The automatic control panel of the C-54 which recently made the pilotless transatlantic flight being inspected by James L. Anast (right), chief of the Army's automatic flight branch of the All-Weather Flying Center, and Capt. Thomas J. Wells (left), Army test pilot, of Orlando, Florida, shortly after the plane's arrival at the Brise Norton Aerodrome near London on September 23 (see News and Notes).

The Polysulfides in Levinstein Process Mustard Gas
Designed for Efficient and Enduring Laboratory Service

CORROSION-RESISTANT

WELCH STAINLESS STEEL TRIPLE-BEAM BALANCES

1 - Fast and Accurate Weighings ★
2 - High Sensitivity ★
3 - Cobalite Knife Edges ★
4 - Covered Agate Bearings ★
5 - Three Etched Scales (visible at eye level) ★
6 - Stable and Well Damped

SENSITIVITY: 0.01 g. or less at total capacity
CAPACITY: 111 g. (with extra weight 201 g.)

Each $21.50—Lots 3, Each $19.50
(Extra weight $1.25 additional)

W. M. WELCH SCIENTIFIC COMPANY
Established 1880

1515 Sedgwick St., Dept. E. Chicago 10, Ill., U. S. A.
WEATHERWAX’ Plant Biology

Beautifully illustrated — finely balanced — and thoroughly up-to-date . . . the New (2nd) Edition of Dr. Weatherwax’ text is all of these. It is ideally suited for today’s one-semester course in elementary botany. All through the text you will find new material that has been added for this edition. An entire new discussion of auxins is given— with their relation to tropisms, flowering, etc. There is new material on viruses, penicillin and streptomycin. And a new section appears on Plant Formation—covering the four major groupings: forests, grasslands, deserts and tundras.

By Paul Weatherwax, Professor of Botany, Indiana University. 451 pages, 5½" × 8½", with 320 illustrations on 190 figures.

PALMQUIST and PETRY’S General Botany Laboratory Book

This important new laboratory manual is designed for courses with 30–36 laboratory periods of approximately two hours each. It is unusual in its complete directions for the student; in the thoroughness of its question-and-answer approach to each problem; and in the usefulness of its illustrations. The experiments cover a wide variety of subjects from diffusion and osmosis to digestion and respiration. The practicality of the manual is evidenced by its adaptability to any standard text and by the availability of the plant materials it requires.

By Edward M. Palmquist, Ph.D., Professor of Botany, University of Missouri; and Loren C. Petry, Ph.D., Professor of Botany, Cornell University. 190 pages, 8½" × 11", illus. $2.50

W. B. SAUNDERS COMPANY
West Washington Square Philadelphia 5
CONTENTS


Starring in American Men of Science: Stephen S. Visher 359

News and Notes 361

Comments by Readers 367

Technical Papers
Effect of Rutin on Anaphylactic and Histamine Shock: R. J. Raiman, E. R. Later, and H. Neches 368

Ammonia Nitrogen Produced From Isomeric Peptides In Kidney Homogenate Digests: Jose M. Gonzalez, Vincent E. Price, and Jesse P. Greenstein 369

Use of Insoluble Penicillin Salts for the Prolongation of Penicillin Blood Levels: Samuel Monash 370

Inhibition of the Enzymatic Hydrolysis of ATP by Certain Cardiac Drugs: T. E. Kimura and K. P. DuBois 370

(Cover photo by Press Association, Inc.)

Creatinuria in Diabetics and an Evaluation of Methods for Determining Total Creatinine: Saul Caspe, Benjamin Davidson, and Joseph Truhlar 371

Interpretation of Lignin: The Synthesis of Gymnosperm Lignin: Alfred Russell 372

In the Laboratory
Ortho-Hydroxyphenylacetic Acid From an Amorphous Penicillin: Henry Fischbach, T. E. Eble, and Joseph Levine 373

The Laboratory Preparation of Mustard Gas: Henry E. Beni 374

Oxidation of β-Carotene With Osmium Tetroxide: G. C. L. Goss and W. D. McFarlane 375

An Improved Electromagnetic Sphygmograph: Basil I. Panzer, et al. 376

Book Reviews
A new notation and enumeration system for organic compounds: G. Malcolm Dyson. Reviewed by Frederick D. Rossini 377


Scientific Book Register 378

Remittances and orders for subscriptions and single copies, and notices of change of address should be sent to the Circulation Department. Claims for missing numbers will not be allowed if received more than 60 days from date of issue. No claims allowed from subscribers in Central Europe, Asia, or the Pacific Islands other than Hawaii or because of failure to notify the Circulation Department of a change of address or because copy is missing from the files.

