ORLL’S
Vertebrate Biology

This clearly written new text presents a beautiful study and picture of vertebrate life of North America. You’ll find all types of native vertebrates covered in detail—fishes, amphibians, reptiles, birds and mammals. A separate chapter is devoted to each group, outlining both general characteristics (skeletal, muscular, circulatory and digestive systems, etc.) and special characteristics (coloration, appendages and locomotion, scales, teeth, antlers and horns, feather arrangements, etc.).

Emphasis is placed on special characteristics such as structural adaptations of the appendages and the integumentary system which have significant correlations with behavioral differences.

No one vertebrate species is dealt with in its entirety, but certain phases in the activities of selected animals have been used to illustrate various behavior patterns and to present, wherever possible, the reasons for these patterns.

The author examines the regional distribution of the vertebrates and the territory and home range of each. He covers such topics as life zones, biomes, biotic provinces and areas, habitat, the territorial concept, methods of marking vertebrates, etc.

The mechanics and causes of migration, methods of studying migration, emigration and dispersal, etc., are treated separately.

The methods of classifying vertebrates are fully discussed in a chapter covering the binomial system, subspecies, taxonomic characteristics, modern systematics.

In the final chapters Dr. Orr covers Dormancy, Reproduction, Growth and Development and Population Dynamics.

Recommended references are listed at the end of each chapter.

The many line drawings, charts and beautiful photographs aid greatly in making this text a valuable presentation of North American vertebrate life.

By ROBERT T. ORR, Ph.D., Curator of Birds and Mammals, California Academy of Sciences; Professor of Biology, University of San Francisco. About 448 pages, 6¾” x 9¼”, with 153 illustrations. About $7.50.

New—Just Ready!


Gladly Sent to College Teachers on Approval
Inside Packard's Series 410A Auto-Gamma Spectrometer it's all solid-state electronics. Fully transistorized—there's not a single hot filament electron tube to cause heat and reliability problems. Unique expander-amplifier circuitry and magnetic amplifier voltage regulation insure that narrow "windows" are maintained with maximum stability. In the wide mode of operation, windows of any width may be examined. Of course, integral operation capability is also included.

The Series 410A is available for manual operation or as a part of a complete Auto-Gamma System—an automated unit capable of handling, unattended, up to 100 samples. The patented* automatic sample changer with its center well and peripheral sample rack insures constant geometry and therefore constant background.

Packard Auto-Gamma Systems are generally supplied with either 2" x 2" or 3" x 3" crystal well detectors for either manual or fully automatic operation.

If you are counting I\(^{131}\), Co\(^{60}\), Na\(^{24}\) or any other gamma emitter, you should find out "what's inside" Packard's transistorized Auto-Gamma Systems that make them count so well . . . so reliably.

*U.S. Patent No. 2,924,718

Write in for Bulletin 400

Tri-Carb Liquid Scintillation Spectrometers * Auto-Gamma Spectrometers
Scalers * Ratemeters * Small Animal Counters * Flow Detectors

Packard Instrument Company, Inc.
BOX 428-A, LA GRANGE, ILLINOIS  PHONE HUnter 5-6300

CHICAGO • ALBUQUERQUE • ATLANTA • BOSTON • LOS ANGELES • NEW YORK • PHILADELPHIA • PITTSBURGH
SAN FRANCISCO • WASHINGTON, D.C. • ZURICH • PARIS

SCIENCE, VOL. 133
S. S. Barkulis, director of microbiological research with CIBA Pharmaceutical Products, Inc., Summit, N.J., has been awarded the eighth annual Selman A. Waksman award by the New Jersey Branch of the Society of American Bacteriologists. The award is presented every year to a scientist in the eastern section of the United States who is under 40 years of age.

Walter P. Work, associate clinical professor of otolaryngology at the University of California School of Medicine, has been named chairman of the department of otolaryngology at the University of Michigan Medical School, effective 1 July. He succeeds the late James H. Maxwell.

Alexander Kossiakoff, pioneer in the field of solid propellant rockets and a well-known physical chemist, has been named associate director of Johns Hopkins University's Applied Physics Laboratory in Silver Spring, Md. He has been assistant director of the Laboratory since 1948.

Harold L. Segal, associate professor of pharmacology at the St. Louis University School of Medicine, has been awarded a 6-month National Science Foundation fellowship to conduct research at the University of Vienna in Austria, where he will investigate the chemical structure of proteins. He will be on leave of absence until 1 September.

