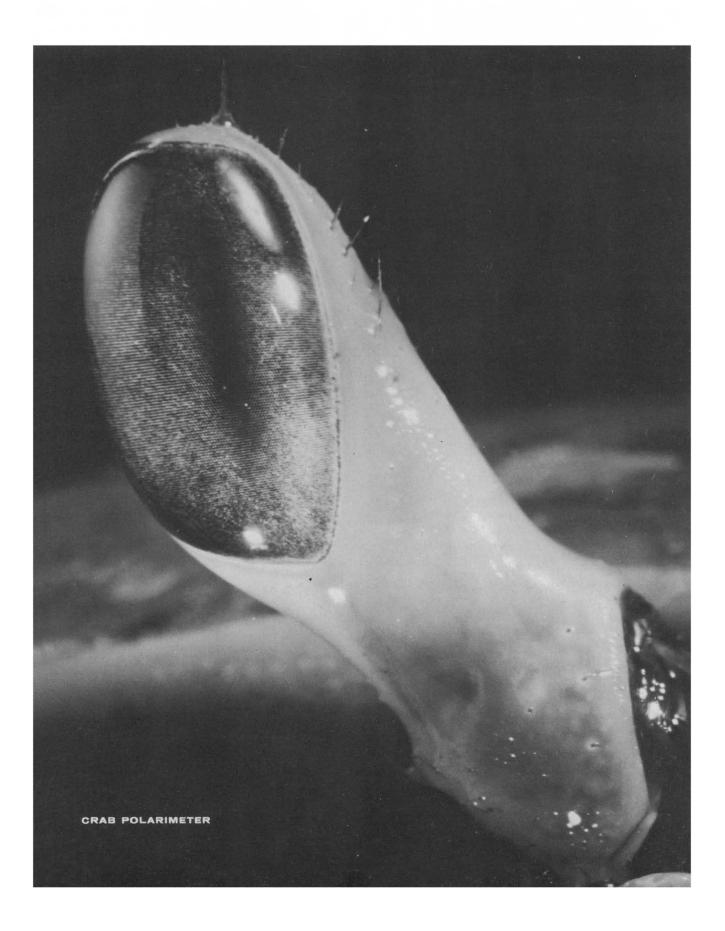
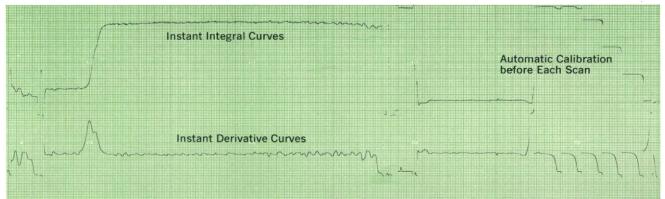
SCIENCE 28 October 1966 Vol. 154, No. 3748

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

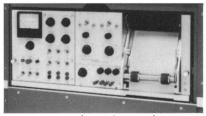




Boundary Velocity Experiment, two DNA's, 44,000 rpm, 265 mµ

Direct Scanning...the new era in analytical ultracentrifugation

The Photoelectric Scanner permits investigators, for the first time, to take full advantage of the highly discriminating absorption optical system of the Model E. It provides split-beam photometry—during centrifugation, at wavelengths selectable at will from 440 m μ down to 236 m μ . You can see what is happening in the cell as it happens because you get an immediate written record, and both integral and derivative curves are recorded simultaneously.



Recorder and controls for Photoelectric Scanner

Thus direct scanning frees you from the tedious procedures associated with the camera; provides "direct viewing" of sedimentation processes, electronic precision and discrimination in scanning the cell, and a variety of wavelengths at which to work. The precision and versatility that this new tool brings to biochemical research will inevitably open new areas of study. Already two investigators working with a scanner have been able to distinguish the catalytic and regulatory protein subunits of an enzyme in an association-dissociation study that augurs well for exciting work ahead.

What that work will be, what more will be accomplished in the era of direct scanning, only time and the ingenuity of investigators will tell.

Inherent advantages of the Scanner

• Because the Scanner utilizes the split-beam principle, two samples in a double sector cell can be subjected to identical experimental conditions—an important factor in studying extremely small differences in sedimentation coefficients, for example. Or sample solution and solvent can be used in the double sector cell, with solvent reading automatically subtracted from the sample solution.

• With the Scanner classical sedimentation equilibrium measurements at extremely low concentrations in the UV are significantly easier to make. And they are more accurate because calibration steps are recorded before each scan.

• Having both curves simultaneously is a real advantage. For example: the derivative curve can show the presence of secondary components not readily recognizable from the integral curve; the integral curve can show heterogeneous material not revealed by the derivative curve.

For more information about the Photoelectric Scanner, write to Spinco Division at the address below.





INSTRUMENTS, INC. SPINCO DIVISION PALO ALTO, CALIFORNIA • 94304

INTERNATIONAL SUBSIDIARIES: GENEVA; MUNICH; GLENROTHES, SCOTLAND; TOKYO; PARIS; CAPETOWN; LONDON; MEXICO CITY

H.D: on the track of a killer

Recently, hematoporphyrin derivative (H.D.) has been reported to be an important agent in tumor detection.

