

The
GAERTNER SCIENTIFIC CORPORATION

SUCCESSOR TO WM GAERTNER & CO.

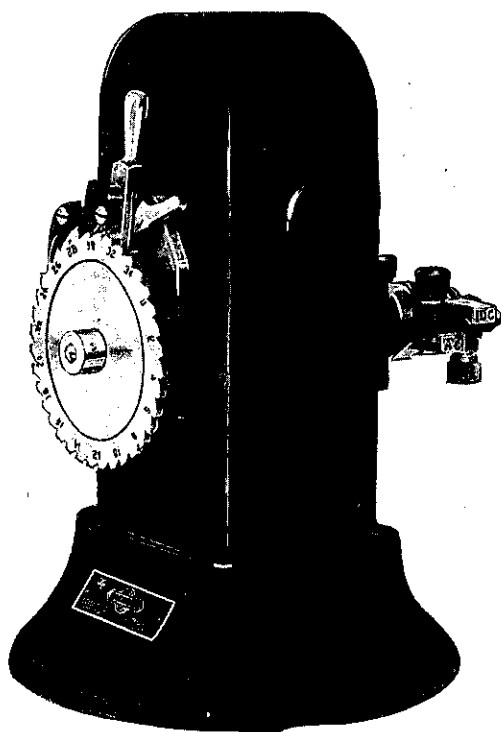
ESTABLISHED 1896



INCORPORATED 1923

1201 WRIGHTWOOD AVENUE
CHICAGO, U. S. A.

**IMPROVED PHYSICAL APPARATUS FOR
ADVANCED LABORATORY WORK**



E1450 Dynamo Analysis Apparatus

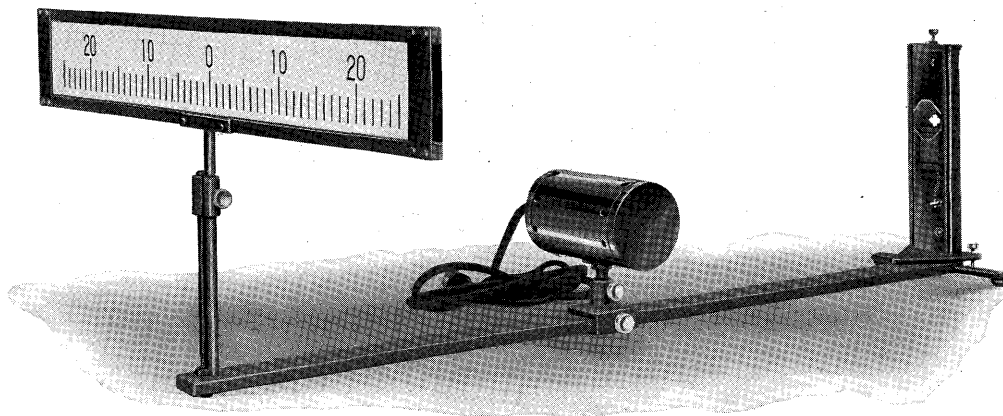
E1450 AC-DC Dynamo Analysis Apparatus. This apparatus is of new and improved design and will serve for demonstrating the principle of the **Alternating** as well as the **Direct Current** dynamo.

It consists of two powerful permanent magnets mounted like poles together on a substantial brass base, producing an intense and uniform magnetic field. A coil of magnet wire, approximately 500 turns, having a resistance of about 70 ohms, mounted on a suitable shaft, serves as an armature. To one end of the shaft a spacing wheel is attached, while the other end carries a compound commutator with four brushes, two for Direct and two for Alternating Current (marked accordingly), and carefully insulated from the frame of the instrument. The spacing wheel has thirty-six accurately spaced notches, and is actuated by two levers, one for applying

tension and the other for release. The wheel automatically locks at the end of 10° rotation and cannot turn backwards during winding, and the tension is the same for each interval so that uniform velocity is assured throughout the complete revolution of the armature.

The instrument stands about 23.5cm high on a base about 16cm in diameter.

The apparatus is designed and will give sufficient current to operate with our Lecture Room Projection Galvanometer E1540, giving a displacement of about 20cm at a distance of one meter. It is intended for performing the experiments as outlined in Millikan and Mills' "Electricity, Sound and Light," page 134, and Taylor, Watson and Howe's "Laboratory Manual," Experiment XXXIII.....\$60.00



E1540 Projection Galvanometer

E1540 Lecture Room Projection Galvanometer. Consists of a D'Arsonval Type Galvanometer, projection lamp and celluloid scale, all mounted on a steel base. The apparatus is intended for general laboratory and lecture room work. The lamp is enclosed in a double walled steel housing. A slit image is projected on the scale by a lens mounted in front of the galvanometer mirror. The image is enlarged and is of sufficient intensity to be seen from any part of an average sized lecture room. The scale divisions are in centimeters with numerals about 2cm high, and easily visible.

The sensitivity of the Galvanometer is 7×10^{-8} amp. per mm. at one meter distance, making the galvanometer suitable for all elementary work as well as for most of the induction experiments. It will satisfactorily operate with our E1450 Dynamo Analysis Apparatus, E1270 Rowland's Apparatus, etc. Requires no darkened room. Complete\$36.00

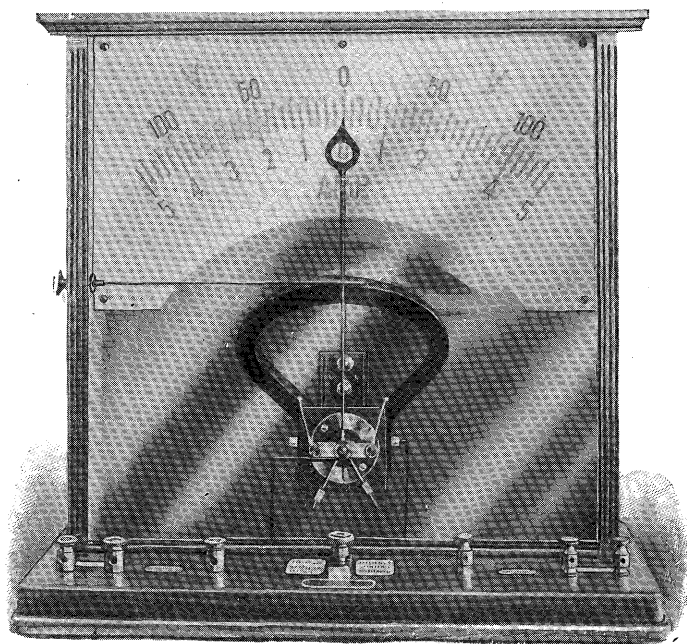
E1640 Demonstration Galvano-Volt-Ammeter. An up-to-date demonstration instrument. D'Arsonval type, dead beat. Every working part is clearly visible. The scale is 30cm long, with wide and distinctly indicated divisions which may be easily distinguished from any part of a medium sized lecture room. For the convenience of the demonstrator, the back of the instrument carries another scale permitting him, too, to observe the readings. Connections on the back of the instrument. Dimensions 43cm x 43cm. Readings:

25-0-25 Volts in Volt Divisions.

