Bingo

Readers of journals of applied science are becoming increasingly accustomed to finding a card or coupon on which they are invited to indicate the advertised or described products and services about which they want more information. These cards are known in the advertising world as "bingo cards." Science hesitated for a long time to enter the bingo game, but finally decided to play. Each week on one of the back pages is an inquiry form on which the reader can check off the advertised products or the items described in the new equipment section on which he would like more information.

Science hesitated because there are disadvantages as well as advantages to the bingo game. The advantage to the reader is that it gives him a quick and easy method to indicate the things about which he would like to learn more. He can do it while he is reading, and does not need to remember sometime later to dictate a letter, or to write one himself. If there are several items in the same issue that interest him, one coupon takes care of inquiries about all. From the advertiser's standpoint there is also an advantage: he gets a quick and easy index of the amount of interest in the product he is advertising.

The principal objection is on the advertiser's side rather than the reader's, but some advertisers fail to recognize it. The bingo card invites a more casual, less sincerely interested inquiry than is received if an individual letter must be written. Advertisers are always interested in knowing the nature as well as the size of the circulation of a magazine in which they are contemplating placing an advertisement. Yet some of these same advertisers are content to measure the effectiveness of an ad by the total number of inquiries, regardless of their nature or quality. Perhaps, having already decided to place an ad in a particular magazine, it is advantageous to secure as many inquiries as possible; as a minimum, the list of prospects is increased. But some advertisers are more discriminating. Those who keep good count of all types of inquiries—individual letters as well as coupons—and who appraise their ads in terms of actual sales frequently report that, while Science produces a comparatively small number of inquiries, the ones that are received are of high quality and result in substantial sales volume. The less discriminating method of simply counting the total number of inquiries gives less credit to Science and less help to the advertiser.

Advertising is useful to the reader as well as to the advertiser. Many advertisements contain information that is of value to a goodly number of readers. There is also a financial benefit to the readers, for the advertisers share with them the cost of publishing the magazine. The cost this year of producing and sending 52 issues of Science to each subscriber will amount to about $11. Annual dues, which include a subscription to Science, are $8.50. If it were not for the fact that the advertisers will provide approximately $4 toward the cost for each member, dues would have to be higher.

Every time an ad in Science leads to an inquiry or a sale it is advantageous to the readers to have the journal receive the credit. Whether he likes bingo cards or not, the reader can help himself by making sure that Science does get the credit. If he prefers to write a letter, he can help both himself and the advertiser by giving the "as advertised in Science" kind of identification. If he prefers to play the bingo game, the Readers Service Form (the proper name for the form on page 378) is there for his convenience.

-D.W.
For vivid, detailed images . . . for comfort and convenience . . . choose the right light for your specific need. Choose from the most complete line serving science. Dependable illuminators for every visual and photographic application . . . for every budget.

WRITE FOR CATALOG DATA
Also, on request, obligation-free survey and evaluation of your present micro-illumination methods. Write to Bausch & Lomb Optical Co., 75932 St. Paul St. Rochester 2, New York.
FOR RAPID HEATING, LONG LIFE
CENCO® IMMERSION HEATERS

Now—of stainless steel to resist corrosion, knife-type for rapid heating. May be used in many types of liquids. New 3-prong plug enables safe grounding.

<table>
<thead>
<tr>
<th>No. 16551</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts</td>
<td>125</td>
<td>250</td>
<td>450</td>
</tr>
<tr>
<td>Each</td>
<td>$14.00</td>
<td>$14.50</td>
<td>$15.00</td>
</tr>
</tbody>
</table>

CENCO the most complete line of scientific instruments and laboratory supplies in the world.

Write for Bulletin #800 to
PHOTOVOLT CORP.
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New York 16, N. Y.
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Colorimeters  pH meters
Fluorimeters  Reflection Meters
Nephelometers  Glassmeters
Electronic Photometers  Multiplier Photometers
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PHOTOVOLT Densitometer
for Partition Chromatography and Paper Electrophoresis

A photoelectric precision instrument for the rapid and convenient evaluation of strips and sheets of filter paper in partition chromatography and paper electrophoresis.