Ralph A. Sawyer, vice president for research and dean of the graduate school at the University of Michigan, recently received the Spectroscopy Society of Pittsburgh's annual award for outstanding contributions to the field of spectroscopy. The presentation took place during the Pittsburgh Conference for Analytical Chemistry and Applied Spectroscopy, which was attended by more than 3500 scientists.

Col. Charles H. Roadman of the National Aeronautics and Space Administration, since last June a special assistant to the director of the Office of Life Sciences, has been appointed deputy director of that office. Roadman, a career Air Force officer, is a specialist in aviation medicine.

George Welford has joined U.S. Nuclear Corporation, Burbank, Calif., as director of its Laboratory for Radiochemical Bioassay and Environmental Testing. Welford was formerly with the Atomic Energy Commission's Health and Safety Laboratory, where he was leader of the Radiochemical Methods Development Group.

George C. Sponsler recently joined the Research and Development Division at the Navy Bureau of Ships as chief scientist for research and development on the Technical and Analysis and Operations Research Staff. Previously, Sponsler was senior scientist at the Hoffman Science Center, Santa Barbara, Calif.

Benjamin Pasamanick, professor of psychiatry at Ohio State University and director of research at the Columbus Psychiatric Institute, has received the $500 Stratton award of the American Psychopathological Association for his studies on the epidemiology of mental disorder.

James W. Perry recently became a member of the faculty of the systems engineering department at the University of Arizona's College of Engineering. He was previously director of the Documentation Center at Western Reserve University. Application of electronic automation to non-numerical information is his principal field of interest.

I. Moyer Hunsberger has been named dean of the College of Arts and Sciences at the University of Massachusetts. A former Fordham University professor, he joined the university last September to head its department of chemistry. In his new post he succeeds Fred V. Cahill, Jr., who resigned last July to become dean of general studies at North Carolina State College.

After 38 years of service with the U.S. Department of Agriculture, John T. Scanlan has retired as head of lubricants investigations at the Agricultural Research Service's Eastern Utilization Research and Development Division in Wyndmoore, Pa. Scanlan is best known for his research program on animal fat, which led to the development of some important commercial products, including a purified oleic acid and a stabilizing plasticizer that enables plastic compositions to withstand the effects of heat and light. He also developed several processes for obtaining lanolin derivatives from wool wax.

Recent Deaths

Parry Borgstrom, Washington, D.C.; 71; superintendent of the U.S. Naval Research Laboratory's Chemistry Division from 1933 until his retirement in 1954; received the Navy's Distinguished Civilian Service Award in 1946; was instrumental in the development of anti-chemical-warfare equipment, aids for personnel downed at sea, and improved methods of fighting oil fires; 25 Feb.

David M. Gould, Denver, Colo.; 48; chairman of the department of radiology at the University of Colorado School of Medicine; formerly department head at the University of Arkansas Medical Center; 1 Apr.

Harry E. Hammond, Columbia, Mo.; 77; emeritus professor of physics at the University of Missouri, where he taught for 35 years; retired in 1955; 18 Mar.

Thomas H. Lanman, Chestnut Hill, Mass.; 69; clinical professor of surgery, emeritus, at Harvard University, where he served from 1928 to 1957; was a pioneer in the surgical treatment of pulmonary disorders in infants and young children; 25 Mar.

George F. Myers, Jackson Heights, N.Y.; 96; pioneer in aviation and a contemporary of the Wright brothers; credited with inventions pertaining to the earliest heavier-than-air flying machines, helicopters, and parachutes; was a practicing patent attorney; 5 Apr.

Howard C. Naftziger, San Francisco, Calif.; 76; pioneer brain surgeon and former president of the American College of Surgeons; retired in 1952 from the University of California as emeritus professor of neurological surgery and a regent of the university; was a department chairman for many years; developed diagnostic tests for tumors of the central nervous system and attained international renown for surgical techniques he devised for removal of tumors of the brain and pituitary gland; 22 Mar.

Harry Raymond, Albany, N.Y.; 85; astronaut; retired in 1939 from the Dudley Observatory, Albany; 23 Mar.

John Unrau, Edmonton, Alberta; 45; head of the department of plant science at the University of Alberta and past president of the Genetics Society of Canada; contributed to research in cereal genetics; 1 Mar.