25-0-25 Amperes in Ampere Divisions.

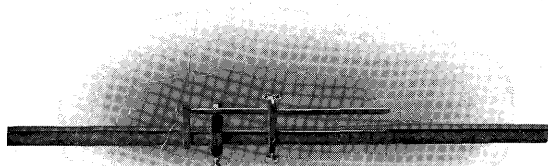
75-0-75 Millivolts in Millivolt Divisions.

25-0-25 Milliampères in Milliampere Divisions.

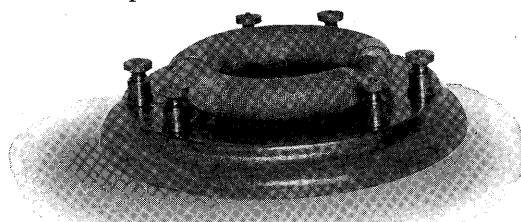


E1640 Demonstration Galvano-Volt-Ammeter

Extra shunts or multipliers to cover other ranges can be furnished, and other readings may be specified, as for instance on the instrument shown in the illustration, which has a scale reading 125 volts and 5 amperes.....\$75.00



E1270 Rowland's Apparatus



E1286 Hysteresis Apparatus

E1270 Rowland's Apparatus for Distribution of Magnetism. Adaptable to Millikan and Mills' Experiment XII-B and Taylor, Watson and Howe's Experiment XXXIV. The apparatus consists of a nickeled brass tube 15mm in diameter, 41cm long, of which 40cm are graduated in 1mm divisions, every centimeter figured. A bar magnet 18 cm long is fixed within the tube with its ends visible through holes drilled through the tube adjacent to which the polarity of the magnet is marked. A test coil of about 1,200 turns of wire (Res. about 160 ohms), wound on a bakelite bobbin, with binding posts securely attached, slides freely along the tube between adjustable stops. These stops can be adjusted for position in respect to the magnet and the amount of travel of the test coil.....\$17.50

E1286 Hysteresis Apparatus. Designed for studying Magnetization and Hysteresis of soft iron as described in Millikan and Mills' Experiment XV, pp. 161-165. The apparatus consists of a laminated selected soft iron ring 11cm in diameter, upon which are wound two primary coils, one 300 turns and one 295 turns, the resistance of each being approximately 1.4 ohms, individually connected to two sets of bind-

ing posts. The secondary or the test coil, consisting of 75 turns, is wound over the primary and is likewise connected to a set of binding posts. The coil is neatly taped with high tension glossy black tape, safeguarding the windings. The whole is mounted on a finished hardwood base upon which the constants of the apparatus are stamped

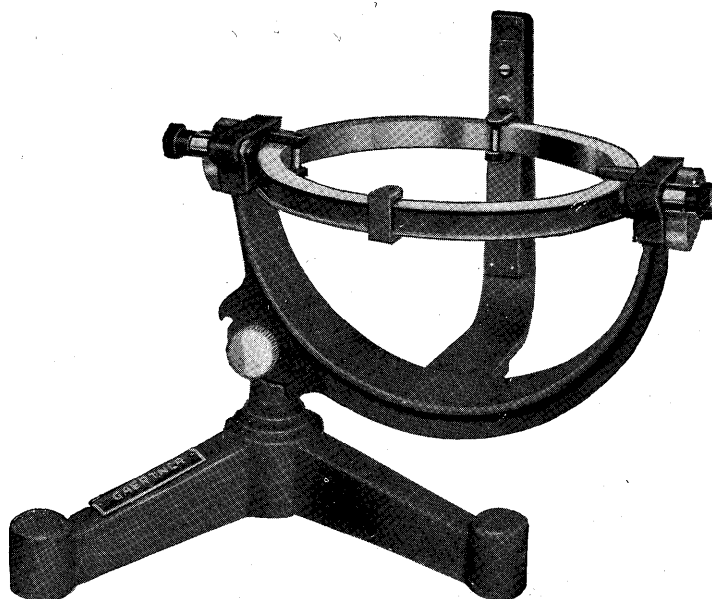
\$12.50

E1286a Hysteresis Apparatus. Same as above except with solid iron core for comparative study of hysteresis loops of solid and laminated cores.....

\$16.00

E1288 Hysteresis Apparatus. Same as E1286 except with core of wood....

11.00



E1280 Earth Inductor

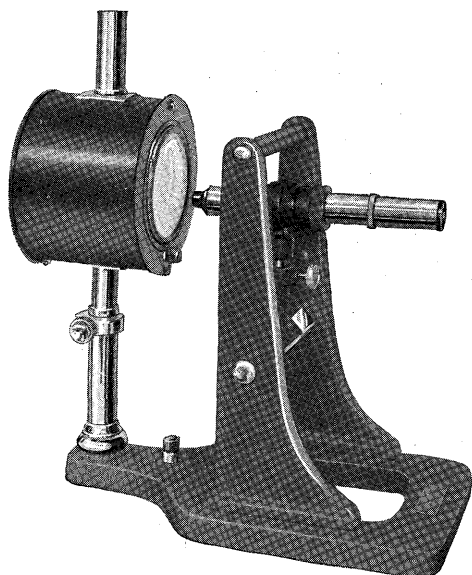
E1280 Earth and Mutual Inductor. This apparatus is designed to be used in determining the horizontal and vertical components of the earth's magnetic field, and hence the angle of dip, and due to its special design it can also be used to determine the figure of merit of the ballistic galvanometer or in studies of the calibration of mutual inductance. This special feature, suggested by Professor A. L. Fitch of the University of Maine, consists of two coils on the inductor ring, the secondary which serves as the inductor coil and the primary, which serves as a current coil, and its advantages will be at once apparent. After recording the galvanometer throw resulting from the rotation of the inductor coil in the earth's field, the figure of merit of the galvanometer, and hence the absolute values of the earth's field, can be readily determined from the throw of the galvanometer during sudden interruption of a measured current through the primary while the coils are still, according to the instructions supplied with the instrument.

