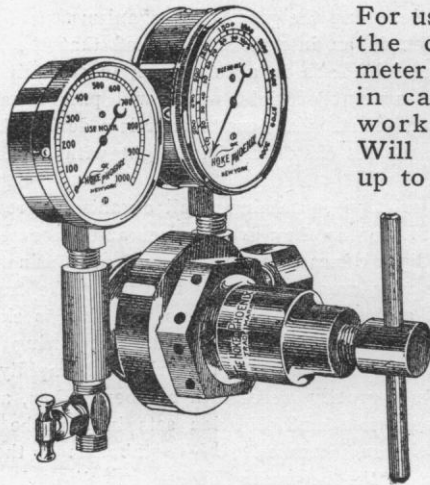


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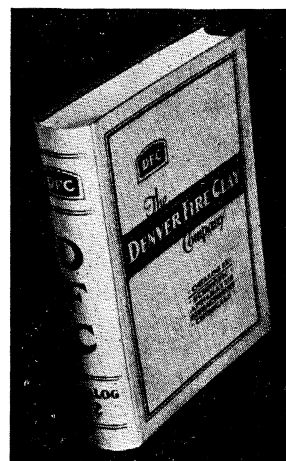
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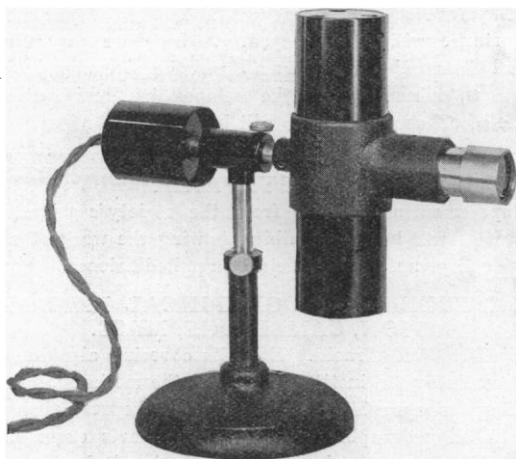
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This company recognized at an early date that precision measurements and precision gauges were vital to mass production. Consequently, C. E. Johansson, the world's leading gauge expert, was engaged. Some of his gauges and measurement equipment will be shown at the exhibition, and demonstrations and displays will be given to show that the Johansson combination gauging system (measuring system) is the universal foundation for the industries of the world. Special exhibit material will be shown from the Ford Building and the Hall of Science at the Century of Progress.

The Pittsburgh offices of the Ford Motor Company, as a tribute to the scientists of the country, will offer courtesy cars which will take the members of the association to and from the exhibition hall and the nearby buildings in which the association meetings are being held.

**GENERAL BIOLOGICAL SUPPLY HOUSE,
CHICAGO**

Booth No. 33

An exhibit having as its theme "Twenty Years of Progress in Biology." This progress will be demonstrated by means of specimens, slides, models and photographs. Featured in the exhibit will be some of the most recent developments by the Turtlox Laboratory.

**W. J. GILMORE DRUG COMPANY,
PITTSBURGH**

Booth No. 80

Exhibit consisting of some of the latest laboratory appliances of special interest to the scientist. This company has a growing department which renders special and unusual services to research laboratories.

GRADWOHL LABORATORIES, ST. LOUIS

Booths Nos. F, G and H

Exhibit showing studies in blood development, the Schilling methods of blood counting and the story of blood development in an illuminated electric cabinet. There is an illuminated pictorial representation of blood changes in various infections. Microscopic specimens of blood and blood parasites stained with Giemsa stain are shown. These laboratories have perfected an American-made Giemsa stain useful in blood work, malarial infections, trachoma, inclusion blennorrhoea and swimming pool conjunctivitis. This stain has been accepted by the Commission on Standardization of Biological Stains.

GULF REFINING COMPANY, PITTSBURGH

Booths Nos. 31 and 32

An exhibit featuring the indispensable character of petroleum products. A diorama of the Gulf Building in Pittsburgh, two or four Greek Ionic columns of illuminated glass tubes of oil, a background showing the façade of the Mellon Institute, the astounding new combination air-compressor-and-oil pump and hundreds of samples of petroleum products are outstanding features of the exhibit, the direct purpose of which is to bring out forcefully the fact that petroleum products are essential and indispensable to science. In showing the samples, the petroleum products are grouped according to their uses in industry and are located in the display in what would be the piazza of the science building. The color scheme of the complete display will simulate sandstone with relieving touches of orange and blue.