Erratum: In the editorial for 7 April, “Equal but separate,” the third sentence of the last paragraph should have read: “In the alternatives of no federal aid or federal aid with some of it going to racially segregated schools, the choice must be for the second alternative.”
whether “the need for specialization can be met without a major retreat from Wristonization,” whether the Government should “create its own undergraduate Foreign Service Academy,” whether the merit system should be so extended as to exclude political appointments altogether but are some of the ticklish issues which Elder discusses with vigor and insight. Not everyone will agree with the answers he suggests, but no one can quarrel with his statement that “a creative adaptation of organization and policy to a world . . . in flux is essential if America and Western Civilization are to avert a decline similar to that of so many great nations and civilizations of the past.”

PETER H. ODEGARD
Department of Political Science,
University of California, Berkeley

The Grasses of Burma, Ceylon, India and Pakistan (Excluding Bamboseae).

The Grasses of Burma, Ceylon, India and Pakistan replaces volume 7 of Sir Joseph Hooker’s Flora of British India. It is a must for anyone interested in agrostology, for it contains a wealth of carefully compiled, concise information on most phases of the subject. Moreover, it is of much importance to the agriculturist interested in forage crops, grazing, or soil conservation: there are many notes on these subjects, as well as lists of species adapted to these purposes. The foreword, written by George Taylor, director of the Royal Botanic Gardens at Kew, includes a brief history of work at Kew on Indian grasses and a paragraph about the author.

The book is divided into a general part and a systematic part. The general part includes a chapter on the morphology of the grass plant which the author divides into the vegetative shoot, the reproductive shoot, and the flower. Numerous examples are given to illustrate the terms. There follows a chapter on dispersal of grass fruits and seeds, by wind, water, and special devices, also with illustrative examples. The third chapter discusses the uses of grasses for food, grazing, and fodder. A list of introduced and exotic fodder grasses is provided, among which are some of our own native grasses. Grasses for essential oils include 15 species of Cymbopogon. A brief account of the oil and oil production from each is given. Other genera producing aromatic oils are Vetiveria, Bothriochloa, and Capillipedium. Grasses used for paper making, lawns, soil binders, and miscellaneous uses are noted briefly. It is of interest that Pennisetum clandestium has been “an astonishing success in hills where rainfall is high, and is one of the most valuable introductions. It provides an excellent fodder, forms a close turf, and wears well.” The final chapter on obnoxious grasses mentions poisonous grasses, grasses causing mechanical injury, and weeds. Two of the worst weeds are Imperata cylindrica and Saccharum spontaneum; both are aggressive.

The systematic part presents a brief history of the “old systematics,” which covers the period from pre-Linnaean times down to about 1930. The change from the old concept of large genera such as Andropogon and Panicum to smaller, more homogeneous ones is given as an example of advancement during this time. “No matter how perfect that system may become from the standpoint of the cytogeneticist, anatomist, physiologist and so on, the task of the taxonomist will still be the correct identification of his plants. That task will not be helped by knowing the chromosome number of the plants before him . . ., but will be based upon easily observable characters from which keys can be constructed . . . After all, the taxonomist’s business was to name plants, and in his classification it must be remembered that the remarkable thing about it was not that so much was wrong, but that so much has been proved right.”

In the “new systematics” a taxonomist considers, in addition to gross morphological characters, the following topics: size and basic number of chromosomes, leaf anatomy, first seedling leaf, lodicules, embryo, hilum, root hairs, starch grains, nucleol, and the nature of the shoot apex. A brief account of the importance of each and what has been accomplished is given. There is a brief discussion of the origin of grasses, and the several phylogenetic arrangements that have been proposed. Of particular interest is the statement attributed to C. E. Hubbard, that “the ancient primary grass consisted of leafy-branched flowering shoots, each of which was many-noded and bore at each node a sheathing leaf. In the axil of each leaf would be found a propylum-like scale and between it and the leaf-base a typical monocotyledonous flower.”

In the systematic list, the grasses are divided into two groups, the Panicoideae—consisting of the tribes Maydeae, Andropogoneae, and Panicaeae—and the Pooidaeae, consisting of 36 tribes, most of them relatively small. The arrangement is strictly alphabetical throughout, an arrangement which greatly increases the volume’s usefulness as a ready reference work. It is also a very commendable plan because of the rapid changes taking place in the concepts of grasses. “It seems obvious that a great deal more information must be gained, before even a tentative scheme with a moderate chance of acceptance can be produced.”