The brass frame is mounted on the heavy brass tripod by means of a strong hinge with stops 90° apart, permitting rapid setting of the coil in vertical and horizontal positions. The coils are wound on a Bakelite ring, which makes a very permanent coil and totally eliminates the induced eddy currents which are unavoidable in metal rings. The ring is fitted with two pivots which are carefully mounted in bearings machined in the frame. Non-magnetic coil springs operating at these pivots rotate the coil 180° about its diameter and serve at the same time as conduc-

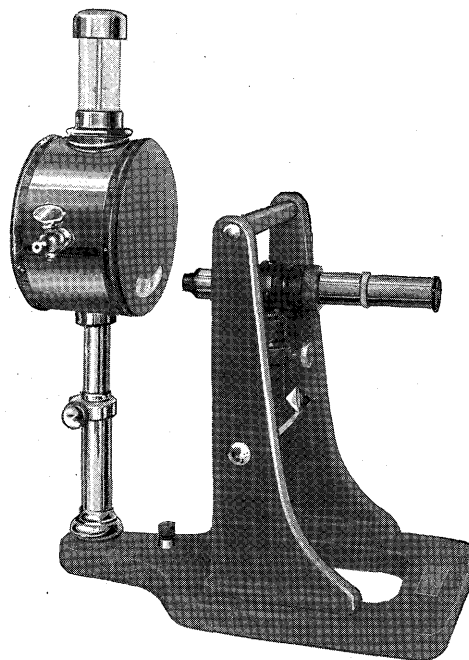
tors for the current, eliminating the use of troublesome contact brushes. The automatic stop and release mechanism is accurate and dependable, and is designed to eliminate the danger of overwinding the springs or winding in the wrong direction.

Specifications: Number of turns, secondary 1000, primary 50; resistances, secondary about 800 ohms, primary about 8 ohms; coil, mean diameter 153mm, effective area about 184cm². Exact data stamped on specification plate on instrument.

Adaptable for Ames and Bliss' Experiment No. 78, Millikan and Mills' Experiment XIII, and Taylor, Watson and Howe's Experiment XXXV.....\$65.00



E1338 Radio Electro Microscope



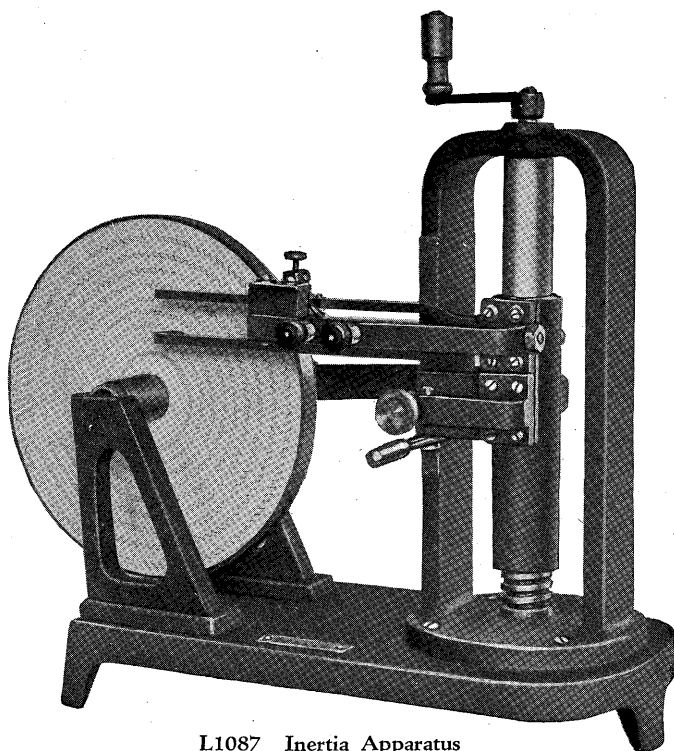
E1340 Radio Electro Microscope

E1338 Radio Electro Microscope. Designed for quantitative comparison of radio active materials and especially recommended for Millikan and Mills' Experiment XXVIII. The apparatus in its new form is of a high-grade workmanship, provided with all necessary adjustments. The inside of the electroscop is finished in a durable white enamel, and is fitted with a small platform upon which a shallow tray containing the radio active material is to be placed. The gold leaf is suspended from a brass rod insulated by an amber bushing. Upon the threaded end of the brass rod can be screwed a ball or a cylinder shaped electrode, which in connection with the outside metal tube, functions as a condenser. The tube likewise protects the electrode against the outside inductive effects. The electroscop is supported on a substantial tube of adjustable height mounted on to a heavy cast-iron base. Two brackets mounted to the base are fitted with a cross beam upon which a reading microscope is held in a suitable holder, provided with a height and side adjustment. The microscope is fitted with a glass micrometer scale 10mm long, divided into .25mm; magnification about 35 diameters; measurable distance 3mm. Two shallow copper trays, for holding radio active materials, are furnished with the apparatus.

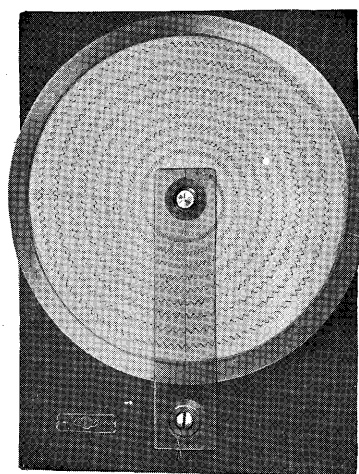
Complete\$95.00

E1340 Radio Electroscope. Boltwood Vacuum Design as described in the American Journal of Science, 4th series, Volume 18—1911, page 97.