By utilizing H.D. and a proper activating and viewing system, one can detect malignancy by fluorescence. Hematoporphyrin tends to accumulate in tumors (1) and its red fluorescence can be utilized in the delineation of neoplastic tissue. (2). Lipson, et. al. have demonstrated that with a single intravenous dose of 0.05 mg/gm body weight of H.D., the tumor exhibited good differentiation within 3 hours after administration. They further report that the amount of H.D. required is well within the range of safety for the body. (3) NBCo offers stat service on H.D. Phone collect 216-662-0212 (USA only). NBCo

NBCo offers stat service on H.D. Phone collect 216-662-0212 (USA only). NBCo will process your order and guarantee shipment within 60 minutes of your call; one-day delivery anywhere in the continental USA, 80 hours anywhere in the world. Send for our free catalog containing more than 3000 items.

| PRICE SCH | E | DL | LE | 5: | | | | | | | Hei | mai | op | orp | hyr | in | Deri | vative |
|-----------------|---|----|----|----|---|---|---|---|---|---|-----|-----|----|-----|-----|----|------|--------|
| 🔰 25 gram bottl | e | • | • | ۰. | | • | | • | ٠ | | | • | · | | | • | gm. | \$4.25 |
| 10 gram bottle | • | ٠ | • | • | | • | ٠ | ٠ | * | ٠ | | | | • | • | | gm. | 4.50 |
| 5 gram bottle | • | • | | ٠ | • | ٠ | • | | ٠ | | | ٠ | ٠ | | ٠ | | gm. | 4.75 |
| 1 gram bottle . | • | • | • | • | • | • | • | ٠ | ٠ | ٠ | ٠ | ٠ | ٠ | * | ٠ | ٠ | | 4.90 |



1. Auler, H., Banzer, G., Krebsfrosch, Z. F., 53, 65 (1942) • 2. Figge, F. H. J., Diehl, W. K., Peck, G. C., Mack, H. P., Cancer Res. 2, 105 (1956) • 3. Lipson, R. L., Baldes, E. J., Olsen, A. M., J. Natl. Cancer Inst. 26, 1 (1961) • The literature references should not be interpreted as either an endorsement or disapproval of the biochemical by the cited investigation.

NOT FOR HUMAN USE

28 October 1966

Vol. 154, No. 3748

| LETTERS | Molecular Biology for Beginners: D. Branson; J. Klimas; A Limnologist Visits Russia: C. E. Goulden; Geographic Criteria for Grants: F. W. Putnam; Job Hunting by Chain Letter: P. L. Petrakis | 461 |
|------------------|---|------------|
| EDITORIAL | Birthday Plans | 465 |
| ARTICLES | Mechanism of Polarized Light Perception: T. H. Waterman and K. W. Horch From Enzymatic Adaptation to Allosteric Transitions: J. Monod | 467 475 |
| | EDUCOM: Interuniversity Communications Council: J. G. Miller | 483 |
| NEWS AND COMMENT | Social Scientists—Seeking a Stronger Voice; NIH—Senate Urges Better Public Relations; British Doctors—Many Head for the United States; Medical School—Training May Change | 488 |
| BOOK REVIEWS | Lectures on Geology, reviewed by C. C. Albritton, Jr.; other reviews by H. Zirin; L. P. Williams; H. Eyring, I. J. Gordon, H. H. Strain, P. H. Rieger, R. H. Busey | 499 |
| REPORTS | Coordinate Synthesis of Heme and Apoenzyme in the Formation of Tryptophan Pyrrolase: H. S. Marver et al. | 501 |
| | Pyrimidine Dimers: Effect of Temperature on Photoinduction: R. O. Rahn | 503 |
| | Denitrification Rates in an Island Bay in the Equatorial Pacific Ocean: J. J. Goering and R. C. Dugdale | 505 |
| | Shattuckite and Planchéite: A Crystal Chemical Study: H. T. Evans, Jr., and M. E. Mrose | 506 |
| | Rare Earths in European Shales: A Redetermination: M. A. Haskin and L. A. Haskin | 507 |
| | Sex Attractants in Frass Produced by Male <i>Ips confusus</i> in Ponderosa Pine: R. M. Silverstein, J. O. Rodin, D. L. Wood | 509 |
| | Schizophyllum commune: New Mutations in the B Incompatibility Factor: | 510 |