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HARSHAW SCINTILLATION PHOSPHORS

Presents definitive article on characteristics and properties of scintillation phosphors with special emphasis on NaI(TI). A general discussion of scintillation counting is augmented with many appropriate tables, efficiency curves, and typical gamma ray spectra. Gives specifications and drawings of Harshaw mounted phosphors, and lists miscellaneous other phosphors available from Harshaw. We will be pleased to send you a copy.

Also available...
Free 36-page book
HARSHAW SYNTHETIC OPTICAL CRYSTALS

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1945 EAST 97th STREET • CLEVELAND 6, OHIO
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HASTINGS-ON-HUDSON, N. Y. • PITTSBURGH

15 AUGUST 1958
Meetings

Study of Human Biology

Although there are many scientific societies for the furtherance of the biological study of man as an individual, there has been no organization in Great Britain catering to those (such as physical anthropologists or human geneticists) concerned with human populations. The need for such an association was made clear at an informal symposium held at the Ciba Foundation in November, 1957, when papers were given on "The scope of physical anthropology and human population biology and their place in academic studies." Such a society was founded on 7 May 1958 at the British Museum (Natural History) and was named the Society for the Study of Human Biology. Its aims are to advance the study of the biology of human populations and of man as a species, in all its aspects, particularly those of human variability, genetics, ecology, adaptability, and evolution. This it will do, not only by organizing scientific meetings, for proffered papers, and symposia, but also by ensuring a continuity of workers for long-term research projects in the field.

The elected members of the committee for 1958-59 are as follows: Chairman, A. C. Stevenson (director, M.R.C. Unit for Human Genetics, Oxford); vice chairman, J. Z. Young (department of anatomy, University College, London); general secretary, J. S. Weiner (department of human anatomy, Oxford); programme secretary, G. Ainsworth Harrison (department of anatomy, Liverpool); treasurer, E. H. Ashton (department of anatomy, Birmingham); committee members: N. A. Barnicot (anthropology department, University College, London), M. J. R. Healy (Rothamstead Experimental Station, Harpenden), A. E. Mournant (Lister Institute, London), J. R. Napier (department of anatomy, Royal Free Hospital, London), K. P. Oakley [British Museum (Natural History)], and J. M. Tanner (Institute of Child Health, London).

After the meeting, members were shown some of the work in progress in the anthropology section of the British Museum. The original Rhodesian (Broken Hill), Gibraltar I and II, and Singa skulls were available for inspection. Selected recent skulls and jaws showing abnormalities of genetic interest were examined and discussed. The anthropological library and the store of skeletal material and associated laboratories were visited. As an example of the cast-making undertaken here, members were shown casts of the hand bones of Proconsul (to be described by Napier and Davis in a forthcoming monograph).

In the paleontological laboratory, the use of radiometric assay in the relative dating of fossil bones was demonstrated. In the serological laboratory, Madeleine Smith described the research she has begun on the blood typing of bones, aimed mainly at improving the available techniques and defining the limits within which they can be reliably applied to ancient material.

J. S. Weiner
Anthropology Laboratory,
Department of Anatomy,
Oxford University, Oxford, England

G. A. Harrison
Anthropology Laboratory,
Department of Anatomy,
University of Liverpool,
Liverpool, England

Geological Conference

Copies of the first circular for the 21st International Geological Congress may be obtained upon request from the American Geological Institute, 2101 Constitution Ave., NW, Washington 25, D.C. All persons who request the first circular will be placed on the mailing list to receive travel literature and other pertinent information.

Leprosy

The 7th International Congress of Leprology, originally scheduled for India, will be held in Tokyo, Japan, 12–19 November 1958. The sponsoring organizations are the International Leprosy Association, the Japanese Leprosy Association, and the Tofu Kyo-kai (Japanese Leprosy Foundation).