The electroscope is fitted with two stopcocks for connections to vacuum pump and the gas reservoir respectively, consequently permitting the study of radio active gases or of the ionization effects of radio active materials in vacuum or in the presence of any gases. The gold leaf is suspended from a brass rod insulated by an amber bushing and protected against outside inductive effects by a removable glass cap. The top may be unscrewed for the purpose of introducing various radio active materials into the electroscope. The electrode is provided with a discharging arrangement which is operated by a magnet acting through the glass cap which keeps it at any time from direct contact with the outside air. The sides of the electroscope are sealed with two heavy plate glass discs, fitted with removable metal covers which prevent static effects and have only small suitable observation openings. Reading microscope with scale mounted in a support with all necessary adjustment, clamps on to a cross beam fitted between two brackets attached to the heavy cast-iron base. Each\$150.00



L1087 Inertia Apparatus



L1089a Measuring Stand

L1087 Inertia Apparatus. This Apparatus is designed for determination of the acceleration and moment of inertia of a circular disc. The inertia disc proper is made of brass, heavily nickel-plated, 200mm in diameter and 12mm thick, weighing about 3.6 kg. (accurate weight stamped on disc) and having a moment of inertia of about 180,000 gm. cm². It is equipped with the highest grade ball bearings which assure minimum and constant value of friction. The outer (stationary) ring of the ball bearing fits into a groove of an iron stand, thereby assuring true and simple center-

ing of the disc. The axis of the disc is placed near the edge of the base so that the radius of the shaft may be used as a moment arm as well as the radius of the disc. The shaft is 25mm in diameter. The periphery of the disc is fitted with a small catch pin, flush with the edge to which a cord carrying the weights can readily be attached, and when completely unwound automatically slips off. This feature is now incorporated in our new design on the recommendation of Colonel C. C. Carter of the U. S. Military Academy. The electrically driven tuning fork of about 150 v.p.s., accurately rated with frequency stamped on one side (operating voltage 3 to 4 volts), is automatically brought in contact by a lever. By a turn of the lever, the brake holding the disc is released, simultaneously bringing the stylus of the fork in contact with the paper disc. The delicate adjustment of the stylus is set by an adjusting screw provided for this purpose.

The tracings are made on a specially prepared coated paper disc and show as a beautiful blue line. The paper disc is held in place with the use of specially prepared adhesive material. These records will not mar upon handling; they are permanent and may be kept for reference. This apparatus is specially adaptable for Taylor, Watson and Howe's Experiment VII, Millikan's Experiment X, and Shannon and Macelwane's Experiment XIV. Inertia apparatus complete as described, including 100 recording paper discs, 1 bottle of specially prepared mounting cement, table for supporting the metal disc, and instructions for operation and care..\$115.00

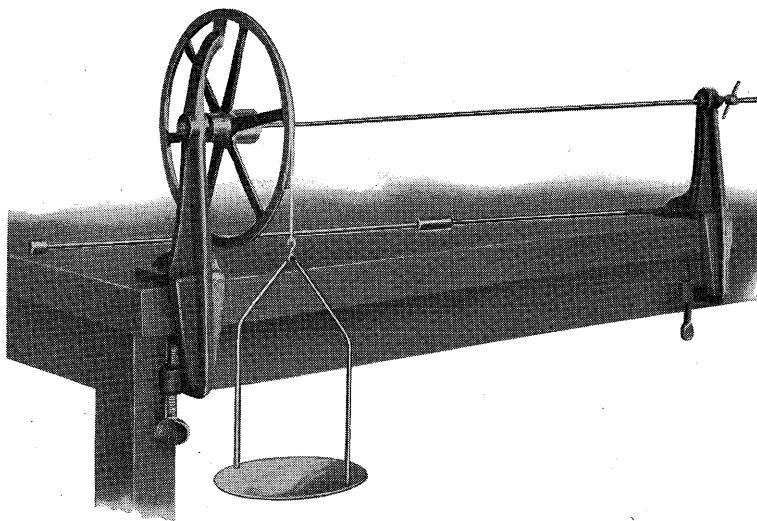
L1087b Sensitized Paper Discs. For use with L1087 (above). Per 100 discs\$ 3.00

L1087c Mounting Cement. Specially prepared for use with L1087 Inertia Apparatus. This cement will hold well without drying, causes no wrinkles and permits convenient removal of the tracing paper. One ounce bottle.....\$0.30

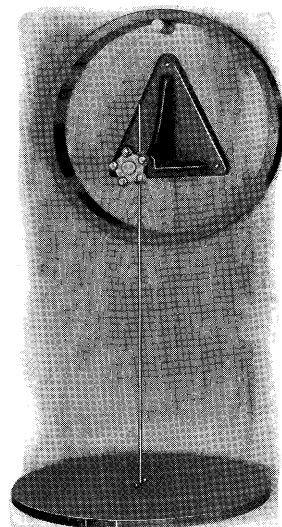
L1089a Graduated Measuring Stand. Consists of an aluminum disc graduated to half degrees and fitted with a brass hub on which it can be easily rotated. The paper disc (removed from the above apparatus after the tracing has been made) is placed on the aluminum plate and held in place with a small quantity of mounting cement. A transparent strip of celluloid with a fine radial index line is placed over the disc and serves to make readings on tracings and graduations.....\$22.50

L1080 Torsion Apparatus. Designed for verifying Hooke's Law of Torsion and for determining the Coefficient of Rigidity and the Moment of Torsion of different rods. It is specially adaptable to Taylor, Watson and Howe's Experiment X, Millikan's Experiment IX, and Shannon and Macelwane's Experiment XX.

The apparatus consists of a torsion wheel about 20cm in diameter (accurate diameter stamped on periphery), graduated 90° each way from zero and mounted on a ball bearing axis fitted to a substantial table clamp; a split chuck fitted in a suitable clamp; weight pan; and two rods. The wheel is fitted with a vernier graduated to read to 1/10°. The torque is applied by weights placed on a pan which is attached by means of a thin flexible metal ribbon to the flat edge of the wheel. A simple brass clutch permanently attached to one end of the rod fits into the hub of the torsion wheel and is firmly held by a pin and clamp screw. The second table clamp carries a hardened split steel chuck which likewise rigidly clamps and centers the rod. The free part of the rod may be adjusted by shifting the split chuck and clamp. The decided advantage of this clamping arrangement is the automatic centering, total elimination of slip as well as a safeguard against the damaging of the rod surface by direct contact with the clamping screws. It also permits an



L1080 Torsion Apparatus



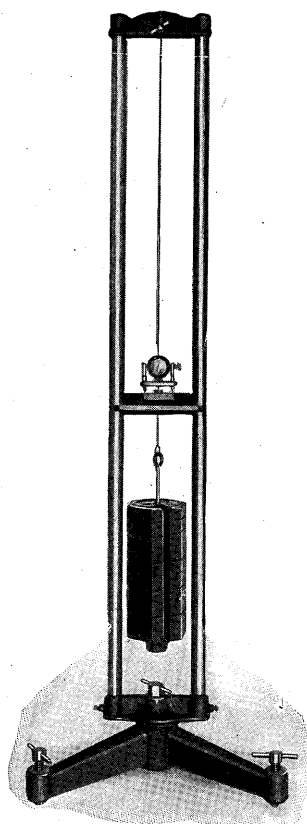
L1081 Torsion Pendulum

accurate length adjustment of the part of the rod to be tested. Complete with two steel rods, 2 and 4mm in diameter, 120cm long, fitted with chucks.....\$30.00

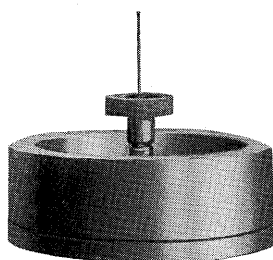
L1081 Torsion Pendulum. This apparatus with L1080 Moment of Torsion Apparatus, is very desirable from the pedagogical standpoint for showing the relation between the Period of Oscillation of Torsion Pendulums, the Moment of Torsion, and the Moment of Inertia for different rods, as described in Taylor, Watson and Howe's Experiment XI, Millikan's Experiment XI, Shannon and Macelwane's Experiment XXI and Ames and Bliss' Experiment XXVIII.