There are dichotomous keys to the groups, tribes, genera, and species. A complete tation, important synonyms, geographical distribution, uses, principal exsiccatae, and chromosome number, if known, are given for each species. Numerous pertinent taxonomic discussions are included when they are necessary to explain the reasons for using a given name. There are no species descriptions. These would have been very desirable, but they would have doubled, at least, the size of an already large volume. An appendix contains the Latin descriptions of new tribes, genera, and species, including a rather large number of species of Agropyron.

The book is well printed and easy to read. There are 80 full-page illustrations, most of them drawn from the Flora of West Tropical Africa, East African Pasture Plants, and The Cultivated Races of Sorghum.

JASON R. SWALLEN
Department of Botany, U.S. National Museum, Smithsonian Institution

Miscellaneous Publications
(Inquiries concerning these publications should be addressed, not to Science, but to the publisher or agency sponsoring the publication.)


IMPROVED PERFORMANCE—WITHOUT INCREASED COST—

NOW AVAILABLE IN NEW SANBORN SYSTEMS DESIGNED SPECIFICALLY FOR BIOPHYSICAL RESEARCH

For recording up to four physiologic phenomena simultaneously—two new Sanborn systems offer all the benefits, operating advantages and improved performance of modern electronic components and instrument design. Signals to each system are fed through versatile, highly developed interchangeable preamplifiers available in ECG/General Purpose, Carrier, Low Level, Heart Sound and other types. Both vacuum tubes and transistors are used in the Preamplifiers, depending on the best component for the particular circuit. Additional reliability is obtained through the use of printed wiring boards and other electronic advances. Recorders in each system are also of improved design.

Series "964" direct writing (heated stylus) system has frequency response to 125 cps, horizontal chart movement for easy viewing and notations, nine chart speeds from 0.25 to 100 mm/sec.

Series "564" photographic system has identical preamplifiers and packaging. It features five chart speeds, simplified controls for easy operation, and 500 cycle galvanometers for recording phenomena beyond the response range of a direct writer. Other advantages include wide scale deflection (up to 15 cm) and ability to overlap traces.

For complete information call the nearest Sanborn Branch Office or Service Agency—or write Manager, Research Instrument Sales, Medical Division.

MEDICAL DIVISION
SANBORN COMPANY
175 Wyman St., Waltham 54, Massachusetts

14 APRIL 1961
how to capture a bat—underwater—with a PI tape recorder

To satisfy a yen for sea food, a particularly interesting member of the bat family catches fresh fish by reaching beneath the surface. In studying these bats, Harvard Professor Donald R. Griffin captures the bat's "radar" with a microphone in the air and a hydrophone in the water. The pulses of sound are recorded on alternate channels of a PI tape recorder, and played back at reduced speeds so that the original frequencies, 15 to 200 kilocycles, become audible.

In other studies, Professor Griffin has captured bat sounds in stereo. Using a pair of microphones located at different points, he has recorded and measured the arrival time of sound pulses to determine the bat's changing position with respect to the two microphones.

For capturing bat sounds and other dynamic phenomena for conversion to electrical form, PI recorders offer a number of distinct advantages over conventional instrumentation magnetic tape recorders. A brief note from you will capture the details.

P. I. invites inquiries from senior engineers seeking a challenging future.

PRECISION INSTRUMENT COMPANY
1011 Commercial Street • San Carlos • California
Phone LYTell 1-4441 • TWX: SCAR BEL 30

REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Letters

Expediency for Latin America

You ought to be congratulated for publishing the survey "U.S. assistance to Latin America" [Science 132, 1936 (1960)]. I cannot help but offer some comments on what appear to me an array of contradictions.

Contradiction number 1. "The Act of Bogotá talks of very much the same . . . things: schools, literacy campaigns, low-cost housing, roads in the country districts. . . . None of these things, any more than any of Castro's original reforms, contributes much to real economic development." If the illiteracy in Latin America is to continue at the level of 50 to 90 percent, if the people are to continue to live in mud huts, sick and undernourished, and if whatever produce is extracted from worn-out soils cannot be taken to the market, how, I ask, can one reach the absurd conclusion that none of the things talked of in the Act of Bogotá contribute to real economic development?