Forthcoming Events

September

15–20. Agriculture, European Confederation, Vienna, Austria. (European Confederation of Agriculture, Pestalozzi-strasse 1, Brugg, Argovie, Switzerland.)
15–20. Carboniferous Stratigraphy and Geology, 4th intern. cong., Heerlen, Netherlands. (Secretary, 4th Carboniferous Cong., Geological Bureau, Akkerstraat 86-88, Heerlen.)
16–20. Nuclear Electronics, Intern. symp., Paris, France. (Colloque Electronique Nucléaire, 10, avenue Pierre-Larrouse, Malakoff (Seine), France.)
16–24. Glacier Movement Symp., Cha- monix, France. (International Assoc. of Scientific Hydrology, 61, rue de Ronces, Gentruguay, Belgium.)
Ultra high vacuums from 10⁻⁷ to 10⁻⁹ mm Hg are easy to achieve with new CEC components. Costs are surprisingly low, too.

In short order you could be doing work at the incredibly low pressures afforded by ultra high vacuums. A little glass tubing and the five CEC components shown here are all you need to create, hold, and measure such vacuums.

1. The pump, an all-glass fractionating type, when used with a copper foil trap, carries you down to as low as 10⁻⁹ mm Hg. At this level, the ionization tube acts as a pump. The fractionating pump works at 25 lit/sec. against a 0.16 mm Hg forepressure.
   Model No. GF-25.

2. The ionization gauge tube, a modified Bayard-Alpert type, permits highly accurate readings from 10⁻² to 10⁻¹⁵ mm Hg. To achieve pressures below 10⁻⁹ mm Hg, you use the tube’s ionization and gettering action to pump. Model No. GIC-001.

3. The ionization gauge is a new CEC model which measures from 10⁻⁸ all the way down to 2 x 10⁻¹² mm Hg. Emission current is so stable, a reading will remain within ±20% of full scale reading with a line voltage variation from 95 to 130 volts. Plug in accessory thermocouple circuit for readings from 1 to 1000 microns. Provisions also included for a recorder. Model No. GIC-100.

4. The copper foil trap makes it possible to maintain a 10⁻⁹ mm Hg vacuum for a week or more without pumping. The special design of this trap eliminates the problem of reevaporation of condensed gases, even at room temperatures. Model No. TFG-51.

5. The valve is a special new type for holding vacuums as low as 10⁻¹⁴ mm Hg. It contains only low-vapor-pressure metals, such as Monel, and Pyrex Glass No. 7740. It withstands a 450°C bake-out. Even after a full year’s use, effective conductance is only 10⁻¹⁰ lit/sec. Model No. VAU-25.


Consolidated Electrodynamics
Rochester Division, Rochester 3, N. Y.
SALES AND SERVICE OFFICES IN PRINCIPAL CITIES
logical Laboratory, Massachusetts General Hospital, Boston 14.)

7-9. International Soc. for the History of Pharmacy, cong., Venice, Italy. (A. F. Vitolo, Piazza Carrara 10, Pisa, Italy.)

8-12. Nutrition and Vital Substances, 4th intern. conv., Essen, Germany (Secretary General, Bemeroder Strasse 61, Hannover-Kirchrode, Germany.)

11-15. Salinity Problems in the Arid Zones, UNESCO symp., Tehran, Iran. (UNESCO, 19, avenue Kleber, Paris 16e, France.)


13-16. Society of Exploration Geophysicists, 28th annual intern., San Antonio, Tex. (C. C. Campbell, Box 1356, Tulsa 1, Okla.)

13-17. American Soc. of Civil Engineers, annual conv., New York, N.Y. (W. H. Wisely, ASCE, 33 West 39 St., New York 18.)


19-26. Medical Hydraulics, 21st intern. cong., Madrid, Spain. (Dr. Francoz, 55, rue des Mathurins, Paris 8e, France.)


22-24. Aviation Medicine, 4th annual symp., Santa Monica, Calif. (T. H. Sternberg, UCLA Medical Center, Los Angeles 24, Calif.)

22-26. American Soc. for the Study of Arteriosclerosis, annual, San Francisco, Calif. (O. J. Pollak, P.O. Box 228, Dover, Del.)