The rod, of which the Moment of Torsion T_0 has been previously determined by L1080 Torsion Apparatus (above), is rigidly clamped at any length desired by a split steel chuck and a clamp screw fitted in a heavy wall bracket. To the other end of the rod a slotted clutch is permanently attached, which can readily be clamped on to a heavy iron disc by means of a small wedge, which arrangement completely eliminates any possibility of slip. The disc is very carefully machined, avoiding any irregularities, consequently enabling reliable calculation of the Moment of Inertia from its geometrical measurements. A heavy Inertia Ring of the same outside diameter is furnished with the apparatus, permitting two sets of data for the same length of rod. All parts are neatly finished in dull black enamel. Complete with two steel rods 2 and 4mm in diameter, 120cm long, fitted with bushings.....\$27.00

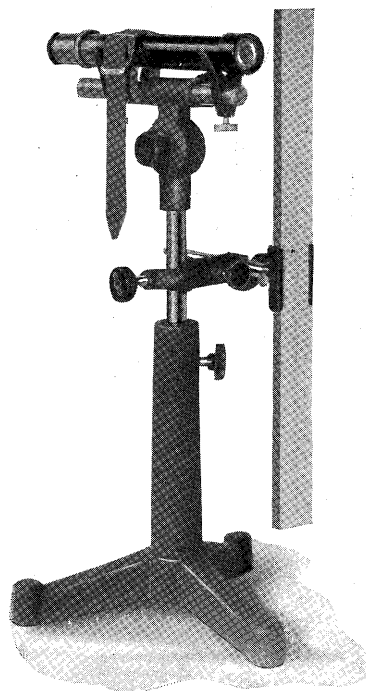
L1060 Young's Modulus Apparatus. The apparatus in its present form is of extremely substantial and sturdy construction, extra height permitting test of a wire one meter long, and an optical lever having a mirror made of **stainless steel**. The supporting frame consists of two nickel plated steel rods 30mm in diameter and 150 cm long, rigidly held together by two cast-iron yokes, one of which clamps on to the heavy tripod fitted with leveling screws. The top yoke carries an improved split steel chuck clamping arrangement for the wire. A bushing securely clamped at any definite distance of the wire under test, passes through a hole of the optical lever support table. The bushing fits with a slight clearance, damping the oscillation in the wire without introducing friction. The optical lever is of new and im-



L1060 Young's Modulus



L1060a Torsion Pendulum
Attachment for L1060

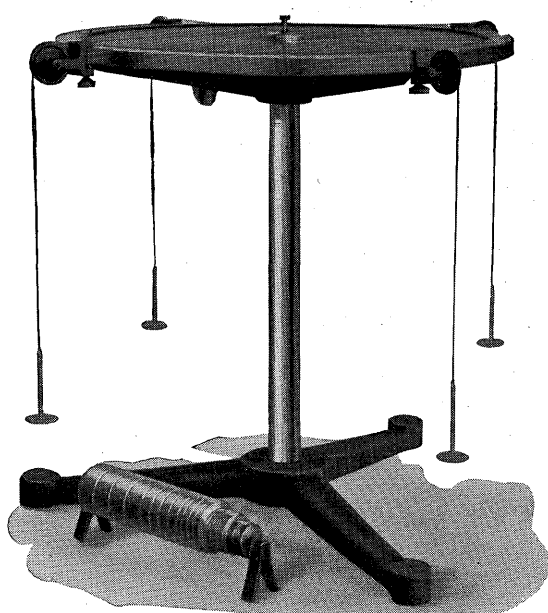


M610 Reading Telescope

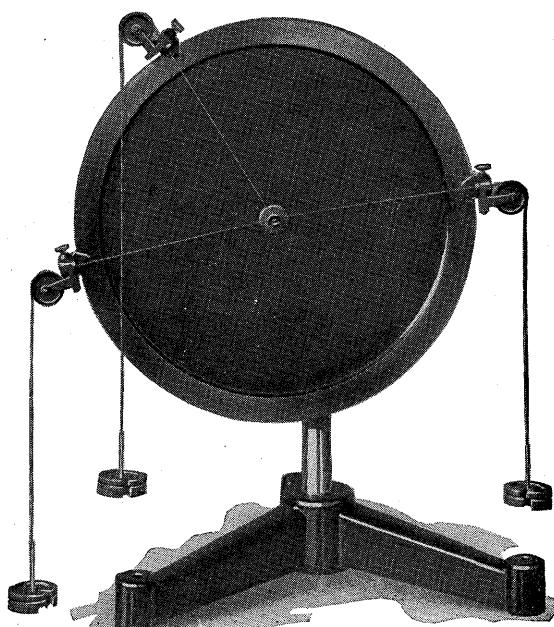
proved design with mirror of stainless steel 30mm in diameter, with highly polished, optically flat surface. The mirror frame is fitted with three hardened steel legs of which two fit in a V-groove of the support table, while the third leg rests on the bushing rigidly clamped on to the wire under test. The stress of the wire is effected by weights placed on the weight hanger, both being furnished with the apparatus and the elongation measured by telescope and scale (see M610). This apparatus is specially adaptable to Taylor, Watson and Howe's Experiment IX, Millikan's Experiment VIII, and Shannon and Macelwane's Experiment XXII. Apparatus complete with optical lever, four 2 kg. weights, and two 1 kg. weights, weight hanger, and four steel wires of different dimensions.....\$37.50

L1060a Torsion Pendulum Attachment. Designed for use in connection with L1060 Young's Modulus Apparatus. The pendulum consists of a brass disc and a heavy inertia ring 10cm in diameter, fitted with an improved clamping arrangement\$13.50

