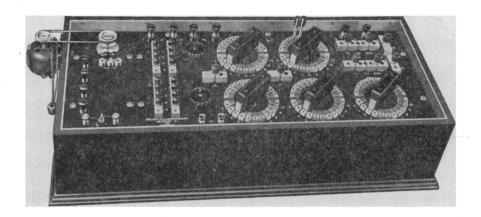
# Electrical Measuring Instruments

for

### **Precise Determinations**



Improved Feussner Potentiometer Multiplier Standard Cell Comparing Potentiometer Modified Mueller Temperature Bridge Thermometer Commutator Platinum Resistance Thermometers Kelvin Double Bridge (illustrated) Per Cent Bridge

Standard Cells

#### **EPPLEY**

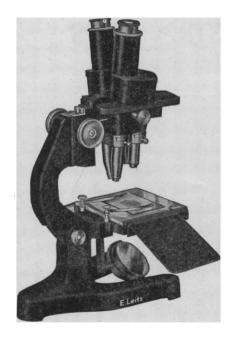
THE EPPLEY LABORATORY, INC.

SCIENTIFIC INSTRUMENTS

NEWPORT, R.I.

# LEITZ

## Wide Field Binocular Microscope



A New Model with

## Automatic Multiple Objective Nosepiece

In connection with Wide Field Binocular Microscopes of other make, the one or other method of interchanging objectives has been offered. These were found to have shortcomings in being either restricted to the use of special objectives or to a limited number of them. The Leitz Works have succeeded in providing an

# Automatic Multiple Objective Nosepiece which permits the use of the standard paired objectives

This multiple Objective Nosepiece provides an automatic interchange of three pairs of objectives at one time. The prism body, resembling in its general construction the body of the well-known series of Leitz Wide Field Binocular Microscopes, is provided with oculars of large diameter. To this body is attached the Automatic Multiple Objective Nosepiece. A pair of objectives IX are permanently mounted to the nosepiece while two dove-tailed tracks serve to accommodate any two pairs of objectives of the available series.

The track on which the objective carriage glides is provided with three stops. When sliding the carriage back and forth to change from one objective to another, the carriage spring engages these stops. The right hand side of the objective carriage is equipped with a spring handle. Upon releasing this handle, the carriage automatically moves forward to be arrested at the next stop, thus placing the second objective into the optical center. The same procedure is repeated for placing the third objective in position. The backward motion of the objective carriage is accomplished in an identical manner, each of the three objectives can successively be located within the optical field.

An important feature is offered by the rapid and exceedingly simple manner in which the change from one objective to another is accomplished, this by means of a spring arresting the objective automatically within the optical center. The convenience of this device can readily be appreciated through actual use of the microscope.

A permanent alignment of the optical system is assured by means of the rigid mounting by which the objectives are attached to the carriage and furthermore, the fact that, when shifting the objectives, they are not touched by hand and not the least pressure is exerted upon them or upon the optical axis, respectively.

We believe that with the introduction of this Automatic Nosepiece, we have contributed materially towards enhancing the usefulness of Wide Field Binocular Microscopes.

WRITE FOR PAMPHLET NO. 1169 (O) in which five different microscope models equipped with the Automatic Multiple Objective Nosepiece are listed.

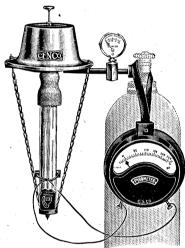
60 East 10th Street

E. LEITZ, Inc.

New York, N. Y.

# New low prices on— THE CENCO LIQUID AIR APPARATUS

## LECTURE DEMONSTRATIONS



No. 8320 (Shown with No. 8321 and a Pyrometer)

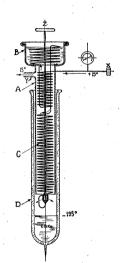


Diagram Showing Internal Construc-

ANY interesting experiments that can be performed with the liquefied gases (so-called permanent gases), have not been possible in most laboratories because the liquefied gases could not be procured. This apparatus permits the production of liquid air or oxygen on a laboratory scale at comparatively low expense, since it requires no expensive compressors or purifying apparatus. At the same time, it gives visual demonstration of the production of the liquid gas by the Linde process which has heretofore not been possible in more than a very few laboratories. From 60 to 75 cc of liquid oxygen is obtained from a 200 cubic foot tank which is enough for most of the well-known experiments with liquid air.

8320. Cenco Liquid Air Apparatus, Demonstration Type, complete with plain Dewar tube, without thermocouple or pyrometer ......