23-25. Rocket Technology and Astronautics, intern., Essen, Germany. (Deutsche Gesellschaft fuer Raketechnik und Raumfahrt, e.V., Neusteinerstrasse 19, Stuttgart, Zuffenhausen.)


24-25. Taxonomic Consequences of Man’s Activities, symp., Mexico, D. F. (H. C. Cutler, Missouri Botanical Garden, St. Louis.)


27-28. Plant Physiology, 9th annual research cong., Saskatoon, Saskatchewan, Canada. (H. M. Coupland, Plant Ecology College of Agriculture, Univ. of Saskatchewan, Saskatoon.)

27-29. Radio, Institute of Radio Engineers, fall meeting, Rochester, N.Y. (V. M. Graham, EIA, 11 W. 42 St., N.Y.)


27-31. Vertebrate Speciation Conf., Univ. of Texas, Austin. (W. F. Blair, Dept. of Zoology, Univ. of Texas, Austin 12.)


Equipment

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Science does not assume responsibility for the accuracy of the information. A coupon for use in making inquiries concerning the items listed appears on page 378.

- **Tempering bath** for Babcock test is available in three sizes. Temperatures are controlled within ±1°F at any setting in the adjustable range from room temperature to 160°F. Construction is of stainless steel with Fiberglas insulation. A retaining rack permits test bottles to be emptied simultaneously. (National Appliance Co., Dept. 218)

- **Oxygen analyzer** for the determination of oxygen in steel, titanium, tungsten, and other metals is capable of a complete oxygen analysis in 5 min. Based on a sample size of 1 g, range is from 0 to 0.035-percent oxygen. Sensitivity is 0.0002 percent. The apparatus does not require a glass blower. The reaction tube, in which the sample is heated, can be changed in 2 minutes. (Laboratory Equipment Corp., Dept. 219)

- **Optical reading device** combines a microscope, for normal-distance viewing, with a precisely engraved steel scale graduated in 0.05 in. spacings. Settings with the device are said to be accurate to 0.00025 in. Scale lengths from 12 to 72 in. are available. (F. T. Griswold Manufacturing Co., Dept. 220)

- **Tape demagnetizer** for bulk erasure of magnetic tape records is said to reduce signal level 4 to 6 db below that possible with standard erasing heads. Reels up to 10½ in. in diameter for tape widths up to 2 in. can be handled. Reels are rotated by a motorized turntable. (Librascope, Inc., Dept. 221)

- **Halogen leak detector** responds only to increases in the amount of tracer gas present, making it unnecessary to wait for the instrument to clear itself. Four models are available for specific applications including high-speed checking of parts being conveyed past the detector and detection of leaks in vacuum systems operating at 1 to 500 μ-Hg or at 20 mm-Hg and above. (General Electric Co., Dept. 225)

- **Digital readout** presents numbers in a single plane with no overlapping characters. The device employs a simple projection system. Lamp life is said to be from 7000 to 8000 hr. The display consists of four digits and a symbol readout. (Kin Tel, Dept. 242)

- **Scaler of glow-tube type** has a capacity of five decimal digits without mechanical registers. Resolving time is 150 μsec. The input sensitivity is 0.25 v negative. A high-voltage supply is variable between 300 and 2500 v. (Baird-Atomic Inc., Dept. 233)

- **Fraction collector** for isolating pure gas with chromatograph fractions uses the freeze-out method of collection. The fraction is captured in a U-tube of pure silica sand chilled to liquid-nitrogen temperatures. The unit is operated with a rapid single-stroke plunger, and samples may be collected at 5-sec intervals. (Hamilton Co., Dept. 236)

- **Card-to-tape converter** is a magnetic-core memory unit that stores up to 80 alpha-numeric characters to accommodate the full contents of a standard card. The memory can be filled in a parallel manner directly from card-sensing brushes and can be read serially a character at a time. Reading time can be 14 μsec per character. Provision is made for code conversion. (Telemeter Magnetics Inc., Dept. 226)

- **Digital voltmeter** measures d-c voltage from 0.001 to 1000 v with ±0.1-percent accuracy. Readout consists of three digits and a polarity and decimal-point
Too Many Variables?