SCIENCE

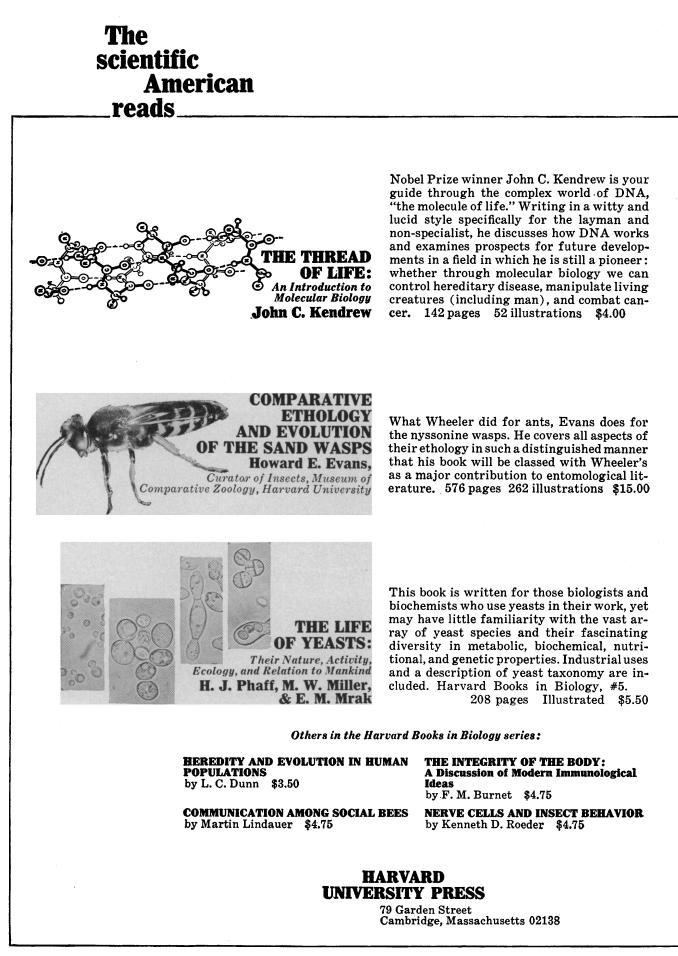
| BOARD OF DIRECTORS | HENRY EYRING Retiring President, Chairman | ALFRED S. ROMER President | | H. BENTLEY GLASS HUDSON HOAGLAI DAVID R. GODDARD MINA S. REES |
|--|---|---|---|--|
| VICE PRESIDENTS AND SECTION SECRETARIES | MATHEMATICS (A) Albert W. Tucker Wallace Givens | PHYSICS (B) Allen V. Astin Stanley S. Ballard | CHEMISTRY (C) Alfred E. Brown Milton Orchin | |
| | Cora Du Bois | Robert M. Gagne | SOCIAL AND ECONOMIC SCIENCES (Kenneth E. Boulding Eugene B. Skolnikoff | HISTORY AND PHILOSOPHY OF SCIENCE Melvin Kranzberg Norwood Russell Hanson |
| | PHARMACEUTICAL SCIENCES (André-Archambault Joseph P. Buckley | Np) AGRICULTURE (0) Nyle C. Brady Ned D. Bayley | INDUSTRIAL SCI Ellis A. Johnson Burton V. Dean | Clarence H. Boe |
| DIVISIONS | | r Viereck Daniel (| . Aldrich, Jr. Robert C. Miller Earl | THWESTERN AND ROCKY MOUNTAIN DIVISIO D. Camp Marlowe G. Anderso sident Executive Secretary |
| Washington, D.C. 20005. New comb | scriptions \$8.50; foreign postage scriptions \$8.50; foreign postage s; \$7, 10 months; \$7.50; Provid | e, \$1.50; Canadian postage e, \$1.50; Canadian postaj e 4 weeks' notice for cl | 2 paid at Mashington, 0.0. Copying | ent of Science, 1515 Massachusetts Ave., ht • 1966 by the American Association for t Guide to Scientific Instruments, which is old address and zip numbers. Send a reco |

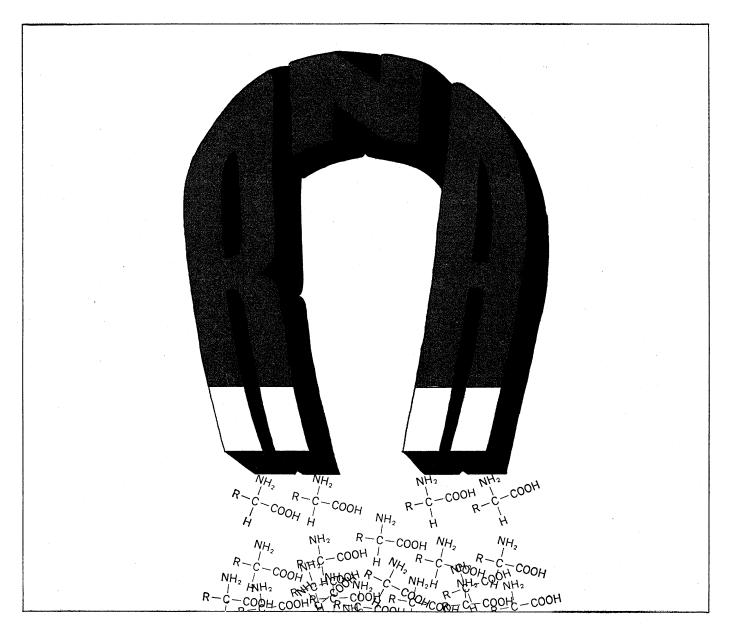
| | Relative Turgidity of Leaves: Temperature Effects in Measurement: B. D. Millar | 512 |
|---------------------|--|-----|
| | Ferrosilite III: A Triclinic Pyroxenoid-Type Polymorph of Ferrous Metasilicate: C. W. Burnham | 513 |
| | Reaggregation of Insect Cells as Studied by a New Method of Tissue and Organ Culture: D. R. Walters and C. M. Williams | 516 |
| | Hydrogen Bonding Specificity of Nucleic Acid Purines and Pyrimidines in Solution: Y. Kyogoku, R. C. Lord, A. Rich | 518 |
| | Anticholinergic Blockade of Centrally Induced Thirst: R. A. Levitt and A. E. Fisher | 520 |
| | Reovirus-Specific Polyribosomes in Infected L-Cells: L. Prevac and A. F. Graham | 522 |
| | Formylmethionyl-tRNA Dependence of Amino Acid Incorporation in Extracts of Trimethoprim-Treated Escherichia coli: J. Eisenstadt and P. Lengyel | 524 |
| | Pyruvate Inhibition of Lactate Dehydrogenase Activity in Human Tissue Extracts: A. L. Latner, S. A. Siddiqui, A. W. Skillen | 527 |
| | Release of Catecholamines and Specific Protein from Adrenal Glands: N. Kirshner et al. | 529 |
| | Long-term Activity Recording in Small Aquatic Animals: A. A. Heusner and J. T. Enright | 532 |
| | Electrophoretic Heterogeneity of Mammalian Galactose Dehydrogenase: P. Cuatrecasas and S. Segal | 533 |
| | Polymorphism of Heavy-Chain Genes in Immunoglobulins of Wild Mice: R. Lieberman and M. Potter | 535 |
| | Perceptual Grouping Produced by Changes in Orientation and Shape: J. Beck | 538 |
| | Underwater Vocalization by Sea Lions: Social and Mirror Stimuli: R. J. Schusterman, R. Gentry, J. Schmook | 540 |
| | Technical Comments: Superconductivity of Alpha Uranium: B. W. Howlett; B. T. Matthias; Dimethyl Sulfoxide and Dogs: L. J. Sacks | 542 |
| ASSOCIATION AFFAIRS | Over-exploited Animal Populations | 544 |
| MEETINGS | Reproductive Failure: E. S. E. Hafez; Forthcoming Events | 546 |