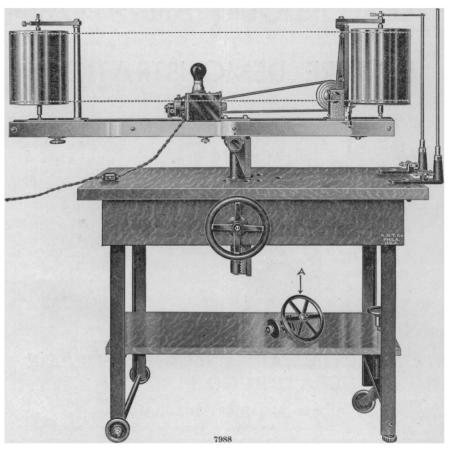
8321. Dewar Tube, Demonstration Type, for use with No. 8320, special form with mirror removed from a strip down the side to permit observation of the process of liquefaction. A thermocouple is sealed in the tube, which when connected to a pyrometer enables the temperature \$25.00 of the contents to be noted.....

\$10.00 8321A. Dewar Tube, plain, for replacement in case of breakage .....

## Central Scientific Company

LABORATORY NO SUPPLIES
Apparatus Chemicals New York - Boston - CHICAGO-TORONTO-LOS ANGELES

# NEW MODEL MILLER KYMOGRAPH No. 3



MILLER KYMOGRAPH NO. 3. With steel bed 133 cm long, which swings about the vertical axis and can be clamped at any point. A crank at front of table gives a vertical adjustment of 28 cm. Drums are 20 cm diameter by 25.5 cm high and take record paper up to 328 cm length.

Drive is by a new electric motor with a sensitive governor to control the speed from 30 to 120 r.p.m. A three-groove pulley on the motor shaft is connected by endless belt to a corresponding pulley of larger diameter on a two-speed gear box. With this arrangement, speeds from  $\frac{1}{5}$  mm per second (with lever down) to 60 mm per second (with lever up) are possible. For slower speeds and overnight records, the motor is belted to countershaft "A" mounted on the bed between the motor and the gear box.

## ARTHUR H. THOMAS COMPANY RETAIL—WHOLESALE—EXPORT

#### LABORATORY APPARATUS AND REAGENTS

WEST WASHINGTON SQUARE

PHILADELPHIA, U. S. A

Cable Address, BALANCE, Philadelphia

# SCIENCE

Vol. 74	FRIDAY, NOVE	MBER 13, 1931
The United States Army Medical Depa its Relation to Public Health: MA ERSKINE HUME	JOR EDGAR	for the Pre SANDERS an Live Nema
Obituary: Richard Alexander Fullerton Penrose Joseph Stanley-Brown. Recent Dec		Zoological O N. A. Cobb Special Article A Chart of
Scientific Events: The Bermuda Fresh-water System; ical Maps; The Agricultural Experime A New Harvard Observatory; A Ju Award	nt Stations; unior Nobel	Structure: 1 Sugar Toler pheres: Dr. on the Lung AMEEL Science News
Scientific Notes and News	481	
Discussion: Concerning an Increase in the Potency Virus in Vitro: Dr. Peter K. Olitsi Filip C. Forsbeck. Geomorphological	KY and Dr. al Evidence	SCIENCE: ment of Science lished every F
of a Climatic Boundary: Professor Ri Russell. Chlorates as Herbicides: Loomis, Russell Bissey and E. V. S	Dr. W. E.	T New Y
Causative Organism of a Papular Typ Measles: Professor Anthony Berg. Abstracts: Dr. Paul D. Lamson	oe of Apple Biological	Lancaster, Pa. Annual Subscr
Scientific Apparatus and Laboratory Mon An Adaptation of the Box Camera micrography: Dr. Charles S. Apgar.	ethods: to Photo-	SCIENCE is tion for the Ad- ing membershi the office of the Institution Bui

Vol. 74

for the Preservation of Old Manuscripts: J. P.	
SANDERS and Dr. F. K. CAMERON. The Use of	
Live Nemas (Metoncholaimus Pristiurus) in	
Zoological Courses in Schools and Colleges: Dr.	
N. A. Cobb	487
Special Articles:	
A Chart of Radioactive Elements Indicating their	
Structure: Professor Ingo W. D. Hackh. The	
Sugar Tolerance of Yeasts Expressed in Atmos-	
pheres: Dr. MARGARET B. CHURCH. More Data	
on the Lung Fluke in North America: Donald J.	
AMEEL	490
Science News	10
·	

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKEEN CATTELL and published every Friday by

#### THE SCIENCE PRESS

New York City: Grand Central Terminal

Lancaster, Pa. Annual Subscription, \$6.00

Garrison, N. Y. Single Copies, 15 Cts.