It's time to draw a line. Straighten out your cleaning problems with Haemo-Sol

There's nothing like Haemo-Sol's unique cleansing power and positive rinsing... it's completely safe! No etching! No corroding of metal parts! Immediate Haemo-Sol bath for valuable volumetric and optical equipment prevents soil etching!

Haemo-Sol guarantees clean laboratory glassware and apparatus—
- removes the full range of laboratory soils
- effectively digests proteinoi materials... other types of polymeric materials
- assures free draining pipets... burets
- gives sparkling clear surfaces for quartz and glass absorption cells
- provides chemically clean reaction and titration flasks
- leaves the clean surfaces that are a must for the smooth operation of fractionating columns and other pieces of laboratory equipment.

And, just as important as its unique cleansing power, is Haemo-Sol's high solubility and powerful solubilizing action. Haemo-Sol washed glassware rinses completely clean... nothing remains behind but a chemically clean, free draining glass surface.

Write TODAY for Sample and Literature.

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New York 14

Carbon Dioxide Equilibration Apparatus may be attached directly to a tank of gas. The device includes a needle-valve assembly, glass-bead trap, and a syringe-needle adapter. By means of the apparatus, gas is bubbled through a serum sample, completely saturating a 1.5-ml sample within 3 min. (Will Corporation, Dept. 237)

Air Particle Monitor indicates detection and measurement of particulate radioactive contamination on a logarithmically calibrated scale covering a range of $5 \times 10^{-10}$ to $10^{-6}$ uc/cm$^2$. Any preset level can be used to trigger a warning. The equipment is comprised of a computer unit and a pump unit. The computer unit consists of a beta scintillation counter, photomultiplier, and amplifier circuits. (Fairchild Camera and Instrument Corp., Dept. 240)

Audio Signal Generator operates on the heterodyne principle from 2 to 4000 cy/sec. The frequency scale is logarithmic. A built-in voltmeter provides an output indication that is accurate to ±2 percent. Frequency scanning and output regulation are automatic. (Brush Instruments, Dept. 210)

Voltmeter uses suppressed zero to achieve ±1/2 percent accuracy over a narrow range. Accuracy is maintained without ovens over the temperature range -55° to +65°C and over the frequency range 50 to 2000 cy/sec. Both d-c and a-c types are available. (Voltron Products, Dept. 211)

Digital Actuator Motor is capable of stepping rates up to 60 per second with travel of 180 deg/step. Used with a 180-to-1 gear ratio, the actuator produces 80 in. oz of torque for a 1-deg step. The weight of the motor and relay box is 1.3 lb. (Digitran Co., Dept. 215)

Inductance Meter measures inductance between 0.05 µh and 100 mh. The instrument consists of an oscillator, tunable over the range of 16 kcy/sec to 5 Mcy/sec, loosely coupled to a resonant circuit consisting of a fixed capacitor and the inductance to be measured. The resonance point is indicated by an electron indicator tube. Provision is made for measurement of low capacitance and for approximate value of Q. (Wayne-Kerr Instruments, Dept. 256)

World-Time Clock uses signals picked up from the National Bureau of Standards Station WWV. Compensation is provided for propagation errors. Time
A Portion of the Sigma Reagent Catalog