M610 Reading Telescope. Specially designed for L1060 Young's Modulus Apparatus and general laboratory use. The telescope is our M511, 20mm aperture, focusable from infinity to 31 cm. The support is provided with all necessary adjustments and is fitted with our new style Bakelite Head brass clamping screws. The scale, 50cm long with 0 in the center, is printed on bristol board and glued on to a birch strip. It is fitted with a clamping arrangement which permits the use in both vertical or horizontal positions. Complete\$25.00



L1050 Force Table



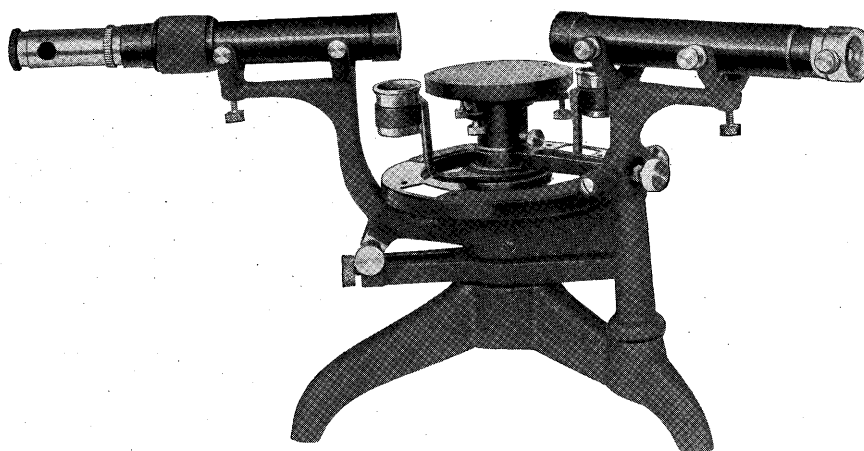
L1051a Force Table

L1050 Force Table. This apparatus is intended for studying the laws of composition and resolution of forces. The table top is made of aluminum 40cm in diameter and is fitted with clamp for holding it on a standard 30mm support rod either horizontally or vertically. The rim of the table top is graduated in half degrees, every 10th degree numbered. Four carefully made pulleys running in cone bearings and mounted on suitable clamps, may be attached to any part of the table circumference. An index on the clamp indicates accurate position. Fine silk cords with weight hangers pass over the pulleys and are attached to a small ring which may be held in the center of the table by a pin while the weights are being adjusted. The support rod is 40cm high and mounted on a substantial iron tripod.

Complete with four pulleys suitable for use in horizontal position only, a set of twelve weights and four weight hangers, and stand. Adaptable to Taylor, Watson and Howe's Experiment I. Shipping Weight 47 lbs.\$37.50

L1051 Force Table on long support rod. This apparatus is the same as L1050 but is mounted on a heavier tripod with leveling screws and the support rod is one meter long. This permits the use of the force table directly on the floor and allows easier access. It also permits attachment of the Lisagou pendulums. Complete with a set of twelve weights and four weight hangers and stand. Shipping Weight 64 lbs. Each\$45.00

L1051a Force Table. This apparatus is the same in general specifications as L1050 but is provided with four pulleys of special construction which can be adjusted in either horizontal or vertical positions. In the latter position the force table will be most desirable for class room demonstration. Complete with a set of twelve weights and stand. Shipping Weight 47 lbs.\$48.00



L101 Students' Spectrometer

L101 Students' Spectrometer. In the design of this small Spectrometer all important requirements have been carefully considered and the latest model embodies every necessary feature usually found only in the best-grade instruments. The instrument is accurately and substantially constructed, convenient in use, and will be found not only useful for the student, but will serve for research work when a higher precision is not required. Constant improvements have been made on this spectrometer since it was first put on the market, and the fact that many hundreds are now used in Educational and Industrial Laboratories throughout the world, will speak for itself. The mechanical and optical workmanship are of the same order as in our higher precision instruments.

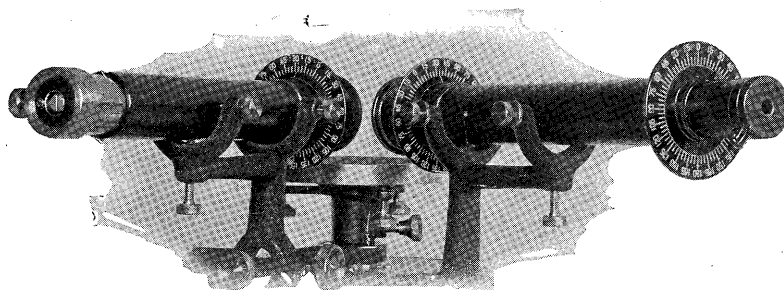
The diameter of the graduated circle is 125mm, the divisions are in 30 minutes, and the two verniers read to one minute. The division lines and figures, being in brilliant white on a black background, are very easy to read. The circle and verniers are fully protected by a cover with windows for the verniers. Two adjustable magnifiers are provided. The circle with the attached telescope, and the vernier plate have independent motions, and both are provided with clamp and tangent screws. The prism table is 80mm in diameter, and is fitted with leveling adjustments and clamp for the prism, and drilled and tapped for screws to fasten the Grating Holder or other attachments to the table. It has adjustment for height and can be rotated without disturbing this adjustment, and either with or without the vernier plate. The collimator and telescope have achromatic objectives of 25mm aperture, and 160 mm focal length. The slit has jaws of nickel-silver 6mm long; it is fitted with delicate screw adjustment and is closed by spring action, thus avoiding possible injury to the jaws. Collimator and telescope are firmly mounted in double cradles fitted with horizontal and vertical adjustments. The telescope has delicate focusing adjustment and is provided with a Gauss eyepiece of 25mm E.F.