No. 1924

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

### THE UNITED STATES ARMY MEDICAL DEPARTMENT AND ITS RELATION TO PUBLIC HEALTH

By Major EDGAR ERSKINE HUME

MEDICAL CORPS, U. S. ARMY

An army exists for the purpose of destroying the power of the enemy and preventing his retaliating in kind. The medical department of an army is, as are all branches, charged with doing all possible to bring about this end. Specifically, in the words of our army regulations:

The mission of the Medical Department is the conservation of man power-the preservation of the strength of the military forces. This is accomplished by the selec-

1 The fourth annual Delta Omega lecture at the Massachusetts Institute of Technology, April 3, 1931. The Delta Omega lecture is delivered each year before the chapters of the Delta Omega Society of the Massachusetts Institute of Technology and of the Harvard School of Public Health, and to it the public is invited. The Delta Omega Society, to which selected students of public health are admitted, was founded in 1924 at the School of Hygiene and Public Health of the Johns Hopkins University. Other chapters have been established at Harvard, the Massachusetts Institute of Technology, Yale, Michigan and California.

tion and enrolment for military service, through properly conducted physical examinations, of only those men physically fit for the performance of the duties to devolve upon them, by keeping such personnel in good physical condition through the application of modern principles of preventive medicine, and in furnishing those who do become disabled with such aid in the form of evacuation and hospitalization facilities as will speedily restore them to health and fighting efficiency.

This is a clear statement of our duty in general terms, and the manner of its performance in modern warfare may be appreciated when I tell you that, in the world war, 85 per cent. of the total number of American army battle casualties were returned to duty, and a total of 95 per cent. of the sick and ordinary injuries were returned to duty. And to those who do not know of the work of the medical service in combat, let me say in passing that though ordinarily considered "non-combatants," the casualties in our

### Books of special interest to doctors . . .



# THE MEDICAL ECONOMICS SERIES

## Paying Your Sickness Bills

BY MICHAEL M. DAVIS

The costs of being sick are here scrutinized; the ways of meeting them—charity, sliding-scale charges, taxation, insurance—evaluated, and a plea made for further experimentation with an improved form of group insurance as the most equitable solution for both doctor and patient.

\$2.50



# Medical Administration of Teaching Hospitals

BY EMMET B. BAY

A comparative study of nineteen important teaching hospitals. "... The book is essential to those engaged in various fields of medical administration and may be read with profit by physicians desiring to understand how organization may contribute to the effectiveness of their own efforts..."—Journal of the A.M.A. "... a closely analytical study... fresh and stimulating."—Lancet.

\$2.00



## The Public's Investment in Hospitals

BY C. RUFUS ROREM

"This work will go a long ways toward helping those of us in the hospital field to solve our financial and accounting problems. There has been a long felt need for such a book..."—F. D. Coffey, Comptroller, Provident Hospital and Training School.

\$2.50

### Order of Birth, Parent-Age, and Intelligence

By L. L. THURSTONE AND RICHARD L. JENKINS

An analysis of 10,000 case histories of the Institute for Juvenile Research, Chicago, and an extensive review of the literature on the problems investigated. "... among the results of especial interest to clinical psychologists may be cited two: that the first born are more likely to be problem children than are their brothers and sisters, and that the sex of the next older or younger child apparently influences behavior adjustment. The results of the study are succinctly summarized. . . ''-Psychological Clinic.

"... The material is well organized, and the tables are excellently arranged."—American Journal of Diseases of Children.

\$3.00

### Medicine, Science, and Art

Studies in Interrelations

By ALFRED E. COHN

"Perhaps the book's most interesting essay, that on 'The Difference between Art and Science in their Relation to Nature,' is especially distinguished for the pace and elegance of its logic, its clean and well-regulated prose, its at once cautious and relatively novel findings."—New York Evening Post.

Other titles are:

The Development of the Harveian Circulation.

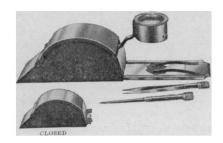
Purposes in Medical Research.

Medicine and Science.

Physiology and Medicine. The Hierarchy of Medicine.