Contradiction number 2. "A real program of development necessarily requires, for one thing, a drastic rise in tax rates, which in every Latin-American country are now far below those in any of the more developed countries." Taxation works wonders in countries with strong middle classes. Latin America, with the exception of Uruguay and Costa Rica and possibly Argentina, is characterized by the "have nots," with incomes of $100 to $500 per year, and the "have everythings," with incomes which approach the national budgets. I do not believe that the oligarchs will ever vote to tax themselves even at the existing rates, and even if they were to pay 1000 percent of what they pay now, the revenues would not be enough to solve any of the basic problems. What is needed first of all is a drastic rise in productivity and incentive to consume. To attain these basic goals, there must be technical know-how and literate, healthy workers. It is an irony to talk about democracy when the elementary ingredients of a decent living are denied the great majority of people.

I could go on analyzing the contradictions which appear to originate from ignorance of the real social and economic problems of Latin America. How can a government be progressive and popular and be able to institute sound economic programs if it does not (i) provide elementary education for the large masses of children who remain illiterate for the lack of schools, work for chronically unemployed people, a little sanitation and modest housing for the
have-nots, and roads to open new areas to productivity; (ii) find democratic formulas to institute land reform in countries where 100 families own 95 percent of the productive land; and (iii) obtain technical aid from the advanced countries and long-range, low-interest loans for broad economic development?

To formulate realistic policies of assistance, it is essential that the experts stop reading government reports, which are invariably colored by national pride, and go, instead, to see for themselves, not Buenos Aires, Caracas, or Quito, but the “people” in the “real countries.” Policies based on expediency will bring only disaster.

L. A. ROMO
DuPont Company,
Edgemoor, Delaware

Racial Differences

The recent letter of Leon S. Minckler [Science 133, 202 (20 Jan. 1961)] on racial differences points out the need for distinguishing between the scientific problem and the applications to daily life.

With regard to the scientific problem, Minckler admits that H. E. Garrett’s opposition to the “equalitarian dogma” is probably justified, although the examples he gives have not been adequately studied. Concerning the problem of intelligence, with which Garrett is primarily concerned, nothing is said. Yet this is the crucial problem of the equalitarian dogma. For the results of mental tests almost invariably indicate significant differences in favor of whites, yet are disregarded by upholders of the dogma, who believe the differences to be due to differences in environment. What makes the problem especially difficult is (i) that we do not know how unfavorable an environment must be to stunt mental growth, and (ii) that, as Shuey has shown, the differences are greater at the upper socioeconomic levels, where the stunting effects should be the least.

As for the problem of application, I do not believe that Garrett or any other responsible psychologist would use racial differences as an “excuse for intolerance or discrimination.” While Minckler does not give any example of his contention, it is probable that he refers to the question of school segregation, as that is central to the question of racial mental differences. But this problem is not as simple as it appears to be at first sight. For it is assumed that segregation is discrimination in favor of the whites, whereas the possibility that segregation could also help the Negro is entirely overlooked. Where

---

NEW METROHM EQUIPMENT FOR

pH STAT

...AND TITRATION CURVES

Fully automatic recording of titrant volume as a function of pH (mV), and only new Metrohm equipment has these

EXCLUSIVE FEATURES:

1) Micro and macro assemblies including interchangeable burette cylinders with capacities from 1.0 to 50.0 ml.
2) Meter accuracy of 0.01 pH
3) Switch-over system for different recorder speeds
4) Built-in magnetic stirrer
5) Temperature controlled titration vessels for minimum volumes of 0.5 ml.

Write for descriptive catalog No. T78CT

BRINKMANN

INSTRUMENTS, INC. 115 Cutter Mill Road, Great Neck, N.Y.
Philadelphia • Cleveland • Houston • Miami • Menlo Park, Cal.
differences do exist, to force Negroes to meet white standards is to do them no favor. Up north, both as student and teacher, I have been impressed by the Negro's difficulty in meeting white standards. I do not believe that the lower standards down south are the result of poorer teaching by Negroes. Teaching ranks relatively high as a profession among southern Negroes, and the teachers I have met appear to be eager to raise the position of the Negro by way of education.

RALPH W. ERICKSON
Department of Psychology,
Mississippi State College
for Women, Columbus

Literature Citation Counting

If one relies upon the enumeration of literature citations to identify significant research [J. H. Westbrook, Science 132, 1229 (1960)], one should be reminded that this technique could be considered a special case of the more general opinion polls which so frequently are called into service to analyze economic and political aspects of our society. The pollster classifies and enumerates subjective opinions. Objectivity is introduced into the poll to the extent that opinion sampling is randomized. The more random the sampling is, the more objective will be the conclusion, and the more uncritical, by whatever criterion, will be the selection of opinions upon which the conclusion is to be based.