| inclosing in childhios | H. BURR STEINBACH | PAUL E. KLOPSTEG | DAEL WOLFLE |
|--------------------------------------|--------------------|------------------|---------------------------------------|
| | JOHN A. WHEELER | Treasurer | Executive Officer |
| EOLOGY AND GEOGRAPHY | (E) ZOOLOGICAL SCI | | BOTANICAL SCIENCES (G) |
| de Webb Peoples | Richard B. Rober | | Charles E. Olmstead |
| chard H. Mahard | David E. Davis | | Warren H. Wagner |
| NGINEERING (M) | MEDICAL SCIENCE | S (N) | DENTISTRY (Nd) |
| sul Rosenberg | Britton Chance | | C. A. Ostrom |
| ewman A. Hall | Robert E. Olson | | S. J. Kreshover |
| INFORMAT William C. Phyllis V. | | William | ICS (U) G. Cochran 1 Sitgreaves |

COVER

Right compound eye of the giant land crab *Cardisoma*, borne distally on the anterolateral surface of a movable eyestalk. Polarized light perception apparently depends on minute twochannel analyzers beneath each of the thousands of facets. In these retinal filters, molecules of visual pigment would serve both as photon absorbers and dichroic analyzers (scale: eyestalk diameter, 4 to 5 millimeters; facet diameter, 20 microns). See page 467. [T. H. Waterman and K. W. Horch, Yale University]





Amino Acid Acceptor Activity

(Would you like an easier way to measure it?)

Precise measurement of "amino acid acceptor activity" requires solutions of C¹⁴ L-amino acids at an appropriate specific activity which have been carefully standardized with respect to molar concentration and radiochemical purity. This is a problem.

This is a solution: use new StanSTAR® reagents which are specifically formulated to obviate said problem.

What are StanSTAR reagents? "StanSTAR" is an acronym-like word for: "standardized soluble transfer RNA activity reagents." I.E.: solutions of C¹⁴ L-amino acids (16 in number) which have been carefully standardized to simplify precise measurement of amino acid loading and transfer capacity in studies on sRNA and specific tRNA fractions. In other words: these are instant reagents for assessing amino acid acceptor activity.

Pertinent details: StanSTAR reagent solutions are guaranteed to contain 1 m μ mole \pm 5% per μ liter with a radiochemical purity which is at least 99%. Available in two sizes: 1 μ mole \pm 5% in 1 ml. 0.01 *N* HCl sol. (approximately 50 μ c) and 10 μ mole \pm 5% in 10 ml. 0.01 *N* HCl sol. (approximately 500 μ c). Note that the specific activity (approximately 50 mc/mmole) is also set to provide the appropriate level for assay of sRNA without adjustment.

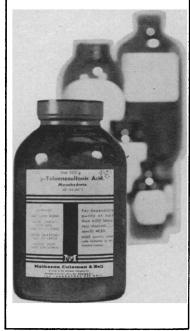
Confidence factor: with each and every shipment of a StanSTAR reagent you receive our traditional Product Analysis Report. This will give you certified molar concentrations (as determined on a carefully standardized amino acid analyzer) plus autoradiochromatographic evidence of radiochemical purity.

More information? Write for complete data. Or turn to page 32 of your new 1966 Schwarz catalog. Or write for a copy of this catalog and *then* turn to page 32. Thank you.

Schwarz BioResearch, Inc. Orangeburg, New York 10962 459

28 OCTOBER 1966

If you want 6000 MC&B reagents right now just call



<section-header><text><text><text><text><text>

141 MC&B Distributors offer the fastest, most dependable laboratory chemical service in the U.S.





NEW NALGENE® UNBREAKABLE BUCHNER FUNNELS...

Strong, light in weight, with a tough polypropylene top and a flexible polyallomer bottom. These funnels handle hot filtrations to 275° F, won't collapse with high vacuum, can't break. Light in weight-less chance of tipping the funnel and flask ... losing contents. They're the newest in the full line of Nalgene unbreakable funnels-Buchners, analytical, powder, utility, heavyweight, large and the unique separatory funnels; every one precision molded of premium resins to provide maximum performance in the specific applications for which they are intended.

Assortable with other Nalgene labware for maximum discounts. Order from your lab supply dealer or write for our Catalog P-166, Dept. **21341**, The Nalge Co., Inc. Rochester, N. Y. 14602.

Another Product of Nalge Research



Geographic Criteria for Grants

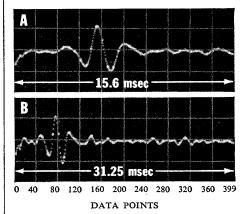
One accomplishment of federal research and development has been the geographic spread of science and the rise of the state universities. Though the growth of the state university system has been sustained by legislative support and prompted by the pressure of student enrollment, excellence in science has been fostered by federal research grants. In the Midwest and Northwest, in Texas, California, and increasingly in the Southeast, federal grants to state universities have achieved some counterbalance to the splendid, but criticized, growth of private universities in the Northeast and California.