The height of the instrument to optical axis is 210mm.....\$100.00

L712—60° Prism of Flint Glass, index for D lines about 1.65, 22.5mm high, 45mm side, with two polished faces..... 18.00

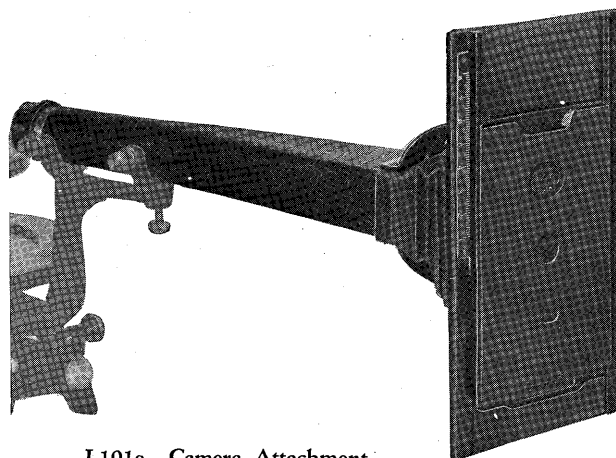
L712a—60° Prism of Flint Glass, index and dimensions same as L712, but with 3 polished faces..... 23.00

L790b Diffraction Grating , replica (transmission grating) for observation of normal spectra, 3940 lines per centimeter, ruling 25x20mm.....	4.50
L791 Diffraction Grating , replica of highest quality, 5900 lines per centimeter, ruling 25x21mm.....	7.50
L791b Diffraction Grating , replica for observation of normal spectra. The same as L791, except in quality.....	4.50
L101a Comparison Prism , fitted to slit. It should be ordered with the instrument as, if wanted later, the slit must be returned for attaching the prism.....	7.50
L101b Grating Holder , to attach to prism table for gratings or Fresnel biprisms up to 25x25mm.....	4.00
L101c Delicate Focusing Adjustment for collimator. This adjustment should be ordered with instrument. If wanted later, the collimator must be returned for fitting.....	8.00



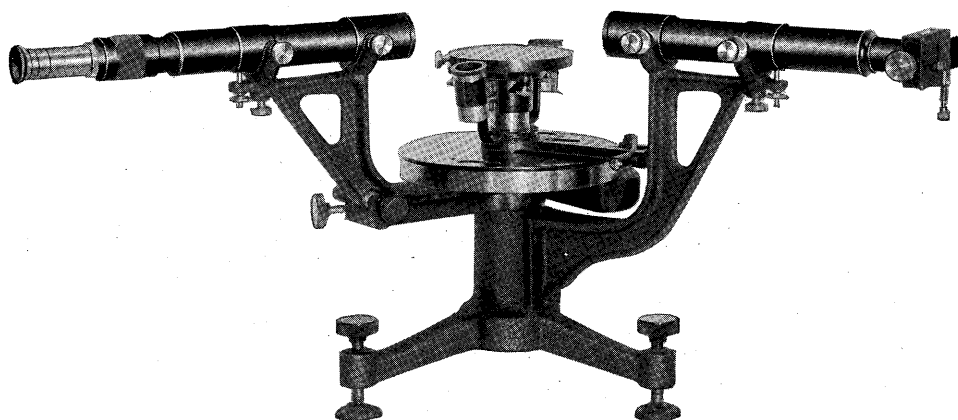
L101d Polarizing Attachments

L101d Polarizing Attachments for L101 Spectrometer, for studying Fresnel's laws of reflection and refraction, elliptical polarization by reflection and by transmission through crystals, etc. Two circles carrying rotatable 10mm Nicol prisms fit over the telescope and collimator objectives. A third circle at the eye end fits in the place of the usual adapter with cross hairs and carries a special Ramsden eyepiece with a Nicol prism between the lenses. The circles are divided to 5 degrees and permit estimating to single degrees. The Nicol prisms may be rotated independently of their circles for adjustment of zero\$70.00



L101e Camera Attachment

L101e Camera Attachment for L101 Spectrometer. A substantially constructed all metal camera attachment, designed to fit in place of the observing telescope of L101 Spectrometer. It is fitted with an objective of 25mm aperture, 300mm focal length, mounted in a draw tube graduated in millimeters for convenience in focusing. The plate holder takes a standard size $2\frac{1}{2}'' \times 3\frac{1}{2}''$ plate or film and will accommodate at least 15 exposures of spectra. It is arranged to slide vertically in a guide fitted with a millimeter scale for reference. The back plate is joined to the taper body tube by two substantial brackets about which it may be swiveled for adjustment of tilt, a durable leather bellows serving to keep it light tight. Complete with one plate holder and focusing screen.....\$75.00



L110 Laboratory Spectrometer

L110 Laboratory Spectrometer. A high grade Spectrometer of improved design, embodying many conveniences in manipulation, and specially recommended for Physical and Technical Laboratories where a substantial instrument and a high degree of accuracy is required.

A new and attractive feature of this spectrometer is the graduations of the circle, with **lines and figures appearing white on a black background**. The lines are white filled by a special process, rendering them **absolutely permanent** and very easy to read.

The circle is 150mm in diameter, made of hard brass, accurately graduated to 20 minutes and fitted with two verniers with graduations in the same plane reading to 20 seconds. Circle and verniers are protected by a dust-tight cover and readings are made by means of magnifying glasses fitted with reflectors for illuminating. The prism table is 90mm in diameter, with height and leveling adjustment and rotation with or independent of the vernier plate without affecting the height adjustment. This feature is particularly useful for setting the prism to minimum deviation. The telescope and vernier plate with prism table have independent motions which are provided with clamp and tangent screws. The axis is made of selected steel, accurately ground and fitted to the bearings, assuring absolute concentricity of circle with vernier plate. The telescope and collimator are firmly mounted in double cradles on the support brackets and fitted with the necessary adjusting screws. The brackets are substantially designed to avoid flexure. The telescope is fitted with an improved delicate focusing arrangement, giving a smooth focusing motion, and is

provided with a Gauss eyepiece of 25mm equivalent focal length. The telescope with its support bracket is counterbalanced, and the weight is relieved by an adjustable helical spring on the base of the axis, permitting free rotation. The weight of the vernier plate and prism table is similarly relieved. The objectives are of the highest quality, having an aperture of 30mm and focal length of 250mm. The collimator is adjustable for focusing. The slit is fitted with jaws of stainless steel 10mm long, closing by spring action, which eliminates the possibility of injury, and is equipped with screw adjustment for width and a sliding shutter to provide a great range of lengths. An adjustable comparison prism is fitted to the slit.

