reflection of the Luminous Rays issuing from a point, on Concave and Convex Mirrors; existence of the real Image; Refraction by a Condensing Lens or Aberrating Lens of the Rays issuing from one point; Action of Spectacles; Action of Diaphragms.

The additional apparatus consists of a separate ground crystal plate on iron stand, one bi-convex crystal glass lens and one diaphragm.

53,861. **Reflector** for reflecting the Solar Rays 0. 12. 0

Liquid Prisms for determining Refractive Indices: see page 501 and 502.