In view of this geographic spread, it is unfitting and illadvised for scientists and administrators to lobby against the regional concentration of research funds or to urge their congressional representatives to insure a wider geographic distribution. Planned geographic distribution inevitably leads to political allocation in which merit and potential become secondary considerations. The aspiring university which pressures Washington for regional development overlooks the aspirations of its weaker neighbors who will inevitably demand their full share. Congressional pressure for geographic distribution of federal research funds in Congress is directly attributable to the demands of university administrators and scientists whose greed has overcome their judgment.

Institutional development programs are being considered by several federal agencies, and a science development program has already been inaugurated by the National Science Foundation. If selection is made by merit and potential, these programs will encourage the rise of new "centers of excellence," which should be concerned with the needs of growing populations and regional development and located only where initiative and quality already exist. Wider eligibility, not geographic distribution, should be the major goal, and university administrators must subordinate their individual interests and unite to protect federal programs from political intrusion. Guidelines can also be set for broader programs of federal support of universities in nonscience fields.

FRANK W. PUTNAM Division of Biological Sciences, Indiana University, Bloomington 47401

Our signal averager uses all its data points for better resolution.



More usable data points. In a signal averager, resolution is a function of the number of data points that can be placed within a region of interest. Resolution can, therefore, be a problem in any signal averager with a minimum dwell-time per data point of longer than the 39 μ sec. of our Model 7100 Data Retrieval Computer (15.6 msec. for 400 data points, display A, above). Many other signal averagers have a minimum dwell-time per data point as long as 78 µsec. (31.25 msec. for 400 data points, display B, above). Our signal averager, the DRC, uses all of its data points for signals that occur within as little as 15.6 msec. Result: the DRC gives you better resolution.

Pre- and post-analysis interval control. Another way to improve resolution is to average only *meaningful* signals. The DRC provides wide-range control of both pre- and post-analysis delay intervals. No data points are wasted on signals occurring between stimulus and response or during recovery after response.

Performance plus versatility. The DRC also has an input sensitivity of 20 millivolts requiring no pre-amplification for many applications. Besides transient-averaging, the DRC will perform time- and intervalhistogram analysis, *without* add-on modules. Now, all of the DRC's performance and versatility is available at a new, lower price:



The Model 7100 Data Retrieval Computer.

For more information on the DRC and its exciting new price, consult your local Nuclear-Chicago sales engineer. Or write to us.

NUCLEAR-CHICAGO

349 E. Howard Ave., Des Plaines, Ill. 60018 U.S.A. Donker Curtiusstraat 7, Amsterdam W.

SCIENCE, VOL. 154

Job Hunting by Chain Letter

During my brief career as a biochemist I have noticed that information concerning available job opportunities is not efficiently circulated to those who need it. I would like to try an experiment to bring about effective distribution of job information in the sciences. Basically, my proposal is an attempt to update the familiar "grapevine" to serve the needs of an enormously expanded scientific community.

For the time being I have a job, and I am also in the unusual position of having a list of about 15 available positions in biochemistry. I will give this list to anyone who writes to me and includes a stamped, self-addressed envelope. The only other requirement is that each correspondent include a descriptive list of available positions he knows about but does not want. The number of positions does not matter, but each correspondent should try to include all the information he would like to know if he were seeking a position. I will add the positions I receive to my own list and send the expanded list back to each correspondent.

I am confident that each person who contributes can receive perhaps dozens of positions in return for the few he sends in, thus increasing his probability of making a rational choice. All participants should, of course, feel honorbound to pass their list along to others when they are finished with it.

Those who are not biochemists can also participate, although, at the moment, I have no list of my own to offer them. They can write to me on the chance that others in their field may have sent in lists. Try again later, if only your own list is returned to you.

Employers may also find this service useful. They may submit advertisements. These will be intermingled with all the listed positions. Blind ads will not be accepted.

Perhaps by establishing this "job intelligence network" on a permanent basis, we can discourage the unfortunate practices of advertising-betweenfriends and non-advertising, a practice which served earlier generations well but is now obsolete and frequently unfair.

PETER L. PETRAKIS Department of Biochemistry, University of California, Berkeley

28 OCTOBER 1966



LINEAR FRACTION COLLECTOR

All three methods of collection — drop, time and volume, are provided by the *Fractomat*...a highly versatile, square-shaped instrument that requires only $17\frac{1}{2}$ -inches of valuable bench space and weighs under 65 lbs. Since the *Fractomat* fits on a standard laboratory utility cart, you can readily move it from one lab to another. All operating controls are conveniently located on a front panel.

The collecting platform accommodates 26 rectangular test tube racks placed in two rows of 13 racks each. Each rack holds 10 standard test tubes 18x150mm and is numbered from 1 to 10 for easy identification. (Special adapters for 13x100 mm tubes are available.)

Continuous, trouble-free operation is provided by a unique rack-moving mechanism that advances test tubes into position, dispensing fractions directly into the collecting tubes. (There's no possibility of cross-contamination!) Racks can be removed at any time and replaced by others to extend collection to an endless number of tubes. If a rack is prevented from advancing a test tube into position, a built-in safety device prevents loss of sample.

For the complete Fractomat story, ask us for a descriptive brochure.

C-4237-1X Fractomat, made of stainless steel and anodized aluminum, complete, for 115 volts, 60 cycles, AC. Price\$1,196.00



YOU PROBABLY MISSED SOMETHING IMPORTANT LAST WEEK

WHAT WAS IT?

Several thousand scientific and technical articles were published last week. It's safe to say that several of these articles contained information of interest to you.

Why didn't you see those articles? Blame the "information explosion." Too much scientific information. Too little time to read it. Too few libraries to store it. And not enough information scientists to process it.

Perhaps there's another explanation.