THE H. J. HEINZ COMPANY, PITTSBURGH

Booth No. 44

Exhibit will feature the part played by science in the business of this company. The scientific organization of the company and the place of research in the development of new products, improvement in processes and the control and improvement in the quality of products will be shown graphically. Products of the company in the development of which research has been of paramount importance will be displayed. A brochure of "Nutritional Charts," covering in a comprehensive way data on vitamins, minerals and the composition and nutritive value of all common foods will be displayed.

**THE HISTORICAL SOCIETY OF WESTERN
PENNSYLVANIA**

Supplementing objects from the society's permanent collection will be loan exhibits showing the work of western Pennsylvania in the field of applied science.

**INSTITUTE OF GEOGRAPHICAL EXPLORATION,
CAMBRIDGE, MASS.**

By Mr. Weld Arnold. Exhibits covering airplane surveys made by the institute, showing the methods used for making topographical maps; panels representing the results of geographical expeditions; charts executed in the field of cartography; some originals of physiographical features by William Morris Davis; and a few three-dimensional models of topographical features.

**INSTRUMENTS PUBLISHING COMPANY,
NEW YORK CITY**

Booth No. 21

An exhibit of the periodical, *Instruments*, as well as the following books: Behar's "Fundamentals of Instrumentation," "Temperature and Humidity Measurement and Control," "Process and Operation Time and Speed Control," "Pressure and Vacuum Measurement and Control" and De Juhasz' "The Engine Indicator."

**THE KELLOGG CEREAL COMPANY, BATTLE
CREEK, MICH.**

Booth No. 13

A display consisting of the Kellogg ready-to-eat cereals and Kellogg's Kaffee Hag coffee. The exhibit will emphasize results of research which has been carried on with these products during the last three or four years.

Important New McGraw-Hill Books

Introduction to Atomic Spectra

By HARVEY E. WHITE, University of California. *International Series in Physics*. 457 pages, \$5.00

"I have looked it over with the greatest interest and think that Professor White has done us all a very great service in producing this extraordinarily good book. It will certainly fill a need that is not supplied by any other book that I know of. The photographs and diagrams are

very well chosen and executed. Professor White's work shows a rare combination of ability in theory and in experiment, which is reflected in this work."

—Professor Frederick A. Saunders, Harvard University.

Principles of Mathematical Physics

By WILLIAM V. HOUSTON, California Institute of Technology. *International Series in Physics*. 265 pages, \$3.50

Aims to fill the gap between the elementary courses in physics and the more advanced treatises on special subjects. It introduces the student to the more powerful methods of treating physical problems by giving him an

opportunity to apply them to simple cases. One of the outstanding features of the book is the extensive problems, which form an integral part of the text and which are designed to develop the student's resourcefulness.

Experimental Physical Chemistry. *New second edition*

By FARRINGTON DANIELS, J. HOWARD MATHEWS and JOHN WARREN WILLIAMS, University of Wisconsin. *International Chemical Series*. 499 pages, \$3.50

As before, this comprehensive laboratory guide seeks to illustrate the principles of physical chemistry, train the student in careful experimentation, develop familiarity with apparatus, and encourage ability in research. The

book has been thoroughly revised, particularly the chapters dealing with electrochemistry and related fields. Several new experiments have been added and the references have been brought up to date.

Introduction to Mechanics and Heat

By NATHANIEL H. FRANK, Massachusetts Institute of Technology. 339 pages, \$3.00

A systematic elementary treatment of the fundamentals of mechanics and heat, characterized by a close-knit structure and a logical, unified presentation. Emphasis is placed on the quantitative aspects of all topics, on

unity of thought, and on the method of applying fundamental principles to actual problems, of which numerous examples are given. The use of special formulas for special problems is avoided.

The Physical Basis of Things

By JOHN A. ELDRIDGE, University of Iowa. *International Series in Physics*. 407 pages, \$3.75

This book—new in spirit, different in approach and style—explains, with emphasis on concrete illustration and with only the simplest mathematics, the meaning of those ideas which, evolving from the older kinetic theory, have

culminated in the new atomic theory of today. The author tells what modern physics is, how it has developed, what it has done, and suggests some of its possibilities.