\$4.00

The University of Chicago Press



### Naturalist's Pocket Microscope and Dissecting Kit

Complete For field or desk use. Contains an excellent compound lens of large size and high magnification (8x) which springs to position when case is opened; scalpel and forceps of surgical steel; and glass object slide with clamps. Finest workman-ship and finish. Ideal for the naturalist, scientist or student. PRICE, with Symmetrical Doublet Lens

Sent Postpaid on Receipt of Remittance

#### KOLLMORGEN OPTICAL CORPORATION

767 Wythe Ave., Brooklyn, N. Y.

#### PRECISION BINOCULARS

Made with the accuracy of fine scientific instruments. Ample range of magnifications, bright clear field; compactness; freedom from color aberration.

For information write

BAUSCH & LOMB OPTICAL CO. 632 St. Paul St., Rochester, N. Y.



#### Hy-Speed MIXERS

Clamp to any tank, operate from light circuit, mix all liquids, maintain even temperature baths. Thousands used in sizes for

Also English to 50,000 gallon tanks.

Write for Catalogue
Lined Tanks

ALSOP ENGINEERING CO.

39 West 60th St., New York



## Field Equipment for Engineers,

Explorers, Hunters, Travelers
Scientific Instruments; Packing Equipment;
Skis; Firearms; Clothing; Fiala Pat. Sleeping Bags; Optical Instruments; Astronomic Telescopes; Range Finders; Binoculars.
Paulin Altimeters. Write for Catalog "A"

FIALA OUTFITS 47 Warren St., New York



#### NEW LISTS FINE SHELLS

A Generic List of recent Mollusca covering 34 sheets has just been issued and will be mailed to those interested. Nothing quite like it in existence. Also 5 sheets covering books on Conchology. Will quote prices on any Mollusca desired from any part of the World. Largest scientific stock in existence.

WALTER F. WEBB

202 Westminster Road

Rochester, N. Y.

SOUTHERN BIOLOGICAL SUPPLY CO., Inc.

517 Decatur St. New Orleans, La.

Living and Preserved Biological Specimens of all Types for the Laboratory Museum or Research, especially Southern or Louisiana Forms.

Specialists in Amoeba Cultures, Giant Bullfrogs, Alligators, etc.



#### VISITRON

PHOTOELECTRIC CELLS

for SCIENTIFIC RESEARCH
These cells are noted for their high sensitivity and long life.
SEND FOR BULLETIN 119

LABORATORIES

731a Belmont Ave.

Chicago, U. S. A.

#### BIOLOGICAL and NATURAL

### HISTORY MATERIAL



Zoological Groups **Embryological** Slides

**Botanical** Life Histories **Drosophila Cultures** 

Catalogs on request: Address

#### MARINE BIOLOGICAL LABORATORY

Supply Department

Woods Hole, Mass., U. S. A.

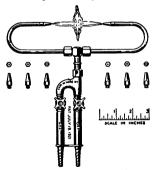
## **Scorpion**

Cross-Fire

For working Pyrex and quartz glass; sealing off; brazing, etc.

It uses city gas, with oxygen. Models also for natural gas, hydrogen, or acetylene, with oxygen.

The arms are flexible and the flames are adjustable. A laboratory necessity.



One of the Hoke oxy-gas burners.

Ask for folder JS.

Your dealer or

Hoke

22 Albany St., New York City

### DROSOPHILA MELANOGASTER

for

### Elementary genetic experiments

Representative mutations of all four chromosomes

Ready for immediate delivery

White Eye

Vestigial Wing

Yellow Body Ebony Body

Eyeless

Wild Type

Cultures at \$2.00 each

Other mutations can be supplied at short notice

#### STANDARD SCIENTIFIC SUPPLY CORP.

Biological, Bacteriological and Chemical Apparatus, Naturalists' Supplies, Specimens, Skeletons, Anatomical Models, Wall Charts, Glass Jars, Microscopes and Accessories.

10-14 West 25th Street

New York City

## AMERICAN MEN OF SCIENCE

### A Biographical Directory

Edited by J. McKeen Cattell and Jaques Cattell

The fourth edition of the Biographical Directory of American Men of Science contains about 13,000 sketches and extends to 1,132 pages. It is an invaluable work of reference for scientific men. It is useful for libraries, newspapers, educational executives and all who have relations with those engaged in scientific research.

Price, Ten dollars net, postage paid

### THE SCIENCE PRESS

Grand Central Terminal New York, N. Y.