Change of address. Four weeks notice is required for change of address. When ordering a change, please furnish an address stencil label from a recent issue. Address changes can be made only if the old as well as the new address is supplied.

The American Association for the Advancement of Science also publishes THE SCIENTIFIC MONTHLY. Subscription rates on request.
We invite your aid in the
ANNUAL SCIENCE TALENT SEARCH

You may already be familiar with the Science Talent Search—an annual contest sponsored by the Westinghouse Educational Foundation to discover and encourage scientific ability among high school seniors. If so, we solicit your continued aid and encouragement to boys and girls showing promise in the field of science. If not, we would like to send you full information so you may aid qualified students.

Briefly, the Science Talent Search includes scholarship awards totaling $11,000, plus five-day, all-expense trips to Washington, D. C., for the 40 finalists. Selection of winners is based on a Science Aptitude Examination, scholastic standing, the high school teacher’s recommendation, and a 1,000-word essay on “My Scientific Project”.

There is still time for students to enter the 1947 contest. As a contribution to America’s scientific future, we invite your interest and cooperation. For further information, write to the address below.

Other Westinghouse Scholarships

George Westinghouse Scholarships in Engineering—ten $2,200 scholarships at Carnegie Institute of Technology, awarded annually to boys with exceptional mental ability, engineering aptitude and leadership qualities.

Worcester Scholarship in Engineering—a scholarship for boys providing full tuition for a four-year engineering course at Worcester Polytechnic Institute.

War Memorial Scholarships—four $2,000 scholarships open to sons of Westinghouse employees and to junior employees of Westinghouse.

Better Methods Electric Contest—for 4-H Club boys and girls devising the most efficient and profitable ways of doing their farm and home chores.

Westinghouse

For full information on these scholarships, write Westinghouse Electric Corporation, School Service, P. O. Box 1017, Pittsburgh, Pa.
The Concentrated-Arc Lamp produces an intense spot of white light many times the brightness of the ordinary tungsten filament lamp. The two-watt lamps with source diameter of .003” have intrinsic brightness of approximately 100 candles per square millimeter. The arc is formed on a thin film of zirconium by electrodes enclosed in an argon-filled bulb. The lamps are rated in 2, 10, 25, and 100 watts with source diameters of 0.003, 0.016, 0.029 and 0.059 inches.

The complete listing of Concentrated-Arc Lamps with prices is available upon request. Write for Circular 1178.
exclusive interchangeable drawer system makes this the "all-purpose" laboratory file

You can have them ALL in the same unit . . . 1" drawers, and 2" and 4", in any combination your filing needs call for. Only "LAB-AID" files have this versatile tracking system which permits instant interchange as filing demands vary. Drawers slide smoothly under full weight of close-packed slides. Safety stops prevent accidental withdrawal, and all-steel construction assures permanent freedom from warping or binding.

Units are small enough (19" square) to fit easily on a desk, yet each will hold up to 6500 slides. Units can be stacked to any height . . . staunch welded-steel construction includes interlocking angles for stability and weight-supporting strength. The "LAB-AID" file is, in simple truth, the "all-purpose" file for all laboratory needs . . . however large or small.
NOW, Bausch & Lomb optical science and engineering make it possible for you to adjust the focus of microscope substage illumination for many objectives of different magnifications as easily and quickly as you set your watch!

The new, exclusive Bausch & Lomb Variable Focus Condenser permits virtually instantaneous change of magnification. All you have to do to change from a higher to a lower power objective is to select the desired objective by means of the revolving nosepiece, and rack down the condenser lens by simply turning the large, convenient adjusting knob. Racking down increases the area of illuminated field, and decreases the numerical aperture of the illuminating beam. This is illustrated at the left by the actual photographs of the light rays focused in uranium glass, and by the diagrams of the Variable Focus Condenser lenses.