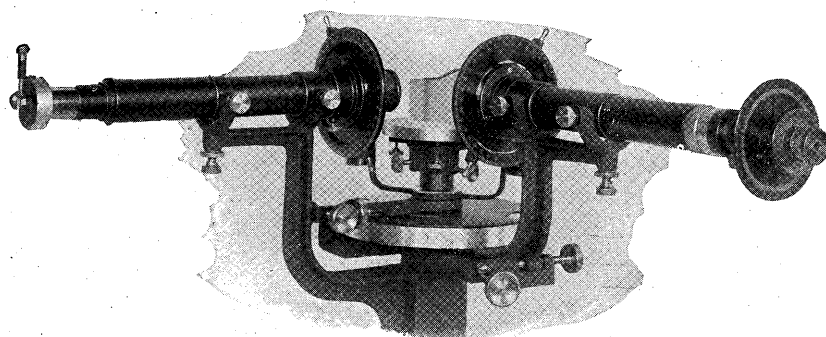
The instrument is supported on a substantial tripod, fitted with steel leveling screws and base plates. The height of the instrument to optical center is 27 cm. Each\$275.00

L713—60° Prism of Flint Glass, of index 1.65, for use with Laboratory Spectrometer L110. Two faces polished. Faces 54mm long and 27mm high 25.00

L713a—60° Prism of Flint Glass, with three faces polished. Faces 54 mm x 27mm..... 30.00

L110c Delicate Focusing Adjustment for collimator. This adjustment should be ordered with instrument. If wanted later, the collimator must be returned for fitting..... 8.00

L110d Grating Holder, to attach to prism table, for gratings or Fresnel biprisms up to 40mm x 50mm..... 4.00

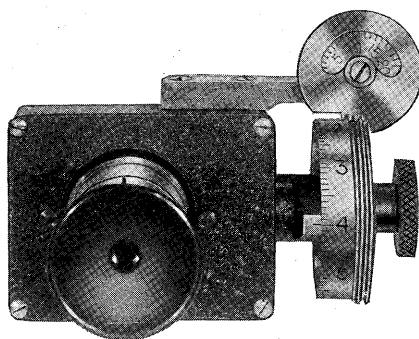


L130 Polarizing Attachments

L130 Polarizing Attachments for L110. Similar in general design to L101d but with carefully selected nicols of 14mm aperture for the objectives, and larger circles divided to one degree 150.00

L132 Wollaston Prism of 20mm aperture, mounted to fit Polarizing Attachments L101d and L130 in place of one nicol prism for the objectives.... 32.00

L133 Babinet Compensator. This is similar in mechanical construction to our standard Micrometer Eyepiece M201a, with which it is interchangeable in our standard spectroscopes, telescopes, etc. The fixed plate is 10mm x 10mm square, the movable plate 10mm x 20mm. The pitch of the screw is $\frac{1}{4}$ mm, the total range of motion about 10mm. The micrometer head is engraved with 100 divisions and carries a worm engaging in a gear. On the latter, whole turns of the screw are engraved and are easily readable simultaneously with the micrometer head. The wedge is of sufficient angle to give a motion of six fringes (wavelength 5460) across the field within the range of motion of the screw. A fixed wire serves as



L133 Babinet Compensator

index and is viewed through a standard 1" eyepiece which includes a 10mm Nicol Prism between the lenses.....\$155.00

L133a Babinet Compensator with Rotable Circle. This comprises the Babinet Compensator L133, but mounted on a rotatable adapter which fits in place of the eyepiece of our standard spectrometers. The circle is divided to 1° . This arrangement permits locating the axis of elliptically polarized vibrations as well as determining the difference of phase.....\$215.00

L134 Quarter Wave Plate with Holder, for Polarizing Attachments L101d and L130. The holder consists of a metal plate with clip for holding the quarter wave plate and is mounted on a collar which fits in place of one nicol prism for the objectives\$12.50

L136 Plane Metallic Surfaces, 20mm x 20mm, of Gold, Silver, Nickel, or Platinum sputtered on glass, for determining the constants of metallic reflection. Each\$7.50

L136a Plane Steel Surface, 20mm x 20mm, of solid polished nickel steel..... 6.00

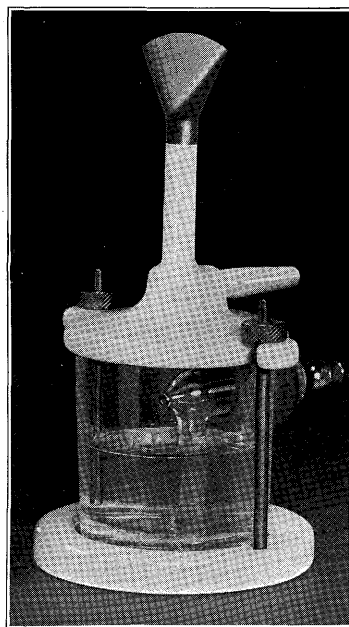
L140 Camera Attachment for L110, fitting in place of the observing telescope; it has an objective of 25mm aperture, and about 300mm focal length, mounted in a draw tube. Provision is made for photographing comparison spectra; a shutter which slips over the slit has three apertures, allowing one to cover either the center or the outer parts of the slit.

The plate holder, which takes any $3\frac{1}{4}'' \times 4\frac{1}{4}''$ plate, slides vertically, allowing ten or more exposures to be taken on one plate. A scale is provided for setting the plate holder for different exposures and a swivel with adjusting screws permits setting the plate at an angle to photograph the extreme violet. A ground glass screen for focusing is included.....\$100.00

L140a Eyepiece, for focusing camera attachments. Our standard 25mm eyepiece is fitted into a holder provided with diaphragm and cross hairs, which bears against the plate holder slide, bringing the focus of the eyepiece in the plane occupied by the sensitive film of the plate. The eyepiece may slide over the whole length of the spectrum and permits sharper focusing than obtainable with the ground glass....\$8.00

L140b Extra Plate Holder, for camera attachment..... 1.00

L140c Spectrum Plates, $3\frac{1}{4}'' \times 4\frac{1}{4}''$ for camera attachment. Per dozen..... .75



L568 Monochromatic
Flame Burner

L568 Monochromatic Flame Burner. A combination of a gas burner and an atomizer specially designed to give a continuous and intense monochromatic light source over a period of several hours. The atomizer when attached to a supply of air blows a fine spray of solution in with the gas, giving a bright broad flame with the color characteristic of the salt used.

The burner and the base are substantial iron castings **porcelain** enameled throughout, thereby precluding any possible corrosion due to the action of the salt solutions. The clamp, rods and nuts are made of Monel Metal, a material highly resistant to corrosion. The heavy glass wall vessel and atomizer can be readily taken out for cleaning. All glass parts are standardized and replaceable.

It is of a very simple construction and requires no elaborate manipulation or adjustments\$ 7.00

L568 Monochromatic Flame Burner, in lots of 5..... 31.50

NOTE: We have available lists of apparatus as required for performing all experiments in Taylor, Watson and Howe's "General Physics for the Laboratory," also for the experiments in Taylor's "College Manual of Optics," which we shall be glad to mail to interested parties.