Thus it would appear that the enumeration of literature citations of a particular research article would represent the current value judgment of the pedestrian researcher in this particular area of research. Past experience has shown that favorable "average judgment" may lag decades behind the publication of brilliant but radical ideas.

Let us suppose that a scientist knew that he was to be rated according to the frequency with which his publications were cited. He might be extremely reluctant to enter any except the most popular areas of research. Such a system might be more vicious than that of rating him on the basis of the number of his publications.

Judging the merit of a scientific publication ultimately requires a subjective evaluation. Why place greater reliance on the "average judgment" than upon the judgment of those whose wisdom is most respected? To do so is to emphasize past accomplishment rather than potentialities for the future.

JAMES R. KUPPERS
Chemistry Department, Pfeiffer College, Misenheimer, North Carolina
PHIPPS & BIRD
PULMOTOR
VARI-PHASE
VALVE

For Controlling Artificial Respiration
For use with compressed air in controlling artificial respiration.
Control of one knob facilitates respiration rates of 15 to 50 per minute. Time ratio may be set to any value between 1:4 to 4:1.
Removes for easy cleaning and sterilizing.

CAT. NO. 71-216

HARSHAW MANUFACTURES A COMPLETE LINE OF SCINTILLATION AND OPTICAL CRYSTALS

SCINTILLATION Mounted NaI(T1) Crystals
Crystal detectors designed for the most sophisticated counting problems. Our physics and engineering group are available to assist you in your special detector problems.

INTEGRAL LINE (Crystal photo multiplier tube combination assembly)
- Improved resolution
- Ready to use plug-in unit
- - Permanent light sealed
- - Capsule design facilitates decontamination
- - Close dimensional tolerances
- - Harshaw guaranteed

INTERFERENCE FILTERS
for isolating narrow spectral bands

Spectral Range: 340-900 millimicrons
Peak Transmission: 40%
Half Peak Width: 8-12mμ
Size: 2" x 2"

For
Colorimetry
Fluorimetry
Flame Photometry
also microscopy, photomicrography, microcalorimetry, refractometry, polarimetry, light scattering measurements, and for many other applications requiring monochromatic light in the visible, near-ultraviolet, and near-infrared range.

Write for Bulletin #180 to
PHOTOVOLT CORP.
1115 Broadway
New York 10, N.Y.

OPTICAL Crystals
For Infrared and Ultra Violet Transmitting Optics
“HARSHAW QUALITY” INHERENT IN EACH HARSHAW-GROWN CRYSTAL GUARANTEES THE MOST EFFICIENT OPTICAL TRANSMISSION POSSIBLE THROUGH:
1) Negligible light scattering in crystals, permitting higher sensitivity and improved resolution
2) Freedom from absorptions caused by trace impurities in crystal optics
3) Minimum strain
“HARSHAW QUALITY” meets the demand for uniformity of optical properties such as dispersion and refractive index. Prices, specifications, or other information will be sent in answer to your inquiry.
The following infrared and ultraviolet transmitting crystals are available; others are in the process of development:
- SODIUM CHLORIDE
- SODIUM CHLORIDE MONOCHROMATOR PLATES
- POTASSIUM BROMIDE
- POTASSIUM BROMIDE PEEL POWDER (through 200 on 325 mesh)
- POTASSIUM CHLORIDE
- OPTICAL SILVER CHLORIDE
- THALLIUM BROMIDE IODIDE
- LITHIUM FLUORIDE
- LITHIUM FLUORIDE MONOCHROMATOR PLATES
- CALCIUM FLUORIDE
- BARIUM FLUORIDE
- CESIUM IODIDE

Additional information on the physical and optical properties of the above crystals is available in our 36-page booklet “Synthetic Optical Crystals.”
Send for your free copy.

PHIPPS & BIRD
Manufacturers & Distributors of Scientific Equipment
6th & Byrd Streets - Richmond, Va.