The necessary coordination of objective and condenser N.A.'s is done in seconds rather than minutes. Intensity of illumination is generally materially increased in the low and intermediate powers. There are no bothersome interruptions in specimen observation. Lens elements or diaphragms are not removed or changed. Only one condenser is needed for all objectives from oil immersion to 48 mm!

In the Bausch & Lomb Variable Focus Condenser, the upper element, of a two lens condenser of 1.25 N.A., is mounted stationary within the aperture of the microscope stage. The lower lens, with iris diaphragm, is centered in full ring mount in the rack and pinion substage for easy separation from the top, as desired. This design approximates the ideal substage condenser more closely than any other yet devised. Developed primarily for bright field microscopy, it may be used also for dark field work by racking down the lens to fill the field of the objective, and inserting the dark field stop. When used with oil immersion objectives, the slide is in immersion contact with the upper condenser lens. Further information is presented on the following pages.

NOTE: The block of uranium glass on the microscope stage is used to visibly demonstrate the light path.
A New, Important Advancement in the Science of Microscopy... the VARIABLE FOCUS CONDENSER (Patented)

Available on New Bausch & Lomb Laboratory Microscopes AT NO EXTRA COST!

ADDITIONAL IMPORTANT DATA ON NEXT PAGE
Only Bausch & Lomb Laboratory Microscopes Give You the New Variable Focus Condenser

**Monocular**  **Divisible Monocular**  **Vertical Binocular**  **Inclined Binocular**

**It is Standard Equipment**  **At No Additional Cost**

The greatly improved efficiency of illumination, the amazing speed and convenience offered by the new Bausch & Lomb Variable Focus Condenser described on the two preceding pages marks a great forward stride in the science of microscopy.

This revolutionary condenser cannot be installed on laboratory microscopes of other makes or those previously manufactured by Bausch & Lomb. Henceforth, it will be supplied on all new Bausch & Lomb Laboratory Microscopes normally equipped with a rack and pinion substage condenser—and at no increase in price. Current catalog numbers may be used in ordering, except for Models CTA and BA, which are designated CTA V and BAV to indicate the Variable Focus Condenser. You'll want its superior performance. You can have it by replacing your present laboratory microscope with one of the Bausch & Lomb models shown above. Other advantages and specifications of these laboratory microscopes are listed in Catalog D-185, available on request.

You can see for yourself, at no cost or obligation, how... by a simple turn of a knob... the new Bausch & Lomb Variable Focus Condenser is varied in focal length and numerical aperture for each objective. You can experience, by focusing it yourself, its amazingly good performance for all objectives of both high and low power. Write now, requesting a demonstration. Bausch & Lomb Optical Company, 642-J St. Paul Street, Rochester 2, New York.
University, Tulane University, the Universities of Alabama, Kentucky, North Carolina, Tennessee, Texas, and Virginia, and Vanderbilt University.

The National Registry of Rare Chemicals, 35 West 33rd Street, Chicago 16, Illinois, lists the following wanted chemicals: 6-hydroxy-2,2,5,7,8-pentamethylychroman; d-2-desoxyribose; hydrocoeruligone; diborane; deuteronomia; coniferin; nitroarogine; agmatine; galegin; canealine; canavanine; hydroxysine; laudanosine; 3-chloropyridazine; pyridazine; pyridazone-3-carboxylic acid; pyridazine-3-carboxylic acid; xanthopterin; desoxyxypiridazine; ethionine; carbon oxyxelene; and carbon sulfoselenide.

The Huancayo Magnetic Observatory, the most important of its kind in this hemisphere, has now been transferred to the Government of Peru from the Carnegie Institution of Washington, in accordance with the latter’s policy of transferring fixed observatories to the governments of countries in which they are located, and also in accordance with the recommendation of the International Union of Geodesy and Geophysics that governments take over such facilities within their own territory because of their importance to national economy. The Observatory, functioning autonomously, will be supervised by a Directive Committee headed by Jorge Broggi, director, Geological Institute of Peru, and including three Peruvian scientists, and three U. S. representatives: J. M. Hydridrck, Rockefeller Foundation, and now of the Peruvian Ministry of Public Health; John A. Fleming, formerly director, Department of Terrestrial Magnetism, Carnegie Institution, and currently special adviser to the Institution in international scientific affairs, who led in the establishment of the Observatory in 1922; and the cultural attaché of the U. S. Embassy in Peru.