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LIQUEFACTION OF OXYGEN AND OTHER EXPERIMENTS

By Professor Charles T. Knipp, University of Illinois, assisted by Professor J. B. Nathanson, Carnegie Institute of Technology. List of demonstrations: (1) Liquefaction of oxygen by three methods; (2) Active nitrogen afterglow in a bulb prepared in 1930 and in a freshly prepared bulb; (3) Flash in the afterglow of an electrodeless discharge about three seconds after excitation; (4) Positive rays in helium, in 25-liter dumb-bell shaped container—beams 40 cm. in length,—hollow cylindrical cathode; (5) Positive rays in helium,—triangular hollow cathode; (6) Molecular or atomic bombardment, a striking demonstration of Boltzman's law; (7) Cathode rays leave the surface normally.

LEEDS AND NORTHRUP COMPANY, PHILADELPHIA**Booth No. 27**

Exhibit of new a.c. bridges, resistors, capacitors, oscillator and amplifier for high precision measurements at high frequencies, and a demonstration of the I & N glass electrode for pH measurements. The company will also be prepared to discuss the use of the other types of electrical measuring and control equipments in which they specialize.

E. LEITZ, INC., NEW YORK CITY**Booth No. 70**

The new Leitz universal photo-micrographic equipment "Panphot," which permits observations and photography by transmitted, ordinary as well as polarized light, by reflected as well as reflected polarized light, darkfield illumination, etc., will be on display. Research microscopes, Dr. Chambers' Micro-Manipulator and a complete display of Leica equipment will be available, in charge of trained technical representatives.

THE MACMILLAN COMPANY, NEW YORK CITY**Booth No. 71**

This exhibit will be divided into six sections; engineering, chemistry-geology, physics, biology, mathematics and psychology. In each section both standard and recent texts, reference and collateral works will be on display and a special feature will be found in a display of scientific works for the lay reader. The Macmillan representatives will be prepared to answer any questions in connection with scientific publications.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Demonstration model of Van de Graaff 15,000,000 volt electrostatic generator, possibly accompanied by explanatory film. New mechanical aids to the solution of mathematical problems, such as recently tested new device for the solution of simultaneous equations, and unit of new cinema integrator for the solution of problems in integral calculus. Twenty-minute film of ultra slow motion movies taken by means of the Edgerton stroboscope, which among other things will show certain new ideas regarding traveling waves on transmission lines. Exhibit relative to new highly sensitive thermocouple; a packing model representative of atomic arrangement in crystalline structures.

MCGRAW-HILL BOOK COMPANY, NEW YORK CITY**Booth No. 4**

Advance proofs of important forthcoming books in the fields of science will be on display, also an exhibit of recent McGraw-Hill books in the fields of biology, chemistry, forestry, geography, geology, metallurgy, physics and psychology.

MELLON INSTITUTE OF INDUSTRIAL RESEARCH

An information booth, at which particulars can readily be obtained regarding the industries and institutions of the Pittsburgh district. Another service of this bureau will be to arrange for inspectional trips, especially through the buildings of Mellon Institute.

METROPOLITAN LIFE INSURANCE COMPANY, NEW YORK CITY**Booth No. 12**

Progress in Public Health since 1900: An exhibit of charts showing (1) the past and present public health problems in the United States as indicated by the death rates from the leading causes of death, 1900 and 1932; (2) the trend of the crude death rates of the leading causes of death during the past three decades; (3) the increased chances of survival to each age, during the like period. The object of the exhibit is to demonstrate the character of the scientific investigations conducted by the company in the important fields of vital statistics and of public health work.

NATIONAL BROADCASTING COMPANY, NEW YORK CITY**Booths Nos. 5 and 6**

Exhibit will consist of graphic display of educational, religious and other public service programs which are on the air, and will also include new microphones and methods of remote control pickup of latest design and at the same time provide for distribution of free material in relation to the company's activities in both the experimental and educational fields. The company offers the courtesy of its facilities for the broadcasting of unusual features of the meetings.

NATIONAL GEOGRAPHIC SOCIETY

Exhibit of equipment used in U. S. Army Air Corps stratosphere flight of July 28, 1934, consisting of (1) a model of the gondola, to one-fifth scale, cut in half vertically so as to show the placement of the many instruments and pieces of equipment taken into the stratosphere; (2) one of the two electrical resistance thermometers which were carried on arms extending from the gondola, and the meter carried inside the gondola which registered temperatures of the outside air; (3) the spectrograph which was suspended 500 feet below the gondola and the parachute which brought it safely to earth; (4) two air sample chambers, of the type taken on the flight, in which to bring back samples of stratosphere air from several altitudes; (5) chart from the barograph records of the flight showing the pressure in millimeters of mercury for each minute of the flight.