One of a series of advertisements which will reproduce the complete list. Complete list available promptly on request.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Quantity</th>
<th>Price</th>
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<tr>
<td>4,5- (5,6)-DIHYDRO-5-METHYL URACIL—See Dihydrothymidine</td>
<td>25 mg</td>
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<tr>
<td>DIHYDRO-3-METHYL-URIDINE (pfs)</td>
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<td>15.00</td>
</tr>
<tr>
<td>DIHYDRO OROTIC ACID—See Orotic Acid, Dihydro</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIHYDROTHYMIDINE (pfs)</td>
<td>25 mg</td>
<td>5.00</td>
</tr>
<tr>
<td>DIHYDROURACIL</td>
<td>10 g</td>
<td>10.00</td>
</tr>
<tr>
<td>DIHYDROXYPYRIMIDINE (5-Mercaptouracil)</td>
<td>5 g</td>
<td>17.50</td>
</tr>
<tr>
<td>DITHIOPYRIMIDINE</td>
<td>5 g</td>
<td>22.50</td>
</tr>
<tr>
<td>DITHIOPURINE</td>
<td>5 g</td>
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<tr>
<td>DITHIOPURINE (pfs)</td>
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<td>50.00</td>
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<tr>
<td>DITHIOXANTHINE—See 2,6-Dihydroxypyrimidine</td>
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<td>DITHIOXANTHINE</td>
<td>5 g</td>
<td>13.00</td>
</tr>
<tr>
<td>DPN KINASE Catalyses reaction DPN + ATP → TPN</td>
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</tr>
<tr>
<td>DPN KINASE</td>
<td>100 mg</td>
<td>7.50</td>
</tr>
<tr>
<td>DPN KINASE</td>
<td>500 mg</td>
<td>36.00</td>
</tr>
</tbody>
</table>

Other package sizes shown in complete catalog

TELEPHONE COLLECT from anywhere in the world
Day, Station to Station RP 1-5750
Night, Person to Person Dan Broida-
WYdown 3-6418

SIGMA CHEMICAL COMPANY
3500 DeKalb Street, St. Louis 18, Mo., U.S.A.
MANUFACTURERS OF THE FINEST BIOCHEMICALS AVAILABLE
SPECTROPHOTOMETER AND REFLECTANCE ATTACHMENT use a diffraction grating as the dispersion device to provide monochromatic radiation. The instrument contains a spherical integrator and a reflectance measuring system designed so that fading, chipping, or staining of the interior surface of the sphere will not affect accuracy. Very small samples can be measured. A trichromatic chart permits the conversion of reflectance readings to standard C.I.E. trichromatic values. (Bausch and Lomb Optical Co., Dept. 301)

**Synchronizing Video, Instrument, Signed and is** (Edgerton, Germershausen & Grier, Inc., Dept. 257)

**LAB-ASCO-VAC**

PORTABLE LABORATORY
HIGH-VACUUM PUMP

FREE AIR DISPLACEMENT 50 LITERS PER MINUTE GUARANTEED ABSOLUTE PRESSURE 0.1 MICRON

Noise is eliminated by insulation and rubber mounting, and with vertical design, the conventional belt and pulley have been eliminated. These features, unique to LAB-ASCO-VAC, permit a carrying handle for easy portability.

In addition to the economical purchase price, the LAB-ASCO-VAC pump requires a much smaller volume of oil, with maintenance and cleaning operations simplified for the user. The vertical design employed in the LAB-ASCO-VAC has made the pump leak-proof, and with the visible oil level cup, oil spillage by the user is confined to a minimum.

In filling the pump, oil is not introduced at the point of discharge, thereby eliminating the need for pump disconnect for this operation.

The LAB-ASCO-VAC 10 mechanical pump is designed to run cooler. A unique capillary gas ballast cleaner provides efficient operation for longer periods.

**SPECIFICATIONS:**

- Guaranteed Absolute Pressure: 0.1 Micron
- Pumping (displacement) Speed: 50 liters/min.
- Operating Speed: 1140 rpm
- Oil Charge Required: 1 pint
- Oil Capacity: 1 pint
- Height: 20 inches
- Diameter: 12 inches
- Weight: 45 lbs.
- Voltage: 110v
- Cycles: 60/60
- Price: $195.00

**OPTICAL GAGE** measures depth, thickness, height, and diameter over a range of 0 to 3 in. without masters or set gages. Measurements are read on an illuminated, magnified scale graduated in least-reading intervals of 0.0001 in. with accuracy of 25 µin. The master scale from which the scale is made is ruled on a diffraction-grating ruling engine. Objects to be measured are laid on an anvil flat to an accuracy of 5 µin. A control knob lowers a spindle until it contacts the object being measured. The spindle stops automatically on contact with the object, and the measurement may be read immediately. (Bausch & Lomb Optical Co., Dept. 250)

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NEW YORK 3, N.Y.

**National Bureau of Standards**