Despite the deluge of scientific and technical papers, only a small fraction falls within the area of each individual's specific interests. Rather than too much information, there is often too little that is relevant to a scientist's particular needs. So your problem may not be one of information overload at all. You may actually have a shortage of information.

How do you solve this problem? You don't. We do.

ISI's revolutionary multidisciplinary approach to information processing brings the benefits of relevant information to those scientists who recognize the value of ISI services. We make it our job to see that you probably won't miss anything important next week . . . or any week.

For a brochure describing ISI and its activities, just write Department 29-15. We'd like to show you what you've been missing.

Thousands of scientists throughout the world regularly utilize such original ISI services as: *Current Contents of Chemical, Pharmaco-Medical & Life Sciences • Current Contents of Space, Electronic & Physical Sciences • Index Chemicus • Science Citation Index • ASCA (Automatic Subject Citation Alert)* • ISI Magnetic Tapes • OATS (Original Article Tear *Sheets) • ISI Search Service.*

|--|

464 INSTITUTE FOR SCIENTIFIC INFORMATION 325 Chestnut St Philadelphia Pa 19106 USA science, vol. 154

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Science serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

Editorial Board

| ROBERT L. BOWMAN | EVERETT I. MENDELSOHN |
|------------------------|-----------------------|
| JOSEPH W. CHAMBERLAIN | NEAL E. MILLER |
| JOHN T. EDSALL | JOHN R. PIERCE |
| EMIL HAURY | KENNETH S. PITZER |
| ALEXANDER HOLLAENDER | ALEXANDER RICH |
| WILLARD F. LIBBY | DEWITT STETTEN, JR. |
| GORDON J. F. MACDONALD | CLARENCE M. ZENER |

Editorial Staff

Editor Philip H. Abelson

Publisher Business Manager DAEL WOLFLE HANS NUSSBAUM

Managing Editor: ROBERT V. ORMES

Assistant Editors: Ellen E. Murphy, John E. Ringle

Assistant to the Editor: NANCY TEIMOURIAN

News and Comment: DANIEL S. GREENBERG, JOHN WALSH (European Office, Lime Tree Farm, East Hagbourne, Berkshire, England), ELINOR LANGER, LUTHER J. CARTER, BRYCE NELSON, MARION ZEIGER, JANE AYRES

Book Reviews: SYLVIA EBERHART

Editorial Assistants: ISABELLA BOULDIN, ELEA-NORE BUTZ, BEN CARLIN, GRAYCE FINGER, NANCY HAMILTON, OLIVER HEATWOLE, ANNE HOLDSWORTH, KONSLYNNIETTA HUTCHINSON, KATHERINE LIVING-STON, BARBARA SHEFFER

Advertising Staff

Director Production Manager

- EARL J. SCHERAGO ROSE MARIE ROMAGNOLO Advertising Sales Manager: RICHARD L. CHARLES
- Sales: New York, N.Y., 11 W. 42 St. (212-PE-6-1858): ROBERT S. BUGBEE Scotch Plains, N.J., 12 Unami Lane (201-889-
- 4873): C. RICHARD CALLIS Madfald Mars 0052 4 Polling Lane (617.350
- Medfield, Mass. 02052, 4 Rolling Lane (617-359-2370): RICHARD M. EZEQUELLE Chicago, Ill. 60611, 919 N. Michigan Ave., Room 426 (312-DE-7-4973): HERBERT L. BURKLUND
- 426 (312-DE-7-4973): HERBERT L. BURKLUND Los Angeles 45, Calif., 8255 Beverly Blvd. (213-653-9817): WINN NANCE

EDITORIAL CORRESPONDENCE: 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Phone: 202-387-7171. Cable: Advancesci, Washington. Copies of "Instructions for Contributors" can be obtained from the editorial office. ADVERTISING CORRESPONDENCE: Rm. 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE 6-1858.

Birthday Plans

November 4 is the 20th birthday of UNESCO—the agency that Nehru called "the conscience of the world community." Both the General Conference of UNESCO, meeting in Paris, and the U.S. National Commission for UNESCO, which met in New Orleans in September, are using the birthday primarily as an opportunity for appraisal and planning rather than as an occasion for celebration.

SCIENCE

Past achievements must seem disappointing when measured against the stirring expression of hope in the preamble to UNESCO's constitution: "Since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed." But never since UNESCO was founded has the world been at peace, and the million dollars a year it can spend on direct efforts to build peace is no match for the estimated \$140 billion a year the world spends on armaments.

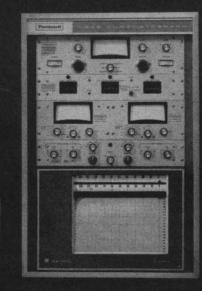
Past achievements seem more impressive when measured in terms of the intent "to contribute to peace and security by promoting collaboration among the nations through education, science and culture."

Science has always been prominent in UNESCO's name, but in the early years was given little programmatic emphasis; major attention then was on education and the use of mass media to promote human rights and to foster international understanding. As time has gone on, the role of science has increased, and accomplishments have become significant. The UNESCO Source Book on Science Teaching has been printed in 18 languages and will soon be available in 14 more. Other scientific activities have included the arid zone research program; close collaboration with the International Council of Scientific Unions, the International Geophysical Year, and the International Hydrological Decade; establishment of the European Nuclear Research Organization (CERN) and the International Brain Research Organization; and a 6-year study of the Indian Ocean, which involved 25 nations. In 1964 UNESCO gave the scientific part of its program higher priority by recognizing science as one of the major factors necessary to achieve economic and social development.