CAMBRIDGE



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THE GRAMINEAE

By Agnes Arber

497 pages, 213 illustrations. \$8.50

A study of cereal, bamboo and grass; the history of the grass family is dealt with, followed by an exhaustive analysis of the structure of the Gramineae, their distribution, dispersal, and hybridity. The book contains a bibliography of over 500 titles.

A HISTORY OF EMBRYOLOGY

By Joseph Needham

300 pages. Illustrated. Probably \$4.25

A history of the subject from the earliest times down to 1814 when John's Chemische Tabellen was published. Illustrated with numerous plates.

INEQUALITIES

*By G. H. Hardy, J. E. Littlewood
and G. Polya*

326 pages. \$4.75

The first six chapters contain an account of the inequalities, such as Holder's inequality, most commonly used in analysis; the treatment of these is comprehensive and in some ways exhaustive. The remaining chapters are on subjects sug-

gested by the more systematic investigations which precede, and serve as an introduction to regions of analysis in which inequalities play a central part.

MANUAL SKILL, ITS ORGANIZATION AND DEVELOPMENT

By J. W. Cox

268 pages. Illustrated. \$5.00

This new volume in the Cambridge Psychological Library considers the problem of measuring manual skill and the nature of the factors which determine its organization, together with an investigation of the conditions under which manual skill is best developed.

ELEMENTARY QUANTUM MECHANICS

By R. W. Gurney

200 pages. \$2.25

This book enables the reader to think in terms of wave mechanics as easily as he could formerly in terms of atomic models. Atomic and molecular problems are treated by graphical methods, carefully explained and illustrated by more than sixty diagrams. The last two chapters give a simple development of the Dirac perturbation theory.

Prospectuses will be sent on request

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**THE JOHN C. OLIVER MEMORIAL RE-
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GARET MEMORIAL HOSPITAL,
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This institution will exhibit: (1) laboratory procedures for the estimation of sex hormones, including the Friedman test for pregnancy, estrogenic hormone (according to Kurzrok), and prepituitary hormone (Ascheim-Zondek); (2) treatment of Osteomyelitis by means of blow-fly larvae, including the breeding of sterile larvae, clinical application (motion picture), and investigations into the modes of action of blow-fly larvae (maggots); (3) an apparatus for the intravenous administration of dextrose and other fluids and a recommended method for preparing dextrose solutions for intravenous use. Tables, charts, photographs, apparatus, models, animals and insect material will be used.

PHIPPS AND BIRD, INC., RICHMOND, VA.**Booth No. 81**

Laboratory supplies and chemicals: Motor-driven Kymograph for student use; self-contained inductorium; gravity air tambour; physiology laboratory equipment; electrically heated drying ovens and incubators, with important innovations in design and operation; also a Phipps & Bird solution feeder, which sanitary engineers commend for operation, cost and accuracy, and the Neale-Forbes titration assembly, which offers a novel accurate feed control for titration.

**PHOTOGRAPHIC SECTION OF ACADEMY OF
SCIENCE AND ART OF PITTSBURGH**

Selections from the annual International Salon of Photographic Art which is exhibited in the art galleries of the Carnegie Institute.

**PITTSBURGH PLATE GLASS COMPANY,
PITTSBURGH****Booth No. 16**

This company will display the several different types of glass which they manufacture and will illustrate their several different characteristics as to light transmission, heat transmission, strength, safety features, etc. They will also exhibit a small experimental pot showing the type of container in which glass is melted and some of the different types of special glasses, such as structural glasses, x-ray protective glasses, welding glasses and similar materials, as well as some of the types of machinery used in making polished plate glass.

**DR. M. A. RAINES, HOWARD UNIVERSITY,
WASHINGTON, D. C.**

A set-up for testing the effect of environmental conditions on the growth of the young root.

**SMITHSONIAN INSTITUTION, DIVISION OF
RADIATION AND ORGANISMS**

Exhibit consisting of monochromatic light filters (Christiansen) with explanatory material. The filters shown were used by Dr. C. G. Abbot in stellar investigations. These filters and others used in plant growth investigations will be discussed in a paper before the Physical Society by Dr. E. D. McAlister.