The Swedish Deep Sea Expedition

The Swedish Deep Sea Expedition, organized by, and under the personal direction of, Hans Pettersson, director of the Oceanografiska Institutet, left Göteborg on July 4, 1947, on the 1,450-ton motor schooner Albatross. The trip is expected to last approximately 15 months, and during that time oceanographic studies will be conducted in low-latitude regions in the Atlantic, the Caribbean, the Pacific, the Indian Ocean, and the Mediterranean. On August 20, 1947, the Albatross had reached the Canal Zone and was scheduled to proceed to Tahiti via the Galapagos and Marquesas Islands, thence to Hawaii and the Netherlands East Indies, and through the Indian Ocean to the Mediterranean.

The principal work of the expedition is to obtain cores of sediment in the deep ocean basins. These are taken with the new piston core sampler developed by Börje Kullenberg, and undisturbed cores have been obtained up to 20 meters in length. The events recorded in these deep-sea cores should greatly add to our meager knowledge of the recent history of the oceans, and such long cores may extend a few millions of years into the geologic past when obtained from the center of a large ocean basin. In addition to cores, continuous depth records are made with a new type of British fathometer which records on a larger scale than any other at present in use. Depth profiles from the Atlantic basins show a remarkable roughness of the bottom in the deep basins in many places with several abrupt changes in depth suggesting fault zones. Walddi Weibull is measuring the apparent thickness of the deep ocean sediments by means of sonic reflections recorded from the explosion of small depth bombs. In the Caribbean Weibull has obtained a probable thickness ranging from 1,000 to 3,000 feet. Complete hydrographic stations are being occupied at regular intervals, and the intensity of light penetration is being measured at various depths. Large water samples also are being collected from deep water layers for a study of their radioactivity.

It was the good fortune of the undersigned to be the guest of the expedition on its way from Martinique to the Canal Zone, representing the Hydrographic Office of the Navy Department and the Woods Hole Oceanographic Institution. Towing techniques for living Foraminifera were demonstrated, and a new type of bottom sampler was loaned to the party. The Albatross is admirably fitted out for a round-the-world cruise, and the scientific party and ship officers and crew are of the highest degree of competence. The ship is a freighter and merchant officer training ship with the midship section converted into laboratories and quarters for the scientific staff. On the main deck is a large general laboratory as well as a chemical and biological laboratory. On the second deck is a large laboratory for treating the cores, which are opened on board, a large refrigeration room for the preservation of certain materials, an aquarium room, a completely equipped photographic dark room, and a small machine shop. The large winch for operating the piston core sampler is in the forward hold and is equipped with 7,500 meters of unspliced heavy cable.

It is interesting to note that the cost of the expedition (approximately $500,000) is not being borne by the government of Sweden, but is made up entirely of donations from private Swedish citizens who are interested in sponsoring the pure science of oceanography. This is a remarkable achievement for a country having only about 4 per cent of the population and 1 per cent of the wealth of the United States and now being subjected to severe income taxation. There is no doubt that the Swedish Deep Sea Expedition will produce results which are of fundamental importance to oceanography. (Fred B. Pfluger, Jr., Woods Hole Oceanographic Institution.)

Erratum. The price of Thermodynamics for chemists by Samuel Glasstone was incorrectly quoted in its review by Don M. Yost in Science, September 26. The book is a single volume, not one of a series, and its correct price is $5.00.

Make Plans for—

American Institute of Electrical Engineers, Midwest General Meeting, November 3-7, Chicago, Illinois.

American Institute of Chemical Engineers, November 9-11, Detroit, Michigan.

National Committee for Mental Hygiene, November 12-13, Hotel Pennsylvania, New York.


The Society of American Foresters, Annual Meeting, December 18-20, Minneapolis, Minnesota.

American Association for the Advancement of Science, 114th Meeting, December 26-31, Chicago, Illinois.