The next 20 years will surely have their difficulties, as have the first 20. Budgets are limited; many more nations than existed 20 years ago call for a greater variety of assistance. In efforts to aid developing countries, UNESCO has been far from alone. Other multinational efforts and many binational assistance programs have funds that, in total, far exceed UNESCO's budget, which even now, for all UNESCO's activities throughout the world, is no greater than that of a single fair-sized university. Bilateral and regional agreements and programs will and should continue. But UNESCO wants a larger part in the total effort. Although separate and individually planned efforts to help a country may all be desirable, they may also get in each other's way or may compete for the same limited talents and local resources. Without inhibiting other efforts, UNESCO could have a more influential role in establishing plans and guiding principles within which national, bilateral, and multinational efforts could work together more effectively. If it is to serve this larger purpose, UNESCO needs greater support from all of its 120 member countries.

There will surely continue to be difficulties in trying to build peace in an unpeaceful world. But UNESCO now has the surer touch that comes from experience, and early efforts that were sometimes marked more by enthusiasm than by reality have given way to more careful planning and more hard-headed weighing of priorities. "The conscience of the world community" merits financial and moral support as it plans for the years ahead.—DAEL WOLFLE

THIS PACKARD APPLICATIONS ENGINEER IS EXPLAINING THE OPERATION OF THE GAS CHROMATOGRAPH HE HAS JUST INSTALLED



Every customer gets this service, free

We want every one of our customers to get the most from his Packard Gas Chromatograph. No instruction manual-not even the very complete one we supply-can tell him everything. That's why every gas chromatograph we deliver is installed by a trained specialist who then explains its features. Features such as the easily-removable column/detector assembly that permits column changes outside the heated oven; electronically programmed temperature control, separate heat controls at inlet, outlet and detector; interchangeable detectors, and the water-cooled oven. Dual-column Packard Gas Chromatographs are ready to use for simultaneous analysis of different samples . . . or for stream splitting with different types of detectors to give general and specific responses from the same sample. Modular design of all systems allows choice of detector and expansion from single to dual channel, or isothermal to programmed temperature operation. For complete information ask your Packard Sales Engineer for Bulletin 1050, or write to Packard Instrument Company, Inc., 2200 Warrenville Road, Downers Grove, Illinois 60515.





THE HISTORY OF **CELL RESPIRATION** AND CYTOCHROME DAVID KEILIN

"One of the major monographs of the 20th century...will become a classic and will be read by many generations of students ... written by a great experimentalist who makes clear what is known and what further problems there are for investigation."-Science

Cambridge

This personal and historical account of the development of the concept of intracellular respiration and of the study of cytochrome, by a distinguished and honored scientist, is of interest to historians of science as well as to biochemists. \$17.50

JOURNAL OF CELL SCIENCE

Editors: H. G. CALLAN, St Andrews A. V. GRIMSTONE, Cambridge

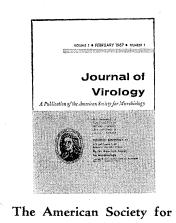
The Journal of Cell Science is a continuation, in new form, of the Quarterly Journal of Microscopical Science. The first issue was published in March 1966.

The new journal, also a quarterly, is devoted to all aspects of the study of cells. It will cover the entire range of investigation of cell organization, including advances in the relevant techniques.

In addition to studies of the structure and functions of plant and animal cells and their extracellular products, papers will be published on such topics as cell growth and division, cell movements and interactions, and cell genetics.

Within its scope also are aspects of morphogenesis at the cellular and subcellular levels, and studies of microorganisms and viruses where they relate to understanding of cell \$27.50 per year organization.

Cambridge University Press 32 East 57th Street New York, N.Y. 10022 28 OCTOBER 1966



Microbiology Announces Publication of

JOURNAL OF VIROLOGY

Journal of Virology, a new official publication of the American Society for Microbiology, will be "devoted to the advancement and dissemination of fundamental knowledge concerning viruses of bacteria, plants, and animals." Journal content will be drawn from original laboratory research in all areas of basic virology-biochemistry, biophysics, genetics, immunology, morphology, and physiology.

The Journal is indeed fortunate in having three distinguished virologists as its editors. Robert R. Wagner, M.D., Professor of Microbiology at the Johns Hopkins Medical School, is the Editorin-Chief. Dr. Wagner is ably assisted by Norman P. Salzman, Pb.D., Chief of the Cell Biology Section of the National Institute of Allergy and Infectious Diseases, and Lloyd M. Kozloff, Ph.D., Professor of Microbiology at the University of Colorado Medical Center in Denver,

Journal of Virology will be published bimonthly, one volume a year, beginning in February, 1967. Subscription cost per year is \$20.00 in the United States and overseas. There is no postage charge for subscriptions outside the U.S.A.

Note: ASM members should subscribe through the Society.

Subscription Agent:

THE WILLIAMS & WILKINS CO. 428 EAST PRESTON STREET BALTIMORE, MD. 21202

Publishers of Books and Periodicals in Medicine and the Allied Sciences.



Invertebrate Zoology

By PAUL A. MEGLITSCH, Drake University This introduction to invertebrate zoology describes the basic processes of the invertebrates, with considerable attention to comparative physiology, and provides classification and coverage of invertebrate life from the Protozoans through Insects and Myriapods. Flexibly organized, the work may be used in either the one-semester or full-year course. An abundant selection of meaningful illustrations enhances the book. Glossary, references, and an index are included.

January 1967 990 pp. illus. prob. \$11.00

Vertebrates: Their Structure and Life

By W. B. YAPP, University of Birmingham, England

"A very impressive, fresh view of the vertebrates, using examples that are not standardly used in the existing textbooks of com-parative anatomy."-Ralph M. Wetzel, University of Connecticut \$8.50

1965 544 pp. illus.