SPENCER LENS COMPANY, BUFFALO, N. Y.**Booth No. 26**

Demonstration of the latest developments in microscopes, microtomes and projection apparatus. The company's representatives will show the advantage of the low fine adjustment; binocular bodies with converging tubes; the newest petrographical and chemical microscopes and accessories for scientific laboratory workers.

STANDARD ELECTRIC TIME COMPANY**Booth No. 74**

Electric stop clocks, synchronous motor driven, measuring elapsed time intervals, which feature accuracy to within one cycle, rugged construction, large dials, also manual, automatic and remote control.

**TRIARCH BOTANICAL PRODUCTS,
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The exhibit will include prepared microscope slides in general botany, plant pathology, pharmacognosy, cytology and wood technology; preserved plants for the ordinary botany laboratory; lantern slides showing native plants and microscopic structures together with striking photographic enlargements. New catalog (No. 3) listing many new and brilliant preparations, illustrated with more than 200 original photomicrographs and photographs, including schedules of regular techniques, will be distributed free to botanists.

UNIVERSITY OF CHICAGO

By Professor Arthur H. Compton. Exhibit consisting of the new cosmic ray counting meter and of one of the Model A instruments as used by Carpe and Koven on Mt. McKinley and later sent into the stratosphere with Settle and Fordney. The instrument is similar to the one now in use by Poulter and Fordney in the Antarctica.

**UNIVERSITY OF PITTSBURGH, PHYSICS
EXHIBIT**

The nucleus of this exhibit, under the direction of Dr. E. Hutchisson, consists of three specially designed cabinets containing many experiments which illustrate some of the fundamental laws of physics. These experiments are set up in such a way that after being performed they return automatically to their original condition. These demonstration experiments are concerned with light, wave

(Continued on Page 24)

BIDDLE SPECIALTIES

At the Annual Science Exhibition

Mellon Institute of Industrial Research,
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You are cordially invited to visit our Booth No. 18, where we are planning to exhibit:

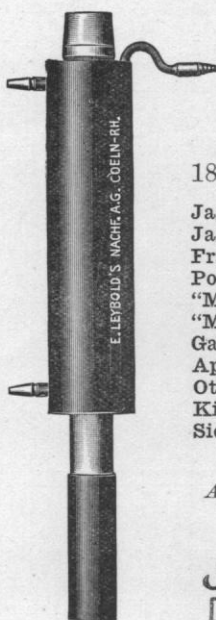
Jagabi Rheostats
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Frahm Tachometers and Frequency Meters
Pointolite Lamps
"Megger" Insulation Testing Instruments
"Megger" Ground Testing Instruments
Gaede High Vacuum Pumps
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Otto Wolff Potentiometer
Kipp & Zonen Recording Microphotometer
Siemens & Halske Precision Electrical
Measuring Instruments

*Appropriate literature will be forwarded
on request.*

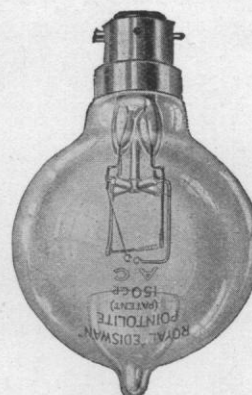
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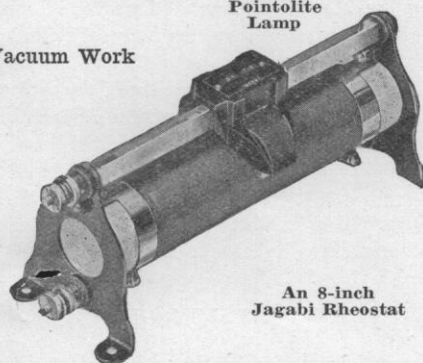
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THE OHIO CHEMICAL & MFG. COMPANY
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INVITATION

You are invited to visit our Booth No. 75A to examine our exhibit of biological teaching material, anatomical models, charts and other preparations for botany, geology, embryology, physiology, genetics, comparative anatomy: skeletons, skulls, bone preparations (human and zoological); Spalteholz transparent preparations; PROMAR microscopic projection and drawing apparatus; neurological charts and models.

CLAY-ADAMS COMPANY
25 East 26th Street NEW YORK

(Continued from Page 22)

motion and sound and the application of physics to the automobile. Many other interesting scientific experiments are presented, such as high temperature measurements, sound and the development of shatter-proof glass. A display of original developments in laboratory apparatus is included.