HARSHAW QUALITY
INHERENT IN EACH HARSHAW-GROWN CRYSTAL GUARANTEES THE MOST EFFICIENT OPTICAL TRANSFeRS POSSIBLE THROUGH:
1) Negligible light scattering in crystals, permitting higher sensitivity and improved resolution
2) Freedom from absorptions caused by trace impurities in crystal optics
3) Minimum strain
“HARSHAW QUALITY” meets the demand for uniformity of optical properties such as dispersion and refractive index. Prices, specifications, or other information will be sent in answer to your inquiry.

Every Harshaw crystal is a product of our experience in crystal growing technology since 1938
Other Phosphors available from The Harshaw Chemical Company
ROUGH CUT THALLIUM ACTIVATED SODIUM IODIDE
CRYSTAL BLANKS
EUROPEUM ACTIVATED-LITHIUM IODIDE (NORMAL)
EUROPEUM ACTIVATED-LITHIUM IODIDE (50% UP ENRICHED)
THALLIUM ACTIVATED CESIUM IODIDE
THALLIUM ACTIVATED POTASSIUM IODIDE
ANTHACENE
PLASTIC PHOSPHORS

THE HARSHAW CHEMICAL CO.
Crystal Division Cleveland 6, Ohio

14 APRIL 1961
Meetings

Forthcoming Events

May

5-7. American Soc. of Internal Medicine, Miami Beach, Fla. (G. T. Bates, 350 Post St., San Francisco 8, Calif.)

5-7. Wisconsin Acad. of Sciences, Arts, and Letters, 91st annual, Waukesha. (T. J. McLauglin, Secretary, 2865 N. Prospect Ave., Milwaukee, Wis.)

5-8. American Psychoanalytic Assoc., Chicago, Ill. (Mrs. H. Fischer, 1 E. 57 St., New York 7, Ill.)

6-7. Academy of Psychoanalysis, annual, Chicago, Ill. (J. H. Merin, 49 E. 78 St., New York 21)


7-10. American Inst. of Chemical Engineers, Cleveland, Ohio. (J. F. Van Antwerp, AIChE, 25 W. 45 St., New York 36)

7-11. Institute of Food Technologists, New York, N.Y. (C. S. Lawrence, 176 W. Adams St., Chicago 3, Ill.)

7-12. Medical Library Assoc., Inc., Seattle, Wash. (Miss R. J. Mann, Mayo Clinic Library, Rochester, Minn.)

7-12. Society of American Bacteriologists, 62nd annual, Kansas City, Mo. (E. M. Foster, 311 Bacteriology, Univ. of Wisconsin, Madison 6)

7-12. Society of Motion Picture and Television Engineers, Toronto, Canada. (SMPTe, 55 W. 42 St., New York 36)

7-9. Titrimetric Methods of Analysis, symp., Cornwall, Ontario, Canada. [J. R. McCallum, Courtaults (Canada) Ltd., Cornwall]


8-10. Mathematical Theories of Biological Phenomena, symp., New York, N.Y. (N. Rashevsky, Committee on Mathematical Biology, 5741 Drexel Ave., Chicago 37, Ill.)

8-12. American College of Physicians, 42nd annual, Miami Beach, Fla. (ACP, 4200 Pine St., Philadelphia 4, Pa.)


9-11. Western Joint Computer Conf., Los Angeles, Calif. (W. F. Bauer, 8433 Fullbrook Ave., Canoga Park, Calif.)


16-18. Western Conf. on Anesthesiology, biennial, Portland, Ore. (J. O. Bradford, 2307 NW Overton St., Portland 9, Ore.)

(See issue of 17 March for comprehensive list)

REHABILITATION OF THE MENTALLY ILL

Social and Economic Aspects

A symposium of the American Psychiatric Association, cosponsored by the AAAS Section on Social and Economic Sciences and the American Sociological Society.

Edited by Milton Greenblatt and Benjamin Simon

This volume presents an up-to-date picture of rehabilitation in its broadest sense. The contributions are from outstanding researchers and practitioners in the field. The process of rehabilitation is examined from the standpoint of (a) hospital, (b) transitional aspects, and (c) community. The rehabilitation of the individual in the total sense is seen as a continuum starting from the moment of admission to his final resettlement in the community and many techniques and recommendations for improved patient care and treatment are contained in the book.

December 1959, 260 pp., $5.00
AAAS Members' Cash Orders $4.50

English Agents: Bailey Bros. & Swinfen, Ltd.
Hyde House, West Central Street
London W.C.1, England

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
1515 Massachusetts Avenue, NW
Washington 5, D.C.