Inorganic Chemistry

By C. S. G. PHILLIPS and R. J. P. WIL-LIAMS, Oxford University

"Both Volume I and Volume II represent major contributions to the pedagogy and practice of modern inorganic chemistry. They represent clear, penetrating, and in-teresting expositions of a field of major im-portance."—James N. Pitts, Jr., University of California, Riverside

Volume I: Non-Metals

| 1965 | 700 pp. | illus. | \$8.00 |
|----------|-----------|--------|--------|
| Volume I | I: Metals | | |
| 1966 | 696 pp. | illus. | \$8.00 |

Applied Climatology: An Introduction

By JOHN F. GRIFFITHS, Texas A. & M. University

A two part study, this book first discusses applied climatology, introducing the con-cept of the standard continent and outlining the climate of representative stations of the world in the framework of Köppen's classification. Part Two considers the application of climatology in various environmental studies and includes the planning work which is now an important feature of civil engineering and building. 1966 128 pp. illus. \$6:00

Oxford University Press

200 Madison Avenue New York, New York 10016 547 the physio-pathology of intersex dealing with cytodifferentiation of fetal gonads, polyploidy and sex phenotype, sex-chromosome mosaicism, and placental enzymes using modern techniques of electron microscopy, tissue culture, and karyotype analysis.

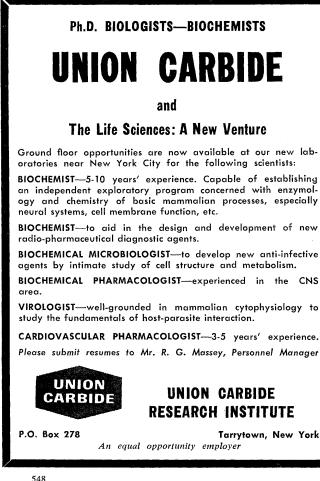
Sophisticated instrumentation and new experimental approaches are now available such as experimental hybridization, inter-species egg transfer, injection with virus or bacteria, interference with the function of the gonads or the placenta, microsurgery, cell fusion, fetal surgery, placenta surgery, tissue and organ culture, teratogenic drugs, overcrowding in utero by superovulation or by egg transfer, and immunological and cytogenetic techniques. Therefore, it is hoped that subsequent conferences on reproductive failure will deal with instrumentation and methodology of reproductive biology. Standardized terminology to be used for reproductive physiology, biochemistry, and immunology would also be highly desirable in order to facilitate interdisciplinary communication.

The second symposium, to be held 31 July to 4 August 1967 at Washington State University, will be limited to a specific topic, "The mammalian oviduct." There have been numerous conferences on the ovary, the uterus, the placenta, and so forth, but there has yet been little emphasis on the biology and method of studying the mammalian oviduct. Sufficient work has now been done and there is enough interest that an excellent symposium could be developed. The program chairmen are E. S. E. Hafez of Pullman and R. J. Blandau of Seattle.

The proceedings of the conference, edited by Kurt Benirschke, are being published by Springer, New York. The proceedings include: Overall Problem in Man (A. T. Hertig); Overall Problem in Domestic Animals (E. S. E. Hafez); Cytogenetics of Abortions (D. H. Carr); Enzyme Defects (D. Y. Y. Hsia); Chemomechanics of Implantation (B. G. Böving); Steroid Hormones (K. J. Ryan); Protein Hormones (J. B. Josimovich); Prolonged Gestation (P. B. Kennedy); Ovulation and Egg Transport (R. J. Blandau); Experimental Hybridization (M. C. Chang and J. L. Hancock); Hybrid Sterility and Fertility (K. Benirschke); Zebroids (J. M. King); Human Malformations (J. Warkany); Experimental Teratology (V. H. Ferm); Malformations Due to Genetic Mechanisms (F. B. Hutt); Bacterial Infections (A. B. Hoerlein); Fetal Infections in Man (S. G. Driscoll); Toxoplasmosis (J. K. Frenkel); Fungus Infections (C. G. Bridges); Virus Infections (D. N. Medearis); Ontogeny of Immune Response (A. M. Silverstein); Immunologic Interactions between Mother and Fetus (M. Galton); Reproduction and Failure at High Altitude (J. Metcalfe); Sterility and Social Interactions in Mammals (R. L. Snyder); Immobiliation of Large Animals (T. H. King); and a Placental Pathology symposium of many contributors.

The conference was generously supported by National Institute of Child Health and Human Development (HD-02035); Population Council (M-66.031); Charles River Breeding Laboratories; Eli Lilly Research Laboratories; Geigy Pharmaceuticals; Lakeview Hamster Colony; Lederle Laboratories; Schering Corporation; Smith, Kline & French Foundation; Syntex Company; and Upjohn Company.

E. S. E. HAFEZ Reproduction Laboratory, Washington State University, Pullman



AAAS Symposium Volume

MAN. CULTURE. AND ANIMALS: THE ROLE OF ANIMALS IN HUMAN ECOLOGICAL ADJUSTMENTS

Editors: Anthony Leeds and Andrew P. Vayda 304 pp., illus., bibliog., indexes, August 1965. Price: \$8.00. AAAS members' cash orders: \$7.00.

The volume is based on a symposium held at the AAAS meeting in Denver, December 1961. It presents case studies of the relationships among human populations, the animals they use for food or foodgetting, the plants significant for maintaining both animals and men, and the socio-cultural usages by which plants, animals, and men are linked in ecosystems.

Anthropologists and geographers discuss animal characteristics, populations dynamics, diets, and other ecosystem variables, including culture. The case material is used for a unique effort to rethink the logic of functional analysis in anthropology in terms of general systems approaches.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

1515 Mass. Ave., NW, Washington, D.C. 20005