THE UNIVERSITY OF PITTSBURGH, DEPARTMENT OF ZOOLOGY

An exhibit of the work of the animal biologist. This series of exhibits will interpret the work of the biologist in terms of philosophic, educational and economic considerations. Among the exhibits will be a "Tree of Life" with living animals to show the gradual changes of complexity in form and function, living animals illustrating the Mendelian laws of heredity, the behavior of muscle when removed from the body, the effects of freezing living tissues, nervous activity, an experimental study in evolution, methods of teaching zoology, simulations of vital activity and the action of short radio waves on living organisms. Highly magnified motion pictures of animal life, microscopic animals and minute fragments of living heart tissue growing outside of the body will be shown. This exhibit is carried out under the direction of Professor Robert T. Hance, head of the department of zoology.

JOINT UNIVERSITY PRESS EXHIBIT Booths Nos. 40 and 41

This will be a cooperative display of scientific and technical books by these presses: Columbia University Press, Oxford University Press, Harvard University Press, Stanford University Press, Pennsylvania University Press, University of North Carolina Press, University of Minnesota Press and University of Chicago Press. A special feature will be the continuous showing of the University of Chicago educational talking pictures in a special demonstration room.

D. VAN NOSTRAND COMPANY, INC., NEW YORK CITY Booth No. 25

Exhibit of latest books, including the new edition of Professor Compton's book on "X-Rays," a revised edition of the "Chemical Formulary" and the second volume of additional formulas; also the first complete work on the analysis and manufacture of spirituous liquor, as well as recent important chemical publications, some imported from England.

THE VASCULAR CLINIC OF THE NEW YORK POST-GRADUATE HOSPITAL AND MEDICAL SCHOOL, NEW YORK CITY

The effect of tobacco on the temperature of the extremities as demonstrated by thermocouple readings of the skin at the base of the fingernails. Exhibit demonstrating the effect of tobacco (chiefly cigarettes) on the circulation in the peripheral part of the body. Charts showing temperature changes at the finger tips as a result of smoking tobacco. These measured temperature changes will be demonstrated at various designated times during each day. This exhibit will be in charge of Dr. A. Wilbur Duryee and his associates.

W. M. WELCH MANUFACTURING COMPANY, CHICAGO Booth No. 7

Electron Display: Demonstration of Millikan oil drop experiment, special electroscopes and condensers, new Thorium decay apparatus, Hoag's $\frac{e}{m}$ apparatus and new x-ray absorption screen and Echelon filters. Special Vacuum Equipment: New Duo-Seal triple stage rotary oil seal pump, capacity in excess of thirty liters per minute of free air, Knipp's condensation pump, McLeod and DuBrovin gauges. General line of physical and chemical laboratory apparatus.

B. WESTERMANN COMPANY, INC., NEW YORK CITY Booth No. 23

Exhibit of the most important publications which appeared in the German and French languages during the year 1934 in physics, mathematics, botany, zoology, chemistry, psychology, technology, geology, biology, social science, economics and general sciences.

WESTON ELECTRICAL INSTRUMENT COR- PORATION, NEWARK, N. J.

Booth No. 11

An exhibit of a representative line of portable and panel types of electrical indicating instruments, many of which are newly designed. Featured will be applications of the Weston Photronic photoelectric cell and its associated apparatus. This group will include such devices as an illumination control relay, smoke alarm, Weston sensitrol relays, a line of photographic exposure meters and direct reading light-measuring instruments.

WILLIAMS AND WILKINS COMPANY, BALTIMORE

Booth No. 1

An exhibit of about twenty scientific journals published by this company, many of them being official vehicles of science societies; also samples of their book output, including works in many fields of science—medicine, biology, physics, chemistry, etc.—including books in medicine for the student and practitioner; also books by four of the leading British medical publishers, which are represented by this company.

MIESSNER INVENTIONS, INC., MILLBURN, N. J.

Mr. Benjamin F. Miessner, accompanied by the eminent concert pianist, Anton Rovinsky, will probably give an unusual demonstration with his Electronic piano on Saturday and Sunday afternoon.

REGISTRATION AND INFORMATION

The privileges to those wearing the association badge at meetings are increasing significantly. The registration is placed in the Exhibition Hall for greatest convenience. Space will be available for the use of members of the press.

THE BELL TELEPHONE LABORATORIES Booth No. 46

Demonstrating the diffraction of electrons, complementary to the vice-presidential address of Dr. C. J. Davisson.